APPENDIX A

COUNTY OF YOLO

Office of the County Administrator

Patrick S. Blacklock
County Administrator

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December 9, 2019

Sherri Metzker
Project Planner
City of Davis Community Development and Sustainability Department
23 Russell Boulevard, Suite 2
Davis, CA 95616

Re: Comments on Aggie Research Campus Project EIR Scoping

Dear Sherri Metzker:

The County of Yolo submits this letter to provide its initial comments on the Aggie Research Campus Project Environmental Impact Report (EIR) Scoping. Enclosed with this letter is the County's annexation policy framework. The County's annexation policy framework provides a starting point for comprehensively accounting for the impacts of a given annexation and subsequent development project while also offering potential mechanisms for addressing such impacts and providing public benefits. The issue of public benefits should be forefront throughout the planning process, ensuring that an annexation provides sufficient and equitable revenue to the County and City of Davis to address the increased need for public services.

Additionally, there are several issue of concern that emerged in prior iterations of this project that we hope are fully analyzed in the EIR including: additional traffic impacts on County roads, particularly County Road 32A; agricultural mitigation and buffers; affordable housing; and the increased demand for library services and the potential need for additional library facilities in the City of Davis. The Department of Community Services has also submitted a comment letter that discusses these technical concerns in more detail.

The County looks forward to working closely with the City of Davis as this process moves forward.

Sincerely,

for BL

Patrick S. Blacklock
Yolo County Administrator

Enclosure

cc: Yolo County Board of Supervisors
Mike Webb, City Manager, City of Davis

Annexation Policy Framework

Purpose and Objective

The annexation of land to a city—and in particular, the development and related activities that follow—can impact the County in a number of ways. The purpose of this document is to identify appropriate issues to consider in assessing the potential impacts of an annexation upon the County. While each proposed annexation will have to be evaluated individually, this document provides a good starting place for identifying issues that require consideration and, if appropriate, resolution through one or more of the following mechanisms:

- Tax-sharing Agreement
- Development Impact Fees
- Development Agreement
- CEQA Mitigation Measures
- Joint Planning/Environmental Review MOU
- Community Facilities District

Within the Land Use, Fiscal, and Infrastructure sections that follow, each category of potential impacts briefly references the mechanism(s) that may be best suited to implement measures that reduce or eliminate adverse effects on the County. The use of a Development Agreement to secure public benefits (net gains) should also be considered in connection with individual annexation proposals. Tax-sharing agreements can also be an effective mechanism for non-traditional allocations of property and sales tax revenues in a manner that enables counties to share in the fiscal benefits of development that follows annexations.

Land Use Impacts

Land use impacts vary greatly from project to project and necessarily require individualized analysis. This will typically happen through the environmental review process under the California Environmental Quality Act. Some of the more common issues to anticipate include the following:

1. Visual Impacts/Aesthetics.
    - Signage, particularly sign height and illumination
    - Architectural and landscape themes that complement the region's agricultural heritage
    - Compatibility with surrounding neighborhoods

Mechanisms: Development Agreement, CEQA Mitigation Measures.

2. Agricultural Resources.
    - County land use policy (including General Plan/Zoning) considerations, including but not limited to foregone development opportunities
    - Project density/intensity
    - Loss of farmland and mitigation on like/better soils (preferably, 2:1 without stacking), within Woodland/Davis "greenbelt" or other strategic areas if feasible

- Appropriate buffers within the project site to minimize impacts on nearby farming operations
- Fencing or other measures to reduce trespassing and vandalism on adjacent farmland
- Proximity of proposed agricultural mitigation to existing conserved lands and the potential for "islands" of agriculture due to development patterns
- Agricultural sustainability/viability, particularly due to development-related impacts, and potential tie-in to Agricultural Economic Development Fund

Mechanisms: Development Agreement, CEQA Mitigation Measures, Joint Planning MOU

3. Growth Inducement.
    - Potential for new infrastructure to ease the path for additional development, potential tie-in to countywide Capital Improvement Plan
    - Effect on regional jobs/housing balance

Mechanisms: Development Agreement, Community Facilities District

4. Air Quality/Odors.
    - Emissions from onsite uses, including industrial facilities and gas stations
    - Odor impacts

Mechanisms: CEQA Mitigation Measures

5. Transportation/Traffic.
    - Measures to reduce vehicle miles traveled and promote active transportation, including bus stops, bicycle paths, and ride-sharing programs, potential to tie-in to bicycle plan
    - Construction of all infrastructure necessary to serve project and mitigate its impacts on existing facilities, potentially including road widening, turn lands, signals and signage, and (for major projects) freeway on-ramps, ingress and egress
    - Ongoing road maintenance issues, including increased wear and tear
    - Mitigation for short-term construction impacts

Mechanisms: Development Agreement, CEQA Mitigation, Joint Planning MOU, Community Facilities District

6. Climate Change/Greenhouse Gases.
    - Energy efficient building design features, onsite solar, and public transit facilities are among the methods frequency used to address GHG emissions
    - Consideration of relevant provisions of the County Climate Action Plan including EV charging stations (will vary by development)

Mechanisms: Development Agreement, Joint Planning MOU

7. Hydrology/Water Quality.
    - Floodplain issues, including displacement of floodwaters and related regional/system effects (may be obviated by onsite detention or retention facilities)

Mechanisms: CEQA Mitigation Measures

8. Biological Resources.
   - Swainson's hawk mitigation (without easement stacking)
   - Coordination with Habitat JPA on biological resources assessment and, as appropriate, mitigation of any impacts

Mechanisms: CEQA Mitigation Measures

9. Urban Decay
   - Effect on existing shopping centers or other facilities that may be affected by a project
   - Ability to address through infill rather than "greenfield" development

Mechanisms: Joint Planning MOU

Fiscal Impacts

Fiscal impacts include the revenue issues typically addressed in a tax-sharing agreement, and will also frequently include both direct and indirect impacts associated with the increased use of County facilities and services. Affected County facilities and services will commonly include including probation, law enforcement, health services, public works, solid waste (landfill), parks, and social services. County infrastructure (e.g., roads, bridges) is discussed separately below. Where practical, contributions to the Yolo County Agricultural Economic Development Fund should also be considered.

Mechanisms: Tax-sharing Agreement, Development Impact Fees, Development Agreement, Community Facilities District

Infrastructure Impacts

Effects on County infrastructure can be direct (e.g., road relocation) and indirect (e.g., bridge reconstruction to accommodate increased traffic). The extension of city utility services, such as water and sewer, also presents unique issues and opportunities, as annexations and related development can reduce the fiscal and other barriers to providing such services to existing portions of the unincorporated area.

Many such impacts will be identified and addressed—to varying degrees—through the environmental review process. However, conventional tools such as "fair share" contributions to new infrastructure are frequently inadequate to fully address effects on County facilities. Alternative approaches, including but not limited to Development Agreements as a means of securing dedicated funding for such improvements and/or implementation of the countywide Capital Improvement Plan, may be appropriate in some cases.

Mechanisms: Tax-sharing Agreement, Development Impact Fees (as CEQA Mitigation Measures or otherwise), Development Agreement, Community Facilities District

From: Boyd, Ian@Wildlife <Ian.Boyd@Wildlife.ca.gov>
Sent: Wednesday, November 27, 2019 1:48 PM
To: Sherri Metzker <SMetzker@cityofdavis.org>
Cc: Wildlife R2 CEQA <R2CEQA@wildlife.ca.gov>
Subject: CDFW comments on the Notice of Scoping Meeting and Preparation of a Supplemental EIR for the Aggie Research Campus Project (SCH#2014112012)

Hello Ms. Metzker,

The California Department of Fish and Wildlife (CDFW) received the Notice of Scoping Meeting and Preparation (NOP)[SCH#2014112012] from the City of Davis (City) for the Aggie Research Campus Project. CDFW appreciates the opportunity to provide comments regarding those aspects of the Project that CDFW, by law, may need to exercise its own regulatory authority under the Fish and Game Code.

On September 19, 2017, the City Council adopted Resolution 17-125, certifying the Final Environmental Impact Report (EIR) for the Mace Ranch Innovation Center Project (MRIC). Immediately following certification, the related planning applications were put on hold. On June 11, 2019, the City received a letter form the property owners of the MRIC project site requesting the City recommence with processing of their application, which has been renamed as the Aggie Research Campus Project (Project). The proposed 185-acre site is located immediately east of the

City of Davis city limits in Yolo County and approximately 2.5 miles east of downtown Davis. The Project would include up to 2,654,000 square feet of innovation center/business uses and 850 residential units of varied sizes and affordability. Since the application was put on hold, changed circumstances have been identified and the City has determined it is necessary to prepare a Supplemental EIR (SEIR) to evaluate all the changed circumstances since the certification of the 2017 EIR.

CDFW is responding as a **Trustee Agency** for fish and wildlife resources, which holds those resources in trust by statute for all the people of the state. (Fish & G. Code, §§ 711.7, subd. (a) & 1802; Pub. Resources Code, § 21070; CEQA Guidelines § 15386, subd. (a).) CDFW, in its trustee capacity, has jurisdiction over the conservation, protection, and management of fish, wildlife, native plants, and habitat necessary for biologically sustainable populations of those species. (*Id.*, § 1802.) Similarly, for purposes of CEQA, CDFW is charged by law to provide, as available, biological expertise during public agency environmental review efforts, focusing specifically on projects and related activities that have the potential to adversely affect fish and wildlife resources. CDFW may potentially be a **Responsible Agency** under CEQA (Pub. Resources Code, § 21069; CEQA Guidelines, § 15381.) if it may need to make discretionary actions under the Fish and Game Code, such as the issuance of a Lake or Streambed Alteration Agreement (Fish & G. Code, § 1600 et seq.) and/or a California Endangered Species Act (CESA) Incidental Take Permit (Fish & G. Code, § 2080 et seq.).

CDFW offers the comments and recommendations presented below to assist the City in adequately identifying and/or mitigating the Project's significant, or potentially significant, direct, and indirect impacts on fish and wildlife (biological) resources:

Mitigation Measure 4.4-11 of the MRIC EIR requires the project applicant to comply with the mitigation/conservation requirements of the Yolo Natural Heritage Program (a precursor to the Yolo Habitat Conservation Plan/Natural Community Conservation Plan [Yolo HCP/NCCP]). The Yolo HCP/NCCP was adopted in January 2019 and provides a method for obtaining coverage under the California Endangered Species Act and/or mitigating for impacts to covered special-status species if full avoidance is not feasible. Section 3.5.1.3.1 of the Final Yolo HCP/NCCP includes this project as a covered activity for adverse terrestrial effects associated with development. CDFW recommends that the SEIR rewrite Mitigation Measure 4.4-11 to include an updated status of the Yolo HCP/NCCP and include a description of the procedures that the project applicant or City will take to obtain coverage under the Yolo HCP/NCCP.

Mitigation Measures 4.4-2 through 4.4-6 of the MRIC EIR require the project applicant to avoid, minimize, and/or mitigate for impacts to special-status species and their habitats. Following the previous comment for Mitigation Measure 4.4-11, CDFW recommends that any mitigation for the temporary and permanent impacts to valley elderberry long-horned beetle (*Desmocerus californicus dimorphus*), giant garter snake (*Thamnophis gigas*), burrowing owl (*Athene cunicularia hypugaea*), Swainson's hawk (*Buteo swainsoni*), white-tailed kite (*Elanus leucurus*), and tricolored blackbird (*Agelaius tricolor*) host-plant, aquatic, nesting, and/or foraging habitat be coordinated through the Yolo HCP/NCCP. CDFW recommends that the mitigation measures in the SEIR include a discussion on how impacts for the above mentioned species will be mitigated through the Yolo HCP/NCCP.

Mitigation Measure 4.4-7 of the MRIC EIR requires the project applicant to Notify CDFW pursuant to Section 1602 of the Fish and Wildlife Code for work within the bed and banks in the Mace Drainage Canal. For clarification, CDFW's regulatory authority is administered through the "Fish and Game Code". CDFW recommends that the SEIR should analyze all potential temporary, permanent, direct, indirect and/or cumulative impacts to the Mace Drainage Canal and any other streams, rivers, or lakes and associated biological resources/habitats that may occur because of the Project. CDFW approval of projects subject to Notification under Fish and Game Code section 1602, is facilitated when the SEIR discloses the impacts to and proposes measures to avoid, minimize, and mitigate impacts to these features. If mitigation is proposed for the loss of riverine, lacustrine, and/or wetland habitat, CDFW recommends including mitigation measures that require mitigating through the Yolo HCP/NCCP.

CDFW appreciates the opportunity to comment on the NOP for the SEIR for the Project, and requests that the City consider CDFW's comments. If you have any questions pertaining to these comments, please contact me at (916) 358-1134 or ian.boyd@wildlife.ca.gov.

Thank you,

Ian Boyd
Environmental Scientist
Habitat Conservation Program
North Central Region (Region 2)
1701 Nimbus Rd., Suite A
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Taro Echiburú, DIRECTOR

County of Yolo

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December 9, 2019

VIA E-MAIL

City of Davis Community Development and Sustainability Department
23 Russell Boulevard, Suite 2
Davis, CA 95691
Attn: Sherri Metzker, Principal Planner
SMetzker@cityofdavis.org

Dear Ms. Metzker:

The County of Yolo Department of Community Services appreciates the opportunity to provide comments regarding the proposed Supplemental EIR for the Aggie Research Campus during the City's scoping period. County staff seek to engage early with the City to continue ongoing discussions regarding one of the County's highest priorities, which is the preservation of agricultural resources.

As expressed in the comment letter submitted by the County Administrator in 2015 regarding the Mace Ranch Innovation Center (MRIC) Draft EIR, County staff carry forth many of the same concerns related to the analysis and proposed mitigation. These include the need for real and substantial ag mitigation for the temporary or permanent loss or limitation in future uses of surrounding ag lands, disclosure and analysis of any offsite storm water retention or drainage anticipated as part of the project or project alternative, incorporation of the HCP/NCCP, inclusion of sufficient traffic analysis and related mitigation for county roads, and inclusion of adequate low income housing for people of all income levels associated with this or surrounding development, including service workers in the hotel and food industries.

AGRICULTURE

It is important to note that the loss of ag land can never be fully mitigated. Agricultural land is a limited resource that can never be replaced once removed from ag production. While ag mitigation in the form of agricultural preservation easements may help preserve and protect other ag lands, this type of mitigation does not make up for the permanent loss of the developed ag land. Therefore, there must be an evaluation to limit the loss of ag land, and secondly that the ag mitigation be real and substantial – that is, commensurate to the true loss of availability, utility or use of ag lands. This is the philosophy of Yolo County, and towards this we offer the following comments with regard to agriculture:

Agricultural Buffer
The City is encouraged to refer to policies in the Countywide General Plan that seek to protect existing farm operations from impacts related to the encroachment of urban uses through use of an increased minimum buffer, as opposed to the City's minimum standard cited in Municipal Code Section 40A.010.050. Specifically, Policy LU-2.1 in the County's Land Use and Community Character Element recommends a minimum 300-foot setback for *ensuring the proposed development will not adversely affect the economic viability or constrain the farming practices of nearby agricultural operations*. Including a larger setback for the Aggie Research Center within the modified project footprint could

also effectively offset the diminished value of mitigation previously adopted for the MRIC, which is addressed below.

It is unclear whether or not the City intends to annex some or all the 25-acre City-owned parcel that is no longer proposed for 'development', portions of which will be still used for agricultural buffering and thus be taken out of agricultural production. The updated CEQA documentation should specify these characteristics. County objectives for preserving agricultural land discourage placing such buffers on active agricultural land that is outside the development footprint, which severely limits or reduces altogether continued agricultural activity. Thus, if the 25-acre parcel will be annexed and/or used for buffering, mitigation for the loss from this agricultural piece of property must be considered in the CEQA document.

County staff concur with Yolo County LAFCo that provision of a 'minimum' agricultural buffer as prescribed by the City's Municipal Code (reference Impact 4.2-4 of the Draft EIR for the MRIC project) may be insufficient for the significance of the proposed project. Therefore, we respectfully request that the City consider not only changes to existing conditions at the project site, but also those conditions that might affect the immediate and surrounding agricultural lands.

While the complexity of reviewing a development proposal on agricultural land not yet annexed into the City requires careful consideration of both City and County Ordinances, it is equally relevant that the County's General Plan Policies are reviewed to ensure that surrounding agricultural lands remaining in the unincorporated area are not adversely affected. Thus, County staff request that the City re-visit the analysis prepared for Impact 4.2-4 of the Draft EIR for the MRIC (reference chapter 8-8 of the Mixed-Use Alternative Analysis) with respect to the *Agricultural Buffer* and *Adjacent Ongoing Farming Operations*.

Impacts to Adjacent Ongoing Farming Operations
Mitigation 8-8 for the Mixed-Use Alternative (reference Mitigation Measure 4.2-4) requires that the applicant "attempt to purchase a 'no aerial spray' easement from the adjacent property owner," but is silent if such an attempt fails. Such a request puts the burden on the agricultural operator and not the developer, which is contrary to the County's goals and principles for enhancing and preserving agriculture. Thus, prior comments from the County and LAFCo on the MRIC project should be reconsidered for the Aggie Research Campus's site plan, including provisions for implementing a 500-foot buffer within the development footprint and referencing the County's Right-to-Farm Ordinance. Absent the acquisition of a no aerial spray easement from adjacent property owners whose pest-control options will be constrained by neighboring development, the project should have to mitigate for the reduced productive potential of those impacted areas.

Other relevant changes to consider since the original EIR are any updated spray permit conditions for the use of restricted materials, e.g., definition of sensitive uses, buffer increases, etc.; and, potential use of unrestricted materials at adjoining and nearby agricultural operations. Unlike application of restricted materials, unrestricted applications don't require permitting or permit conditions but can result in nuisance complaints if proper buffers are not imposed and the County's Right-to-Farm Ordinance has not been referenced. The City is encouraged to coordinate with the Agricultural Commissioner on such changes and requirements.

The Final EIR for the MRIC concluded that approval of a surface mining permit, reclamation plan, and financial assurances would be required in accordance with the County's Agricultural Surface Mining and Reclamation Ordinance (Chapter 8 of Title 10, Yolo County Code of Ordinances). The Supplemental EIR for the Aggie Research Center should identify the extent to which these provisions will apply to the modified project. Furthermore, the EIR discussed connecting storm water drainage to city facilities, with a caveat of installing onsite detention if this is not feasible. The project should not impact or exacerbate potential offsite flooding. However, if use of additional agricultural lands is required or anticipated for potential storm water drainage or retention or other improvements, then this should be disclosed and analyzed for annexation into the City, with mitigation for the loss of agricultural lands, whether temporary or permanent.

TRAFFIC

County staff encourage the City to analyze traffic according to current traffic analysis methodologies and in consideration of current and anticipated traffic patterns on Covell Blvd. east of Hwy 113, Mace Blvd, and County Road 32A, as well as routes used to avoid traffic on I-80 (including CR 27 and 28H). As the City is well aware, these roads are receiving increased traffic due to apps that provide drivers alternative routes. These roads are also frequented by bicyclists. In consideration of these factors, and knowing the tendency of drivers to use alternative routes, including future residents and workers at the Aggie Research Campus, we request a thorough analysis of traffic and circulation impacts and the inclusion of related mitigation (including to mitigate adverse safety impacts) as appropriate. It is important to note that Road 32A is also an important route for solid waste collection trucks and agricultural equipment, and this should be included in the analysis. We also encourage you to consider facilities to improve transit and active transportation (i.e. bicycling and walking) to mitigate traffic impacts.

REDUCING VMT THROUGH AFFORDABLE HOUSING

One of the changes since the original EIR is CEQA's increased emphasis on vehicle miles traveled, or VMT. One of the most effective methods of reducing VMT for a commercial project is to allow workers to live near their jobs. County staff encourage the City to require affordable housing at the proposed project for people and families of all income levels, including service workers, such as those working in the hotel and restaurant industries.

* * *

County staff look forward to strengthening our relationship with City staff and are eager to continue discussions related to matters outlined in this comment letter. My staff is available to work with you at these early stages of the process to adequately analyze and address the project's potential impacts. Thank you for allowing the County an additional opportunity to provide comments on proposed development at the 'Mace curve'.

Sincerely,

Taro Echiburu
Director
Department of Community Services

Cc (via e-mail only):
Supervisor Don Saylor
Supervisor Jim Provenza
County Administrator Pat Blacklock

City Manager Mike Webb

Burrowing Owl Preservation Society

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December 4, 2019

Sherri Metzker, Planner
City of Davis
23 Russell Blvd
Davis, CA 91616

These comments address the supplemental EIR for the Aggie Research Campus project.

The Mace Ranch Innovation Center (MRIC) FEIR did not adequately assess impacts to biological resources, specifically impacts to Western Burrowing Owl. The FEIR was inadequate because, 1) burrowing owl surveys were not conducted according to California Department of Fish and Game 2012 Staff Report on Burrowing Owl Mitigation, and 2) cumulative impacts to the regional burrowing owl population were not assessed, and 3) mitigations listed, pre-construction survey and "passive relocation" are ***not*** mitigations.

California Department of Fish and Wildlife's Staff Report Burrowing Owl Mitigation Guidelines 2012 recommend three burrowing owl surveys during breeding season when the owls are most detectable, April 15 to July 15. Breeding season surveys were not conducted.

Cumulative impacts excerpt from Staff Report:

"At a minimum, if burrowing owls have been documented to occupy burrows (see Definitions, Appendix B) at the project site in recent years, the current scientific literature supports the conclusion that the site should be considered occupied and mitigation should be required by the CEQA lead agency to address project-specific significant and cumulative impacts. Other site-specific and regionally significant and cumulative impacts may warrant mitigation."

The following is excerpt from the Staff Report:

Cumulative effects. The cumulative effects assessment evaluates two consequences: 1) the project's proportional share of reasonably foreseeable impacts on burrowing owls and habitat caused by the project or in combination with other projects and local influences having impacts on burrowing owls

Burrowing Owl Preservation Society

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and habitat, and 2) the effects on the regional owl population resulting from the project's impacts to burrowing owls and habitat. As set forth in more detail in Appendix A, the current scientific literature supports the conclusion that mitigation for permanent habitat loss necessitates replacement with an equivalent or greater habitat area for breeding, foraging, wintering, dispersal, presence of burrows, burrow surrogates, presence of fossorial mammal dens, well drained soils, and abundant and available prey within close proximity to the burrow.

Some of the mitigations listed in the MRIC FEIR are not mitigations. For example, pre-construction survey is not mitigation. It is take avoidance.

Exclusion or "passive relocation" is not mitigation. It is a significant impact. The following excerpt from the Staff Report (pg 10)

Burrow exclusion and closure. Burrow exclusion is a technique of installing one-way doors in burrow openings during the non-breeding season to temporarily exclude burrowing owls, or permanently exclude burrowing owls and close burrows after verifying burrows are empty by site monitoring and scoping. Exclusion in and of itself is not a take avoidance, minimization or mitigation method. Eviction of burrowing owls is a potentially significant impact under CEQA.

Since the certification of the MRIC FEIR on September 19, 2017, conditions affecting the burrowing owl population have changed. Land available for foraging has decreased. Projects have been built on land previously available for foraging, and pending projects will decrease foraging habitat even further.

The burrowing owl population around Davis is trending toward extirpation. Loss of habitat affects a much greater impact on the regional population.

The MRIC FEIR did not assess the impacts to burrowing owl habitat from construction activities. The majority of available burrows near the project site are at the edge of the county roads. Heavy equipment and staging of materials will significantly impact burrowing owls. All burrows must be protected.

Impact Assessment Staff Report (pg 7)
Type and extent of the disturbance. The impact assessment describes the nature (source) and extent (scale) of potential project impacts on occupied, satellite and unoccupied burrows

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including acreage to be lost (temporary or permanent), fragmentation/edge being created, increased distance to other nesting and foraging habitat, and habitat degradation. Discuss any project activities that impact either breeding and/or non-breeding habitat which could affect owl home range size and spatial configuration, negatively affect onsite and offsite burrowing owl presence, increase energetic costs, lower reproductive success, increase vulnerability to predation, and/or decrease the chance of procuring a mate.

The 25 acres of City own property adjacent to the project is burrowing owl breeding and foraging habitat. The project proposes planting trees and other tall vegetation on six and a half acres of the City's 25 acres. Changing the vegetation type is a significant impact to burrowing owls as owls cannot use land with tall vegetation. This loss of habitat should be included in the impact assessment.

Compensatory mitigation should be paid to the Yolo Habitat Conservancy, not to Elsie Gridley mitigation bank. Elsie Gridley provides no burrowing owl conservation value.

Thank you for your thoughtful consideration,

Catherine Portman, CEO/President

Comments from: Lynne H. Cunningham, Davis resident, homeowner
Email: lynnecunningham9@gmail.com
Phone: 530-752-2396

Project Description:

TRANSPORTATION / TRAFFIC comments:

To propose this at the curve, on a 2-lane roadway is asking too much of the residents, business owners and travelers of Davis. This is a development planned to guarantee a traffic bottleneck identical to South Mace Blvd. I do not believe this project should be approved for development until this section of Mace Blvd. north of I-80 has been expanded to a 4-lane roadway. The 4-lanes need to be continuous from I-80, continuing through the curve eastbound Covell, and connecting to existing 4-lane roadway. I am a resident, not a business owner. In other municipalities, privately funded improvements to City or State infrastructure has been a requirement prior to the development of a business campus. Amenities such as additional traffic lights, signage, landscape, sidewalks, along with roadway widening and the funding to design and develop those need to be required from the developer.

Why is this development being proposed if it's dependent on another amendment to the General Plan? In this proposal, not only an amendment for a parcel that's twice the size as the Cannery is being requested, an entirely new land use category is as well.

What expansion to existing YoloBus service is proposed, and will they have input on design?

Bus stops should have structures for shade, wind, rain protection, with adequate lighting, seating, curb cuts.

What transportation linkage to the Davis Amtrak station is proposed?

CONSTRUCTION:

What dust mitigation is proposed for this project for demolition and construction? In windy conditions or still-air conditions, the dust from demolition and construction will be formidable for adjacent neighbors. As part of the construction of the Cannery project, no dust mitigation was provided whatsoever for the demolition of the Hunt Wesson plant. Dust, particulates etc. especially in windy conditions were terrible. Adjacent neighborhoods suffered.

LAND USE PLANNING comments:

Recreation amenities are appearing sterile and boring, with little thought for intelligent siting.

LAND USE PLANNING comments:

Why, in a development of this size and usage, is there no outdoor pool? A pool could be used by residents, workers, hotel guests, etc. The ARC has the layout appearance of a corporate campus: boring and user-hostile.

Has Ikeda's Fruit Stand been contacted to see if they're interested in pursuing their permitted cafe, as previously proposed and denied by Davis City Council? Alternative options for eating would be a positive in adding connections to existing businesses.

CITY SERVICES comments:

Does the City of Davis have a Hazardous Material response unit operational now, for the proposed bio-medical, manufacturing and storage uses proposed?

Land Use Plan:

Why is there no identified transit hub for buses, vanpools and alternative transportation on the Land Use Plan? These uses were proposed in the Project Description.

I don't believe adequate roadway/ pullout/ turning radius planning is adequate for regional YoloBus or Uni bus transportation.

I don't believe adequate roadway/ pullout/ turning radius planning is adequate for firetrucks, trash & recycling trucks.

Why is the largest, open green park space sited along the busiest route, Mace Drive? That's unsafe for casual play and passive recreation for anyone including children, pets, and the road noise / traffic is distracting. The location is not a positive feature for a well-designed park, or green space.

The building sites situated along Alhambra Drive have green spaces which are shown open to prevailing north winds, and shaded in winter rather than being oriented in the other direction, green spaces open to the south. Why? If buildings were sited so that the green space is open to the south, wind mitigation is achieved. Sun shading can be achieved with other architectural features.

From: Todd Edelman <todd@deepstreets.org>
Sent: Monday, December 9, 2019 4:54 PM
To: Sherri Metzker <SMetzker@cityofdavis.org>
Subject: ARC - Supplemental Environmental Impact Report
Importance: High

Dear Ms Metzker,

In regards to the Recommended Project Alternatives for the for the proposed "Aggie Research Center", I would like to provide the following comments.

The EIR and information provided subsequently at official City of Davis activities, distribution channels, events etc. **DOES NOT** re-assure me to any reasonable extent that:

1- The development at full build-out has to exist in a single location;

2 - The proposed activities / functions / purposes / uses have to exist in a single location;

3 - The proposed activities / functions / purposes / uses can be best fulfilled at this location;

4 - The proposed activities / functions / purposes / uses can be best fulfilled - in general terms - at a current peripheral location;

5 - The proposed mobility solutions will fully - or nearly fully - mitigate the negative impacts of the project. For example:

a) The re-design process for the adjacent I-80 project has an unclear outcome. It's not clear how the ARC team etc are sharing information with Caltrans District 3 (CD3), let alone having substantial conversations. Information provided by CD3 shows worsening congestion and other negative transport impacts in all of of its Alternatives.

b) There's no information if shuttles of any sort or even extensions to the cycling network will be used in any significant level in lieu of travel to the proposed site by individual automobile transport, especially because of its peripheral location, relatively close or simply perceived proximity to existing areas of Davis, West Sacramento and Sacramento, etc. along familiar transportation routes for individual automobile transport.

c) Any fee'd temporary storage of personal motor vehicles (typically referred to as "paid parking") of the type that might conceivably be proposed for the site - on private lots - is completely unprecedented in the City of Davis, and in the immediate region (outside of the UC Davis campus), and - in addition to an unclear picture of how this would encourage alternative means of travel to the site - it's not clear if any costs to the employee will not simply be built into their salary or pay;

6 - Revenues from the proposed activities / functions / purposes / uses will be available to significantly improve the lives of residents and visitors to the City of Davis by way of provision of improved facilities of any sort (general infrastructure, schools, transportation, etc.);

7 - Some or all of the activities / functions / purposes / uses proposed cannot be fulfilled in a superior manner by placing them closer to Downtown, existing schools, inter-regional transportation nodes, etc.;

8 - The City, in its original scoping activities, EIR, and other actions - and especially in lieu of a modern and new General Plan nor continuous and robust activities following recent studies on infill development - has a reasonably complete analysis and picture of alternative means to fulfill the proposed activities / functions / purposes / uses for the proposed project.

Sincerely,

Todd Edelman

1320 Locust Pl. Davis CA 95618

415-613-0304

From: William Fleeman <doby@andeman.biz>
Sent: Monday, December 9, 2019 3:34 PM
To: Sherri Metzker <SMetzker@cityofdavis.org>
Subject: Resident Comments - ARC Scoping Meeting - EIR

Sherri,

Thanks for inviting public comment and participation. Unfortunately, I was unable to personally attend the original evening's presentation. Nonetheless, I do have strong opinions concerning the negative aspects of the EIR process as presently proscribed and mandated by CEQA.

For the community, the EIR process unnecessarily starts off any conversation about development on a negative footing, and places both the developer and the City in a defensive posture. In addition to agreeing with this statement, it represents a paraphrasing of my takeaway from conversation with former Davis Mayor Robb Davis.

Without commensurate, counter balancing forces in support of a given project – many projects would fail in the court of "underinformed" public opinion – on the simple basis that change is more often than not a unwelcome option/undesirable outcome.

Sadly, the City of Davis has no recognized Economic Development Commission which might otherwise be charged with making the positive case for new development or otherwise afforded the opportunity to present the glass half full side of the discussion.

But more to the same point, the EIR process is designated as the first report out of the gate after announcement of any project.

In addition to these basic points, there is much a much more insidious aspect to conditions surrounding the current ARC development proposal – primarily stemming from a failure of the City, the County and CalTrans to adequately forecast, plan and develop the infrastructure necessary to accommodate traffic flow for residential and commercial development along the Covell Corridor, 2nd & 5th Street connecting corridors plus route 102 from Covell north (and includuding Woodland's Spring Lake Development) plus expansion of the Downtown traffic without any new access corridors over the past twenty five years – the cumulative result of which is now evident with morning and evening commute and congestion patterns along the Covell/Mace/I-80 intersection. Without benefit of the relevant contextual background, explaining the legacy of existing conditions, it seems plausible that an EIR report could come back with a negative finding and/or punitive developer recommendations associated with the current transit infrastructure limitations.

Truth of the matter is that without benefit of an integrated, forward-looking transportation plan the City is rapidly closing in on traffic conditions at this location which will could effectively foreclose any further development – residential or commercial – which would invite or rely upon addition traffic volumes via this critical corridor.

The reality for correcting this situation is not, and should not be, the responsibility of the ARC developer to resolve, much less to finance.

The real question then becomes, how will the City plan to lead a constructive conversation towards a successful resolution of the present situation such that the community does not lose out on this exciting opportunity to consider a new, world class development designed expressly to foster new employment and career opportunities directly linked to the world class research being conducted at UC Davis?

If the EIR scoping process and subsequent report are not sufficiently capable of addressing the simple questions and challenges presented by this short email, then how and when does the City intend to incorporate necessary analysis and discussion of these important issues – along with its own recommendations and proposals - in its process of evaluating the current application?

Long and short, an EIR process which either diminishes or otherwise compromises the City's and the Community's ability to entertain and fully explore all issues relevant to ongoing fiscal sustainability and economic health of the community should not be considered as serving the best long term interests of its own employees, its private employers and property owners, its residents, the environmental ecosystem or the development community.

William Fleeman
Business and Property Owner

Attn. Sherri Metzger City of Davis
12/9/2019

Dear Ms. Metzger,

Below please find my questions for the ARC Supplemental EIR .

Background: Mixed Use Alternative

- The Aggie Research Campus Project Description (on the city of Davis website) states at the bottom of page 13 that “the housing at ARC will not be restricted to employees only but will, consistent with Fair Housing Act requirements, be available to the community at large”.
- In contrast, the traffic assumptions for the Mixed Use Alternative in the final EIR for the MRIC are based on 100% employee occupancy (at least one resident in each home will work on site).
- In Chapter 4 page 7 of the final EIR, 4 measures are outlined that the city council and/or MRIC could take to restrict housing to employees.
- The final EIR also states (Chapter 4 page 9) that in the Mixed Use Alternative significant traffic impacts will occur if employee occupancy of the project housing drops below 60%.
- Additionally, according to Fehr and Peers’, recent traffic counts on key roadway segment serving the project may result in new significant impacts or increase in the severity of identified impacts (in staff report awarding the ARC supplemental EIR contract).
- Furthermore, according to the project description on the city of Davis website on page 13, “Construction of the residential units will be timed to slightly trail the commercial development so that jobs are created onsite prior to offering housing”.

Question1. What percent employee occupancy of ARC housing is needed now to ensure that new significant traffic impacts do not occur or the severity of identified traffic impacts does not increase?

Question 2. Doesn’t the supplemental EIR need to mandate as a mitigation that the city council put in place a mechanism to restrict the housing to ARC employees before the project goes forward to prevent new traffic impacts or prevent the increase in the severity of identified traffic impacts?

Question 3. Doesn’t the supplemental EIR need to stipulate as a mitigation that the commercial development must be actively hiring to ensure that jobs are in fact in place before construction of ARC housing to prevent new traffic impacts or to prevent the increase in the severity of identified traffic impacts?

Question 4. In the land use plan drawing shown at the city scoping meeting for the supplemental EIR, the intersection at Alhambra Dr. and Mace Blvd. is enlarged and it looked as though the median strip leading into Mace Ranch along Alhambra was removed. What effect will enlarging the intersection (and/or removing the median strip there) have on traffic calming as this intersection is an entrance to the Mace Ranch neighborhood?

Question 5. How will the level of fire response time to the proposed housing at ARC be impacted if new or more severe traffic impacts are identified in the supplemental EIR?

Background:

- Since the MRIC EIR was completed, the city has released a draft of the Downtown Specific Plan that calls for the addition of 1500 housing units by 2040. The Downtown plan calls for a revitalization of downtown by putting in housing, more mixed use and making the downtown the identity of Davis.

- The city general plan has a goal of infill development and discouraging urban sprawl.

Question 5. How does the housing component of the ARC comply with the principles of the Downtown Specific Plan and the General Plan of Davis?

Sincerely,

Pamela Gunnell
1123 Villaverde Lane
Davis CA 95618

To Mike Webb, Ashley Feeney, Sherri Metzker:

From: Rik Keller

I am writing this to discuss emails that Mr. Feeney sent me on 11/26 (4:55PM) and 11/27 (5:06PM) that contained responses to emails I sent out on 11/24 (11:00PM) and 11/25 (6:49PM), that were follow-ups and extensions to an information request that Colin Walsh emailed on 11/24 (9:06PM) regarding the **Scoping meeting and Notice of Preparation (NOP) for the Supplemental EIR (SEIR) for the ARC project**.

First, I want to thank you for your prompt responses during a busy pre-holiday shortened week. However, the actual content of these responses only serves to confirm and reinforce the statement I made on 11/25 that ***the City should prepare adequate and accurate information in advance of a Scoping meeting and reschedule the meeting until after such information has been circulated for an adequate amount of time to allow for adequate questions by citizens and interested agencies at the meeting, and provide a response deadline after that in order to provide for "meaningful responses to the proposed scope of the EIR***." The City should also provide adequate time to address potential changes to the EIR scope after this process, and provide a revised schedule for the preparation of technical reports for the EIR that will rely on this scoping. ***Public scoping is a critical step for producing an adequate environmental review, and I would hope the City treats it as such, rather than as an afterthought tacked onto the project schedule at the last minute as it is clear that has been done so far.***

The following is a summary list of the issues that I explain in detail subsequently:

- The City has not provided adequate information to the public to provide meaningful responses for the scope of the SEIR.
- The City and its consultant have not completed the Final Project Description that was scheduled for 11/25.
- In lieu of providing this the City has instead circulated inaccurate, misleading, and downright false information about a project comparison of the current ARC application/proposal to the previous Mixed-Use Alternative ("MU Alt") in the EIR for MRIC.
- The City has allowed an attorney apparently representing the developer to provide inaccurate and misleading information directly to the public without vetting from the EIR consultant or, most importantly, the City itself.
- In doing this, the City has breached the public trust and compromised the SEIR scoping process. It has made itself complicit in distributing inaccurate information about the proposal. If the City continues with the Scoping meeting tonight as planned and presents this misinformation as planned it will then knowingly be complicit in the further spread of misinformation and falsehoods.

I will go through the responses provided by the City and the project attorney and discuss details about the problematic nature of them, the questions that have not been answered, the misleading and false information that has been provided.

Ash's response on 11/26 states:

> "While the notice for the scoping meeting was not an official NOP (as this is not mandated but voluntary) and did not include a detailed project description, it was not determined necessary to do so given that the proposed Aggie Research Campus project is very similar in scope to the Mixed-Use Alternative that was evaluated in the MRIC EIR. The meeting is intended to focus more appropriately on collecting comments related to the changes in circumstances that may have occurred in the project vicinity since the certification of the MRIC EIR in 2017, given that this is an important criterion to consider when preparing further environmental documents for projects…"

My comments on this:

- The City states that there is not an *explicit* legal requirement to prepare a NOP for the SEIR. However, it is standard practice for jurisdictions in California to do so.
    - In order to justify its decision not to provide a legally-adequate NOP, the City should catalog SEIRs that have been prepared for projects within its jurisdiction and projects that the environmental consultants for this project, Raney Planning & Management, Inc., have completed that have not included a NOP.

- There is also a question that once a jurisdiction has decided to publish a NOP as the City of Davis had done on 11/15/2019 (entitled "Notice of Scoping Meeting and Preparation of a Draft Environmental Impact Report"), if it can legally provide a NOP that does not meet State CEQA law requirements in terms of the contents. The City needs to provide a legal justification for this that discusses precedent.

- The City directly admits that it has not provided an adequate "detailed project description" in this NOP, which is one of the State law requirements for a NOP.
    - Even the minimal Project Description provided in the NOP contains factual errors. For example, it states "The project consists of the proposed ±212-acre Aggie Research Campus (ARC) site," which is not true because the project size has been reduced to 185 acres (or 187, depending on the document).

- This email response did not address my primary concern in by 11/24 email: that the City did not provide sufficient information to allow "meaningful responses" to the SEIR scope

.

- The email also did not address my requests in my email on 11/25 that the City provide an update on the completion status of three tasks in the "tentative schedule" contained in the Raney proposal dated 10/25/2019 (and stamped 11/5/2019 for the City Council meeting)--these involved the completion of the Project Description.

- The email also did not respond to my specific question of why the NOP was circulated before the Final Project Description has been drafted, approved, and circulated. Nor did it address how the City could expect that this would allow for "meaningful responses" given the NOP does not contain the Final Project Description.

- The City states that “the proposed Aggie Research Campus project is very similar in scope to the Mixed-Use Alternative that was evaluated in the MRIC EIR, “ however it does not provide any information with which to compare the two proposals. Based on my analysis below, there are actually substantial differences between the two projects.

- The email also states that “The meeting is intended to focus more appropriately on collecting comments related to the changes in circumstances that may have occurred in the project vicinity,” however it also does not provide any information on the changes in circumstances that may have occurred that would be essential in providing comments on the proposed scope

- **It should be noted that if there are significant changes to the project itself that the SEIR also needs to address these. However, the City seems to be ruling this out before adequate scoping and comparison has been made, and has come to the premature conclusion that these won’t be addressed.**

Ash’s email on 11/27 states that

> “the applicant delivered a letter and two associated comparative exhibits today. Our team was able to get them uploaded to our webpage for the project before the holiday closure. Here is the link where you will find the uploaded materials…”

This letter on Taylor & Wiley letterhead dated 11/27 that in linked to on the City’s project site for ARC discusses preparation of the “subsequent CEQA analysis” and also provides a “list of ARC components that differ from the MRIC Mixed-Use Alternative.” The letter also describes attached tables:

> “The distinctions and similarities between ARC and the Mixed-Use Alternative analyzed in the MRIC EIR are further displayed on two tables that are being submitted with this letter. We will publicly display these tables at the scoping meeting on December 2, 2019 for the benefit of those in attendance.”

As discussed below, taken together the list and the tables are incomplete, inaccurate, misleading, and downright false at times. In addition they mischaracterize the MRIC MU Alt itself and thus provide an inadequate basis for comparison to the new proposal.

- The attorney states that “Per our discussion this week, we understand that a few members of the public have questioned why the City has determined that the Aggie

Research Campus (ARC) may utilize the environmental analysis conducted on the MRIC Mixed-Use Alternative as the basis of its environmental review and CEQA compliance"

- This was not a question that either Colin or myself raised, and it appears to be a strawman argument by the attorney.
- As stated in an email Mr. Feeney sent to Colin Walsh at 5:28AM 11/27: "I have previously requested that the applicant submit a comparison of the ARC proposal to the MRIC mixed-use alternative proposal. This implies that this was an outstanding request that the City had put into the developer previously, and not an immediate response to the questions that Colin and I raised a week ago.
- The attorney states that he is responding to an information request from Mr. Feeney earlier that week. This would mean that the request was after Colin's and my initial information requests. **This calls into question why the City waited this long to try to obtain even minimal comparative data between the projects**. **Can the City clarify when this critical information was requested from the developer and why this was not done prior to the NOP and scoping meeting announcement being distributed?**

- **There are large discrepancies between the attorney's description of the MRIC MU Alt and the actual contents of the MU Alt as described in the EIR. These are misleading at times, and downright false at other times. Given that the attorney's purpose appears to be to try to downplay any differences between the two, information it is irresponsible for the City to present this information.**

- **This information is posted under "Project Information" on the City's website. And when someone clicks on the link for "Land Use Comparison Table for ARC and MRIC" it just provides the table. It doesn't say it is from the developer's attorney It is presented as if it is accurate project information straight from the City. The City also irresponsibly plans to present this information at the Scoping meeting tonight, further misinforming the public about the project.**

- **The City has allowed an attorney apparently representing the developer to provide inaccurate and misleading information directly to the public without vetting from the EIR consultant or, most importantly, the City itself. In doing this, the City has breached the public trust and compromised the SEIR scoping process, and has made itself complicit in distributing inaccurate information about the proposal.**

Major discrepancies, misleading statements, misinformation, and falsehoods include the following:

Land use comparison

- There is a statement that "In sum, ARC proposes the exact type and scale of land uses that were analyzed in the MRIC Mixed-Use Alternative, at the same physical location, but on a footprint that has been reduced by 25 acres. Additionally, the site layout, including general land uses, roadways, points of access onto existing infrastructure, and nonautomotive paths of travel remain largely unchanged."

- This is false is several respects, **Most glaringly there are large discrepancies in open space/parks acreage and parking acreage, and the ARC development proposes a large number of single-family homes, something that wasn't included at all in the MRIC MU Alt. Furthermore the summary data provides no supporting date from which to determine whether the net FAR ratios of the two proposals are as described.**
- To re-state this: the tables from the developer's attorney make false statements that MRIC MU Alt had single family housing (and parking requirements).The EIR document itself states "The Mixed-Use Alternative includes up to a maximum of 850 residential, workforce housing units. The housing for this Alternative does not include detached single family housing." The City is incredibly negligent in posting this information without vetting it and verifying its accuracy

- The "Land Use Comparison Table for ARC and MRIC" on the City website states that the MU Alt had and Agricultural Buffer of 20.1 acres and 22.6 acres in Parks and Greenways. However, this is false information and drastically understates what was actually in the Alt.

- The MRIC MU Alt actually had 55.7 acres classified as Parks & Greenways + a 20.1 acre ag buffer = 75.8 acre total parks/open space, which was 36% of total 212 acre site area

- The ARC proposal shows 15.1 ac Parks & Greenways + 13.6/22.6 acre ag buffer (depending on the document looked at--it appears that the lower number is the figure actually on the site itself) = 28.7 acres total parks/open space = 15% of the total 187 acre site area.

- **The ARC project as about 2.5 times less open space/parks acreage than the MRIC MU Alt, but by presenting false information about what the MU ALt contained, the developer has tried to claim that they are close to being equivalent. The City is incredibly negligent in posting this information without vetting it and verifying its accuracy**

<u>**Parking comparison**</u>

- There is not a description of the number of parking space nor of the total parking area of the project in the MRIC EIR for either the main project or the MU Alt.
    - I understand that there was information somewhere else in project documentation that the proposal included about 9,000 parking spaces. However, I have been unable to locate this information.

  - The EIR does state that for the main project “The parking ratios utilized for the proposal are consistent with those required by the City’s Municipal Code” and that **"The parking ratios utilized for the office/commercial components of the Mixed-Use Alternative are consistent with those required by the City’s Municipal Code.”**

- **However, the table in the “Parking Comparison Table for ARC and MRIC” on the CIty website gives false information about what the City’s parking requirements are multiple times and thus provides a mistaken account of the actual parking required. The mistakes are so widespread that almost every single number in the table is wrong.**
  - The table misstates R&D/office/laboratory uses at 1,570,000 sq. ft. compared to 1,610,000 in the “Land Use Comparison Table for ARC and MRIC” and 1,510,000 in other project documents.
  - The table states that “Advance Manufacturing” requires 1 sparking space per 1,000 sq. ft. floor area in City Code. This is false. City Code actually states “Multi-tenant buildings utilized typically by light industrial, research, service types of uses, where office use does not exceed more than thirty-five percent of building area: one space per four hundred square feet or major fraction thereof.” OR “Manufacturing plants, research or testing laboratories and bottling plants, one for each one and one-half employees in the maximum working shift.” Depending on what use is actually more consistent, the table likely understates required parking for these uses substantially.

  - The table states that City Code requires one parking space for every 1.5 hotel rooms/units. This is false. City Code states “Hotel uses require “1 parking space per one space for each living or sleeping unit.”. The City would also require additional parking for the conference center uses, but these are totally ignored by the developer.

  - The table states that the MRIC MU Alt and the ARC proposal both call for 40,000 sq. ft. of retail. As stated elsewhere, both projects actually include 100,000 sq. ft. of retail, so the amount of required parking for this is drastically understated by the developer.

  - The table breaks down the residential parking requirements for single family and multi-family units. However, there were no single family units at all in the MRIC MU Alt. As discussed above, this is a substantial difference between the current ARC proposal and the MU Alt.

  - The table also misstates what actual residential parking requirements are. It states that single family units require 1.5 spaces per unit, while City Code actually states that a minimum of 2 spaces are required: “SF detached units require “one covered and one uncovered off-street parking space for dwellings containing four or fewer bedrooms.” And likewise “Dwellings, duplex and single-family attached, one covered and one uncovered off-street parking space for dwellings containing three or fewer bedrooms, and one additional space for each bedroom in excess of three."

- The table states that multifamily units require 1 parking space for every unit, while City Code actually requires more for any unit larger than 1-bedroom: efficiency/1 bedroom = 1 space, 2 bedroom = 1.75 spaces, 3+ bedroom = 2 spaces.

- **Given all of these errors, a more realistic accounting of the number of parking spaces required by City Code in the MRIC MU ALt would be around 8,000 (or close to the 9,000 figure cited earlier)**

- **The proposal for the ARC for 4,340 parking space thus represents a figure that is about half of City requirements. However, there are no project changes from the MRIC MU Alt that would affect the parking demand.**

- **It is unclear whether the SEIR will update assumptions regarding travel demand/mode split and whether there is any data that would support halving the projected car traffic (and parking needs) to the site that were projected as 91% of all trips in the EIR. This looks more like an effort by the developer to try to keep the acreages/floor area the same of the developed numbers the same while the site size was reduced by 25 acres, rather than a realistic assessment of parking needs.**

- **It should be noted further that even using highly optimistic assumptions of non-car mode split, the MUA Alt in the MRIC EIR only showed a reduction of 13% of the car trips from the standard project.**

- It should also be noted that the "Comparison of Land Uses by Type" table makes no effort to describe the actual area taken up by on-site parking. For example the 4,340 parking spaces in the ARC proposal would take up approximately 30-40 acres based on industry standards. But this is not accounted for at all.

ARC EIR Scoping comments

Rik Keller

12/16/2019

I. Proper Project Description and Summary of Changes is Required

Insufficient and inadequate information provided for scoping purposes

The City has not provided adequate information to the public to provide meaningful responses for the scope of the SEIR.

The scoping meeting on 12/2/2019 and the materials provided by the City on its ARC project portal and in the 11/15 NOP/Notice of Scoping Meeting are incomplete and show false information\. They do not not provide and adequate basis for input into the EIR scoping process to start with.

- According to State law, "the Notice of Preparation should provide the Responsible Agencies with sufficient information describing the project and the potential environmental effects to allow the Responsible Agencies to make a meaningful response. At a minimum, the information should include:
  - Description of the project: *[this is minimal and does not describe changes to the project from the project in the original MRIC EIR]*
  - Location of the project indicated on an attached map.*[Not included]*
  - Probable environmental effects of the project." *[Not included . There is no section describing the categories of impact that the Supplemental EIR proposes to analyze further (and/or revise the original analysis]*.

- In short there is not sufficient information provided to "allow meaningful responses."

The City states that there is not an explicit legal requirement to prepare a NOP for the SEIR. However, it is standard practice for jurisdictions in California to do so.

- In order to justify its decision not to provide a legally-adequate NOP, the City should catalog SEIRs that have been prepared for projects within its jurisdiction and projects that the environmental consultants for this project, Raney Planning & Management, Inc., have completed that have not included a NOP.

- There is also a question that once a jurisdiction has decided to publish a NOP as the City of Davis had done on 11/15/2019 (entitled "Notice of Scoping Meeting and Preparation of a Draft Environmental Impact Report"), if it can legally provide a NOP that does not meet State CEQA law requirements in terms of the contents. The City needs to provide a legal justification for this that discusses precedent.
  - For an amendment like this SEIR, there is no explicit requirement to do another NOP if the changes are not significant. The threshold for "Significant" is that, ultimately, the baseline used for the first EIR has not changed and there are not more mitigation measures needed or the severity of the impact has not

increased. The overall umbrella is if the lead agency (City of Davis) feels that the changes are things the public needs to know, they can then require a secondary NOP process.
  - Since this has been done, the City has made the determination that changes rise to the “significant” level and it must meet legal requirements for the NOP

Addressing information needs before scoping

Complete Project Description

- The City and its consultant have not completed the Final Project Description that was scheduled for 11/25. Regarding the NOP/notice of scoping meeting that is dated 11/15/2019, given that State law mandates that the NOP contain a project description, how/why was the NOP circulated before the final project description has been drafted and approved? This does not allow for "meaningful responses". Based on the schedule adopted contract with the SEIR Consultants, the following three tasks were supposed to be completed before the 12/2/2019 scoping meeting but were never provided to the public.
  - "Prepare Supplemental EIR Project Description": November 13, 2019
  - "Receive City edits on Supplemental EIR Project Description": November 20, 2019
  - "Prepare Final Supplemental EIR Project Description ": November 25, 2019

- The City directly admits that it has not provided an adequate “detailed project description” in this NOP, which is one of the State law requirements for a NOP.
  - Even the minimal Project Description provided in the NOP contains factual errors. For example, it states “The project consists of the proposed ±212-acre Aggie Research Campus (ARC) site,” which is not true because the project size has been reduced to 185 acres (or 187, depending on the document).

Project Comparison

In order for proper scoping of the SIR to occur, a complete comparison of the previous MRIC-MU Alt project and the proposed ARC project \must be completed. In lieu of providing this the City has instead circulated inaccurate, misleading, and downright false information about a project comparison of the current ARC application/proposal to the previous MRIC-MU Alt in the EIR

- The City has allowed an attorney apparently representing the developer to provide inaccurate and misleading information directly to the public without vetting from the EIR consultant or, most importantly, the City itself.

- In doing this, the City has breached the public trust and compromised the SEIR scoping process. It has made itself complicit in distributing inaccurate information about the proposal.

II. Prepare an Adequate NOP and Re-start the Scoping Process

Public scoping is a critical step for producing an adequate environmental review, and I would hope the City treats it as such, rather than as an afterthought tacked onto the project schedule at the last minute

- Given the flaws and omissions in the NOP contents detailed above, the City needs to prepare an adequate NOP that fully addresses all State law requirements, and recirculates it for the full required comment period of 30-days after registered mail receipt by OPR.

- The City should then provide a revised timeline/schedule for the EIR process so that citizens know what to anticipate. Even with the unrevised scoping period now stretching beyond 12/9/2019, it is difficult to see how the Consultant could possibly address changes to the SEIR scope and produce adequate technical reports in that short time period (further shorted by the holidays) by 1/9/2019 as currently scheduled.

- Given the substantial changes to the project that I document below and that other commenters on the scoping bring up, it is highly questionable whether a "Supplemental EIR" is sufficient for the project.
  - After a full description of proposed project changes, the City needs to provide a complete analysis of whether the threshold for requiring a Subsequent EIR has been met.
  - Based on a preliminary comparison of project changes, some of which are detailed below, many do seem substantial and would rise to that threshold requiring a Subsequent EIR rather than a Supplemental EIR
  - Why did the City of Davis publish hastily-prepared, sloppy, and factually mistaken documents from developer's attorney, and do this without any oversight or vetting? And why is the City relying on these documents as the basis for its opinion about the noticing requirement, as well as the scope of the EIR update in general, and whether it should be a Supplemental or Subsequent EIR?

II. Changes to Surrounding Circumstances

This is all that the NOP for the project states about changed circumstances around the project:

> "In the ensuing years since the MRIC EIR was certified, there have been changed circumstances. Therefore, the city has determined it is necessary to prepare a Supplemental EIR to evaluate all the changed circumstances since the certification of the 2017 EIR."

An email from Assistant City Manager Ashley Feeney on 11/26/19 stated that "The [12/2/2010 scoping] meeting is intended to focus more appropriately on collecting comments related to the changes in circumstances that may have occurred in the project vicinity," however it also did not provide any information on the changes in circumstances that may have occurred that would be essential in providing comments on the proposed scope.

- Because the proposed scope of study in the SEIR for changes circumstances is not even described in the NOP or scoping meeting documents, this is entirely inadequate and provides nothing to comment on.
- The City needs to include a thorough description of these changed circumstances in a new NOP before conducting a scoping meeting and soliciting scoping feedback.

III. Changes to the Project

If there are significant changes to the project itself that the SEIR also needs to address these. However, the 11/26 email from Assistant City Manager Ashley Feeney seemed to be ruling this out before adequate scoping and a comparison of ARC to MRIC-MU has been made, and has come to a premature conclusion that these will not be addressed.

- The City needs to clarify in the scoping that it will address changed circumstances within the project itself, as well as to update existing data and assumptions that are outdated and have been superseded by more recent and accurate data and assumptions.

The letter on Taylor & Wiley letterhead dated 11/27/2019 that in linked to on the City's project site for ARC discusses preparation of the "subsequent CEQA analysis" and also provides a "list of ARC components that differ from the MRIC Mixed-Use Alternative." The letter also describes attached tables:

> "The distinctions and similarities between ARC and the Mixed-Use Alternative analyzed in the MRIC EIR are further displayed on two tables that are being submitted with this letter. We will publicly display these tables at the scoping meeting on December 2, 2019 for the benefit of those in attendance."

As discussed below, taken together the list and the tables are incomplete, inaccurate, misleading, and downright false at times. In addition they mischaracterize the MRIC-MU project itself and thus provide an inadequate basis for comparison to the new ARC proposal.

- There are large discrepancies between the attorney's description of the MRIC MU Alt and the actual contents of the MU Alt as described in the EIR. These are misleading at times, and downright false at other times. Given that the attorney's purpose appears to be to try to downplay any differences between the two, information it is irresponsible for the City to present this information.

- This information is posted under "Project Information" on the City's website. And when someone clicks on the link for "Land Use Comparison Table for ARC and MRIC" it just provides the table. It doesn't say it is from the developer's attorney It is presented as if it is accurate project information straight from the City. The City also irresponsibly plans to present this information at the Scoping meeting tonight, further misinforming the public about the project.

- The City has allowed an attorney apparently representing the developer to provide inaccurate and misleading information directly to the public without vetting from the EIR consultant or, most importantly, the City itself. In doing this, the City has breached the public trust and compromised the SEIR scoping process, and has made itself complicit in distributing inaccurate information about the proposal.

Land Use

- There is a statement in the attorney's 11/27 letter that "In sum, ARC proposes the exact type and scale of land uses that were analyzed in the MRIC Mixed-Use Alternative, at the same physical location, but on a footprint that has been reduced by 25 acres. Additionally, the site layout, including general land uses, roadways, points of access onto existing infrastructure, and nonautomotive paths of travel remain largely unchanged."
    - This is false is several respects, Most glaringly there are large discrepancies in open space/parks acreage and parking acreage, and the ARC development proposes an increased number of single-family homes.
    - Furthermore the summary provides no supporting data from which to determine whether the net FAR ratios of the two proposals are as described.

Open/Green Space

The "Land Use Comparison Table for ARC and MRIC" on the City website states that the MU Alt had and Agricultural Buffer of 20.1 acres and 22.6 acres in Parks and Greenways. However, this is false information and drastically understates what was actually in the Alt.

- The MRIC MU Alt actually had 55.7 acres classified as Parks & Greenways + a 20.1 acre ag buffer = 75.8 acre total parks/open space, which was 36% of total 212 acre site area
    - In addition a proposed mitigation measure states that in order for development to meet its requirement for park land, other green spaces, and ag buffers per City parks and open space standards required a total of 77.0 acres

- The ARC proposal shows 15.1 ac Parks & Greenways + 13.6 acre ag buffer (*with an additional 9 acres of ag buffer off-site, which is not allowed according to City Code) = 28.7 acres total parks/open space = 15% of the total 187-acre site area.
  - *The developer is trying to claim 9 acres of the City's 25 acres as on-site open space, thus inflating their tabulation.

- The ARC project has about 2.5 times less open space/parks acreage than the MRIC MU Alt, but by presenting false information about what the MU ALt contained, the developer has tried to claim that they are close to being equivalent. This is a significant project change and the material for ARC does not list in accurately in an effort to state the projects are substantially similar to avoid more detailed environmental review. This change needs to be addressed in the project comparison before scoping is done.

Residential

- The MRIC MU land use diagram only shows about 134 single family residential lots compared to 194 shown in the in the ARC land use diagram–almost 50% increase in single family units
  - The ARC diagram still doesn't account for all 280 of the single family units described in the "Parking Comparison Table for ARC and MRIC"

- Based on a comparison of the areas shown in the two diagrams, the total acreage of the housing has also increased substantially from the MRIC MU Alt to the current ARC proposal.

- This is a significant project change and the material for ARC does not list in accurately in an effort to state the projects are substantially similar to avoid more detailed environmental review. This change needs to be addressed in the project comparison before scoping is done.

Parking

The City also posted a table (received from the developer's attorney) entitled "Parking Comparison Table for ARC and MRIC" on the City website that provides false information about what the City's parking requirements are multiple times and thus provides a mistaken account of the actual parking required. The mistakes are so widespread that almost every single number in the table is wrong.

There is not a description of the number of parking space nor of the total parking area of the project in the MRIC EIR for either the main project or the MU Alt.

The EIR does state that for the main project "The parking ratios utilized for the proposal are consistent with those required by the City's Municipal Code" and that "The parking ratios utilized for the office/commercial components of the Mixed-Use Alternative are consistent with those required by the City's Municipal Code."

- The table misstates R&D/office/laboratory uses at 1,570,000 sq. ft. compared to 1,610,000 in the "Land Use Comparison Table for ARC and MRIC" and 1,510,000 in other project documents.

- The table states that "Advance Manufacturing" requires 1 sparking space per 1,000 sq. ft. floor area in City Code. This is false. City Code actually states "Multi-tenant buildings utilized typically by light industrial, research, service types of uses, where office use does not exceed more than thirty-five percent of building area: one space per four hundred square feet or major fraction thereof." OR "Manufacturing plants, research or testing laboratories and bottling plants, one for each one and one-half employees in the maximum working shift." Depending on what use is actually more consistent, the table likely understates required parking for these uses substantially.

- The table states that City Code requires one parking space for every 1.5 hotel rooms/units. This is false. City Code states "Hotel uses require "1 parking space per one space for each living or sleeping unit.". The City would also require additional parking for the conference center uses, but these are totally ignored by the developer.

- The table states that the MRIC MU Alt and the ARC proposal both call for 40,000 sq. ft. of retail. As stated elsewhere, both projects actually include 100,000 sq. ft. of retail, so the amount of required parking for this is drastically understated by the developer.

- The table breaks down the residential parking requirements for single family and multi-family units. However, there appear to be substantial difference between the amount of single family housing in the current ARC proposal and the MU Alt.

- The table also misstates what actual residential parking requirements are. It states that single family units require 1.5 spaces per unit, while City Code actually states that a minimum of 2 spaces are required: "SF detached units require "one covered and one uncovered off-street parking space for dwellings containing four or fewer bedrooms." And likewise "Dwellings, duplex and single-family attached, one covered and one uncovered off-street parking space for dwellings containing three or fewer bedrooms, and one additional space for each bedroom in excess of three."

- The table states that multifamily units require 1 parking space for every unit, while City Code actually requires more for any unit larger than 1-bedroom: efficiency/1 bedroom = 1 space, 2 bedroom = 1.75 spaces, 3+ bedroom = 2 spaces.

Given all of these errors, a more realistic accounting of the number of parking spaces required by City Code in the MRIC MU Alt would be around 8,000-9,000 spaces

- The proposal for the ARC for 4,340 parking space thus represents a figure that is about half of City requirements. However, there are no project changes from the MRIC MU Alt that would affect the parking demand.

- It is unclear whether the SEIR will update assumptions regarding travel demand/mode split and whether there is any data that would support halving the projected car traffic (and parking needs) to the site that were projected as 91% of all trips in the EIR.

- This looks more like an effort by the developer to try to keep the acreages/floor area the same of the developed numbers the same while the site size was reduced by 25 acres, rather than a realistic assessment of parking needs.

- It should be noted further that even using highly optimistic assumptions of non-car mode split, the MUA Alt in the MRIC EIR only showed a reduction of 13% of the car trips from the standard project**.**

- It should also be noted that the “Comparison of Land Uses by Type” table makes no effort to describe the actual area taken up by on-site parking. For example the 4,340 parking spaces in the ARC proposal would take up approximately 30-40 acres based on industry standards. But this is not accounted for at all.

- The ARC project materials understate this significant project change. This change needs to be addressed in the project comparison before scoping is done, including an accurate assessment of what existing City parking standards for the site would add up to and what parking acreages would total by land use type.

- The SEIR also need to tie in the traffic demand projections to the parking demand projections using a realistic assessment based on industry standards for this type of development.

IV. Existing EIR Issues

The City needs to update existing data assumptions in the MRIC EIR that are outdated and have been superseded by more recent and accurate data and assumptions. It also need to correct factual misstatements and misrepresentations.

The City’s Objectives and Project Objectives Need To Be Revised for Accuracy

The described project and City objectives in Chapter 7 are too narrowly-focused towards describing the specific size of the project and not the broader goals the City is seeking. This makes the alternatives analysis deficient. The EIR also provides misleading information about City policy and omits key City policy direction in its General Plan that also leads to a deficient analysis of alternatives..

- The text under #1 of “City Objectives for Innovation Centers” conflates a number of documents and has the effect of stating that some documents are adopted city policy when they are not. The EIR states the following under “ City Objectives for Innovation Centers” in Chapter 3:

  “The City of Davis proposes to achieve the following objectives with a new innovation center. These reflect findings of the 2010 Business Park Land Strategy; Innovation Park Task Force, 2012, Davis Innovation Center Report (Studio 30); adopted 2012 Dispersed Innovation Strategy; the 2014 Davis Innovation Center Request for Expressions of Interest (RFEI) and 2014 Guiding Principles for Davis Innovation Center(s).”

  - And then the #1 objective the EIR lists references the 2012 Studio 30-produced “Davis Innovation Center Report” regarding a site “200 acres in size” and then later states “the fundamental objectives of the City... to develop an integrated innovation center campus of approximately 200 acres in size…” **However, a 200-acre site is not an adopted City objective. The information from** Studio 30 was done for a UC Davis class and is not a City document, nor is it City policy. The actual City Council-adopted “2014 Guiding Principles for Davis Innovation Center(s)” are listed starting with #2 in the EIR list (“Density”). The City’s Guiding Principles do not include a description of a target size of a potential “innovation center.”

- The EIR defines the City’s economic development goals far too narrowly and does not consider that the same types of uses could be provided for on scattered sites with sufficient development capacity to meet 20-25 year needs.
  - When objectives are defined too narrowly, an EIR’s treatment of alternatives is inadequate, because they unreasonably limit alternatives analyses.
  - See *Watsonville Pilots Association v. City of Watsonville (2010) 183 Cal.App.4th 1059* where an EIR for update of City’s General Plan did not consider “reduced development alternative,” even though approved General Plan would have SU impacts on agricultural land. City argued EIR did not need to consider such an alternative it would be inconsistent with the City’s objective to accommodate future demand for housing and employment. The decision held the EIR inadequate because a “reduced development alternative” would meet most of the City’s other objectives.

- Numerous adopted City policies and guidance emphasize the City’s strategy to develop and redevelop land within city limits and only look at peripheral land outside of city limits when the land within the city has been …
  - The 2010 Business Park Land Strategy states “When community priorities for existing vacant land are established, it may then be appropriate to explore the subject of whether Davis should pursue additional commercial land to support business growth."

- The “Working DraftComprehensive Economic Development Strategy 2011-2016” adopted by City Council in 2011 states merely that “Form a task force to explore research park options and space suitable for start-ups and medium size businesses that are beyond the start-up phase within the city limits and in areas immediately outside current city boundaries.”

- The City of Davis General Plan Chapter 5. Economic and Business Development Economic cDevelopment Element states under Action “f” under Policy ED 3.2 [my emphasis]:

  Study opportunities to designate lands for “green” technology, high technology and University related research uses within or adjacent to the City. Work closely with the local business community, community leaders and U.C. Davis officials in determining when and where such uses can best be accommodated in addition to the 25-acre enterprise site planned on the UC Davis campus. Preference should be given to sites that are viable economically and consistent with compact City form principles. As part of this study:
  • ***Consider re-designating or rezoning land(s) within the City limits (as of January 1, 2001) from Industrial, Business Park or General Commercial to research-oriented Business Park uses*** *(that is, uses which allow a wider range of high technology, research and development uses than a URRP and which are complementary to UC Davis);*

  • ***Encourage second floor and underground building construction to maximize the space available to accommodate URRP needs within the City limits****;*

  • Key considerations in such re-designation or rezoning shall include the timing of these potential development(s) and impacts and demands caused by these potential developments on the City and the Davis community. Impacts to address include, but are not limited to: traffic, water, housing (for example, growth demand), schools, effects on neighborhoods, and economics (for example, cost benefits and cost generation to the City); and

  • ***Designation of a peripherally sited URRP shall only occur after:***
  a) It is determined that lands within the City limits would not meet the needs for “research-oriented” Business Park uses*.*
  b) Specific guidelines for development projects on the periphery of the City are adopted.

Insufficient Analysis of Alternative

Because of the narrow and deficient definition of the project/City objective, the EIR does an inadequate job on analyzing the Alternatives in Chapter 7, including the Reduced Site Size Alternative, the Reduced Project Alternative, and the Infill Alternative. The SEIR needs to consider the development capacity of land within city limits to address at least a portion of the demand that the ARC project is.

- Additionally, because the "Mixed Use Alternative" has now become the main project proposal, the EIR needs to look at potentially viable alternatives for the land uses it contains over the next 20-25 years. For example, with the large amount of the site devoted to residential uses and open space requirements for those uses, 200 acres of commercial/industrial property elsewhere in the city is no longer needed as a 1:1 comparison--the amount provided by the ARC proposal is much less--and a much-reduced amount of land could be considered sufficient. The alternatives should all be reexamined and reevaluated in the context of land that would potentially be available within city limits for the commercial/industrial/retail/residential uses.

- The Reduced Project Alternative analysis states among other things that "it fails to achieve the fundamental objectives of the City or the applicant to develop an integrated innovation center campus of approximately 200 acres in size, with sufficient land to meet demand over a 20 to 25 year period."
    - Again, this is not an actual City objective. This entire analysis needs to be redone
    - The SEIR needs to examine capacity on existing city land that could meet a 20-25 year demand

- The Reduced Site Size Alternative states that is has an "overall FAR of 0.77" which is more than the 0.49 FAR of the MRCI proposed project.
    - However, it is substantially less than the 0.92 FAR of the proposed ARC project, therefore the findings regarding the Reduced Site Size Alternative such as "design challenges and may be too dense to attract some desirable R&D users" need to be discarded and reveluated.
    - Furthermore, it should be restructured so that is does not merely place the same amount of square footage on a reduced site area. If the SEIR wants to consider placement of all of the proposed project square footage, it needs to look at capacity on existing city land.

Chapter 7 (Alternatives Analysis) briefly discusses and then dismisses an "Infill Alternative" (IA). This discussion is inadequate and based on superceded and outdated data. It needs to be revised and thoroughly considered.

- As the EIR text states “As the infill alternative would involve multiple small locations throughout the City, it does not meet the fundamental objectives of the City or the applicant to develop an integrated innovation center campus of approximately 200 acres in size, with sufficient land to meet demand over a 20 to 25 year period, and a critical mass of users of various sizes sufficient to support the necessary infrastructure and amenities to allow for a full range of research and market uses.
    - This is not valid. It produces a tautology wherein the goals of the City are to do the project, and therefore any alternative that does not do the project does not meet the goals.
    - A 200-acre site is not a City objective in the first place

- The text states that “According to the vacant land information, out of the 32 properties, only 24 vacant sites, totaling approximately 82 acres, are currently available for development, meaning these 24 vacant sites are appropriately zoned for office and industrial building types, are available on the market, and do not currently have development plans.”
    - SInce the MRIC/ARC proposals are scheduled for phasing over 20-25 years, discarding large amounts of vacant land because it is not *immediately* available does not apply the same standards to the IA as to the proposed project that is phased and is not planned to be built out for 20-25 years.
    - For land use planning purposes, a vacant/ buildable/ underdeveloped is intended to provide a summary of land designated/zoned for certain uses over a long time period: 20-30 years. Whether all of that land is immediately available (“shovel-ready”) is generally not an important consideration as long as it is available in a long-term perspective.
- The text also states that “In addition, other vacant parcels in the City or vicinity are not currently owned by the project applicant, and acquisition of the number of parcels sufficient to develop the proposed project would be difficult.
    - The fact that the current proposed developers of the ARC project do not currently own these other parcels is not a valid reason to dismiss this alternative out of hand:
        - A valid test is not whether an alternative costs more, or whether proponent can afford it, but whether cost is so much greater that a reasonably prudent proponent would not proceed (see *Uphold Our Heritage v. Town of Woodside [2007]*).
        - Substantial evidence of economic infeasibility is required. In order to demonstrate this, the SEIR should prepare and include an economic report in the record (see *The Flanders Foundation v. City of Carmel-by-the-Sea [2012]*).

- The text also states “Overall, undeveloped parcels of similar size to the proposed project site, which are designated and zoned appropriately for the project, do not exist in the City.”

    - This is also not a valid reason. Infill parcels are, by their nature, smaller and more scattered than a contiguous 200-acre site

- The text states: “Additionally, the ability of one centrally developed and managed center to produce net community benefits in the form of fiscal benefits, economic multiplier effects, and surplus annual revenue is greater than that of many individual small users/sites.”
    - This is vague and not supported by any evidence whatsoever. The central economic literature in the field actually states the opposite regarding these supposed effects.
        - For example see ***The False Promise of the Entrepreneurial University* (2009)** Marc V. Levine, Center for Economic Development, University of Wisconsin Milwaukee
    - The EIR needs to conduct an analysis of these differences or delete these unsupported assertions

- The text states: “Similarly, impacts related to transportation and circulation could potentially be greater than the proposed project based on the consideration that all of the sites making up the Infill Alternative would not have easy access to I-80; therefore, trips would be distributed throughout the City, sometimes along local collectors.”
    - This suggestion ignores the potential reductions to automobile trips from infill sites, and also does not provide any data to support it.
    - The EIR needs to conduct an analysis of these differences or deleted these unsupported assertions

Analyze Development Capacity Within City

Chapter 5 of the EIR itself references figures regarding development capacity on existing city land (see Table 5-2 Projected Office/Industrial/Commercial Development). While the assumptions were very conservative and low-density in still showed the capacity included 2 million square feet of floor area, a figure far exceeding that of the proposed project.

In January 2019, the City of Davis released an updated commercial land inventory. This inventory does not address city owned property, commercially viable property outside of the city limits, or those properties that may be zoned commercially but underutilized and therefore pose potential redevelopment opportunities like the PG&E corporation yard for example.” The City stated that this initial inventory was “**the starting point for preparing analysis of what vacant commercially designated lands offer in potential commercial square footage available for economic development. Staff would like to return to Council with an in-depth discussion of this vacant commercial land inventory in the context of the City and the region, the potential uses and theoretic commercial square footage capacity of the undeveloped**

land, and recommendations for next steps on using this and other key information to build an economic development strategy that aligns with the goals of the Council."

Adequately addressing the feasibility and capacity of an infill strategy in the Infill Alternative, requires analyzing not only vacant land, but also underutilized, and redevelopable land as well. And not just what is available now, but looking down the road 20-25 years with the development of sensitivity models for the likelihood of development given changing economic conditions and demographics.

- The SEIR needs to be updated to not only address and integrate the information in the updated inventory, but the larger issue of development feasibility and capacity on infill sites that is central to the City's economic development strategy as referenced above.

- The SEIR needs provided updated development capacity numbers for this land based on the infill goals in City policy that include densification of uses.

- The SEIR also needs to include an analysis of not only this vacant land, but also potentially underutilized and redevelopable land, City-owned land, and other land that could potentially be re-zoned to meet commercial/industrial needs that could be developed with the 20-25 year timeframe.

Jobs/Housing Balance

- The EIR uses outdated and wrong figures for the jobs/housing ratio for Davis (e.g. jobs-housing balance on p. 4.12-6)

    - Because of this, the EIR wrongly describes Davis as having a housing/jobs balance tilted heavily toward housing because it ignores UC Davis employment.
    - It also describes the proposed project as "improving the jobs/housing balance because it will add jobs, when it will actually exacerbate the existing jobs/housing imbalance
        - See p.. 4.12-19: [my emphasis] "Using the methodology presented above, with full buildout of the MRIC and the addition of 5,882 jobs, the jobs/housing balance in the City of Davis would **improve** to 0.55 (25,739/[28,683 x 1.62] = 0.55).19"

- The EIR needs to be updated with jobs/housing balance figures from the most recent SACOG MTP for Davis area. It should also reference the jobs/housing balance data that is contained in the Fiscal Analysis done by EPS for the MRIC project

    - Any analysis that is based on jobs/housing balance in the rest of the EIR needs to be updated to reflect these updated and accurate numbers.

- Additionally, the following portions of the EIR use SCOG regional targets for employment growth targets (e.g. see p. 5-47 [my emphasis] “According to SACOG, the entire proposed project and Davis IC Project (comprising the MRIC and Mace Triangle) would not exceed SACOG’s **regional** employment projections
  - However, this is inadequate. The SEIR should be updated to include a comparison of project growth against the SACOG”S most recent growth targets for population/housing/jobs growth within the SACOG-defined Davis “Employment Center”

Realistic Assumptions for Employee/Residents and Employees/Households

- The SEIR needs to provide realistic assumptions regarding residents of the proposed project who projected to be employees
- The SEIR also needs to provide realistic assumption regarding the number of employees per household
- Unless the project is a company town in which employees are required to live there, there is no justification to assume on-site housing will only consist of workers
- There is also no justification to assume that each household within the project that is occupied by an employee would have more than one employee (1.57 in each according to the MU Alt)
- A realistic adjustment of these figures based on current City of Davis rates as well as those from similar projects will show much lower rates of these than currently in the MU Alt. I turn these figures will have significant impacts on other areas that need to be recalculated such as traffic and parking
  - For example, it is likely that without the extremely high number of employees assumed to be living on-site in the MU Alt, the traffic numbers would be worse for MU Alt than the baseline project.
  - Parkland/ open space and open space needs will also increase because of the reduction of the overlap between employees and residents

Dec. 4, 2019

Here are my comments regarding the scoping meeting and draft environmental impact report for the Aggie Research Campus Project.

My main focus is making sure the 25 acres owned by the city to protect burrowing owl habitat continues correctly. Currently the plan would have this project take 6 ½ acres from the 25 acre burrowing owl habitat to build the ag buffer along the northwest corner. This is not acceptable. The property owners need to use their own land for the ag buffer, and not encroach on this habitat. The 25 acres was purchased with Measure O funds, and should never be used for anything else. s

When building the ag buffer, **not using any of the 25 acres of city land**, native plants should be planted in the section adjacent to the burrowing owl habitat. Additionally, there should be a plan in place to maintain the plants, and grasses, for the benefit of the burrowing owls.

Another important consideration is the timing of the previous EIR. Since the 2017 EIR the Nugget headquarters complex on Mace Blvd. was approved and is now being built. Additionally the Marriot Residence Inn hotel is near completion on the corner of Fermi and Mace Blvd. The hotel was literally built on burrowing owl habitat. These two large projects have further degraded what little is left of burrowing owl habitat in Davis. This must be taken under consideration for changed circumstances in the Supplemental EIR.

My last concern is the railroad crossing on Rd. 32A. The decision to keep the crossing open, or have it removed, has not been decided. There should be a plan in place before this project is approved to build another road to replace Rd. 32A if the railroad crossing is closed. If this is not done there will be a dead end road and bottleneck of traffic.

Thank you for your consideration,

Gayna Lamb-Bang
4350 Cowell Blvd.
Davis, CA 95618

-----Original Message-----
From: Billie Martin <drbilliemartin@yahoo.com>
Sent: Monday, December 9, 2019 4:59 PM
To: Sherri Metzker <SMetzker@cityofdavis.org>
Cc: Ashley Feeney <AFeeney@cityofdavis.org>
Subject: Aggie Research Campus project Scooping Meeting December 2, 2019 : Changes since Sept. 17, 2017 EIR

CAUTION: External email. Please verify sender before opening attachments or clicking on links.

Comments: to;
City of Davis
Planning Department
23 Russell Blvd.
Davis, Ca. 95616
The Aggie Research Campus Project will add toxic exposure and pollution to the adjacent farmland and wildlife. in excess to

what would have been present after Sept.19 ,2017 if the Mace Ranch project had been built because the ambient toxins in the

area have increased. I have own and farm 160 acres of organic farmland at the North East corner of Road 105 and Road 30.

(44794 County Road 30 and 44560 county Road 30B, Davis, Calif. 956180 Since Sept 2017 the approximately

200 acres of conventionally farmed almonds to the North and East of the proposed Aggie Research Campus .

have grown to be adult, producing trees. Because these trees are conventionally farmed, they have added fertilizes,

and pesticides to the runoff that ends up in our area, and on my farm that were not present in 2017. The Aggie Research Campus will

add much more pollution than is present now, therefore project developers should be required to mitigate the damage their additional

pollution will cause to the nearby farms and and wildlife.
Billie Martin, DVM
44794 County Road 30,
Davis, Calif. 95618
drbilliemartin@yahoo.com

Aggie Research Campus

Scoping Meeting

December 2, 2019

COMMENT

To: City of Davis, Community Development and sustainability Department drbilliemartin@.../Sent

Billie Martin <drbilliemartin@yahoo.com> Dec 9 at 3:05 PM

Dec. 9.2019

Circumstances the have changed since Sept,19,2017: Traffic

Traffic has increased significantly and will increase more due to the new office buildings and the Hotel to the north of I 80 and west of the "Mace Curve" (Mace/ Covell Blvd.).

In addition, the anticipated closure of Road 32 A by the Railroad will bring even more traffic

The representatives of the proposed Aggie Research Campus project estimated the when built, the project will bring 10,000-12,000 car visits per day!!

A new traffic study should be done to realistically represent to the voters of Davis what the traffic will be like if the the Aggie Research Campus project is built. It would not be fair to create such a negative impact on the quality of life for the people of Davis without advance warning.!!

Dr. Billie Martin

44794 County Road 30

Davis Calif 95618

drbilliemartin@yahoo.com

Submit to

City of Davis
Planning Department
23 Russell Blvd.
Davis, CA 95616

Comments for scoping of the SEIR for the Aggie Research Campus (ARC)
Roberta L. Millstein, Davis citizen
December 6, 2019

The following questions need to be addressed by the Supplemental EIR for the "Aggie Research Campus" (please note that wherever I say "impacts" I mean "environmental impacts"):

Use of land at the site:

What will happen if the expected demand for office/R&D *or* manufacturing *or* onsite hotel does not materialize? Will the developer come back to the City and ask to build housing instead on these parts of the site? What would the impacts of an "all housing" project be, or various possible combinations of increased housing with decreased use in one or more of the other three categories? These scenarios need to be described and analyzed.

What if it turns out that the amount of parking planned is not sufficient to attract office/R&D or manufacturing or housing uses? Will the developer come back to the City and ask for more parking spaces? What would the impacts of, say, double the number of parking spaces be? Is the amount of parking specified in the Project Description actually consistent with the projected amount of car traffic to/from the site?

Single-family homes were not part of the Mixed-Use MRIC proposal, so this is a project change whose impacts need to be analyzed. It's not clear why single-family homes are part of the ARC proposal at all. Are they an efficient use of limited space? What would the impacts be without any single-family homes? Conversely, what if the developer asks the City for more single-family homes – what would the impacts be?

Here it must be noted that Ramco Enterprises has a history of saying that it will do one thing and then later doing another, documented on the City's own website: https://www.cityofdavis.org/about-davis/history-symbols/davis-history-books/growing-pains-chapter-6 . So these questions about the developer coming back for changes that could have environmental impacts are realistic questions, not just speculative, especially since housing has now been moved to phase 1 of the project (whereas it was in phase 2 for the MRIC Mixed-Use Alternative).

Agricultural buffer, parks and greenways:

Essential background to be taken into account for all items in this section: The MRIC DEIR states, "The California Department of Conservation has defined the Mixed-Use Site as Prime Farmland (approximately 159 acres or 76.1 percent of the site), Farmland of Statewide Importance, (approximately 39 acres or 18.7 percent of the site), and Potential Local Farmland (approximately 11 acres or 5.3 percent of the site)." The land is currently being farmed, but it is also potential habitat for species such as the burrowing owl and the Swainson's hawk (the former a California "species of special concern" and the latter a California "threatened" species), as noted in the MRIC DEIR.

Documents submitted to the City and posted on its website on the evening of November 27, 2019 (the night before Thanksgiving and four nights before the December 2 scoping meeting) state that when comparing the MRIC Mixed-Use Alternative to the ARC proposal, the "agricultural buffer" (subject to Davis Municipal Code 40A.01.050) has been increased from 20.1 acres to 22.6 acres while "parks and greenways" have been reduced from 18.6 acres to 15.1 acres. This implies that the MRIC Mixed-Use Alternative had a combined parks/greenways and open space of 20.1 + 18.6 = **38.7 acres**. However, on p. 8-11 of the Mixed-Used MRIC DEIR, a table shows a total of **75.8 acres**.[1] So, if the ARC proposal has a combined parks/greenways and open space total of 22.6 + 15.1 acres = **37.7 acres** (including the easement on the Mace 25),[2] *then the amount of combined parks/greenways and open space in the ARC proposal is **less than half** of what it was in the Mixed-Use MRIC proposal. **This is a substantial change in project that the Supplemental EIR must analyze***. What are the impacts of the loss of the combined parks/greenways and open space, on environmental factors including but not limited to the urban heat island effect, drainage and infiltration to the underlying aquifer, and habitat for species, including the species noted above but also other species (including insect species) as well? Does the current ARC proposal satisfy the City's standards for parks, greenways, open space, and agricultural buffers, given that the 75.8 acres of the Mixed-Use MRIC was deemed to be insufficient (see 8 - 134 of the DEIR), and the ARC proposal has less than half of that?

The ARC project proposes to use 6.8-acres[3] of the City parcel just to the northwest of the project, often called the "Mace 25," to satisfy the agricultural buffer requirement spelled out in Davis Municipal Code 40A.01.050. This proposal calls for the City to provide a buffer (part of the Mace 25) for its own land (the remainder of the Mace 25). However, it is not clear that this use satisfies the spirit or the letter of the municipal code, which states "all new developments adjacent to designated agricultural, agricultural reserve, agricultural open space, greenbelt/agricultural buffer, Davis greenbelt or environmentally sensitive habitat areas according to the land use and open space element maps shall be required *to provide* an agricultural buffer/agricultural transition area" [my emphasis], and "the land shall be dedicated to the city," implying that the land for the buffer is not already owned by the City. With this use, instead of the *developer* providing *all* of the land for the required agricultural buffer, as the Code seems to imply, the *City* is providing 6.8 acres of land (a portion of Mace 25) that was purchased with funds from Davis's open space tax. In effect, this represents a reduction of 6.8 acres of open space within the City, since Mace 25 should already be open space anyway, and since the developer is not adding the full amount of the agricultural buffer to the total amount of open space in the City. What is the impact of this loss, especially considering the adjacent burrowing owls? Is this use even in compliance with the ordinance? This needs to be determined. What would the impact of the project be if the developer provided that 6.8 acres instead of the City providing it?

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[1] In some places in the DEIR, the figure of 64.6 acres appears, but this appears to be a copy-paste error from the chapter for the MRIC project proposal that lacked housing. The Mixed-Use MRIC project required greater acreage of parks because of the onsite housing triggers Davis's standards for resident/parks ratios.

[2] Note that the Project Description says 49.1 acres. Either way, the basic points I make in this paragraph still hold. The total amount has been substantially reduced.

[3] Note that the Project Description says 9 acres. The 6.8 acre figure appears in the documents uploaded on November 27, 2019.

I understand from the presentation to the Open Space and Habitat Commission that the developer will allow tenants to determine the size of buildings and the amount of pavement, asphalt, etc., within the scope of the described project. Is this accurate? If it is accurate, what are the impacts of the worst-case scenario, where all the parts of the project not marked as agricultural buffer or parks/greenways consist of buildings, asphalt, or concrete (or similar materials), including but not limited to the urban heat island effect, drainage, and habitat for species? What are the impacts of lesser scenarios that still contain a substantial amount of buildings, concrete, and asphalt (or similar materials)?

What would the environmental impacts be if the project were to adopt the recommendations made by the Open Space and Habitat Commission at its meeting of November 4, 2019? These recommendations are:

"The Open Space and Habitat Commission recommends that, if the City Council approves the Aggie Research Campus project, the following project features should be included in the project's "Baseline Project Features" and/or Development Agreement:

1. *The agricultural mitigation land should be located within the Davis Planning Area;*
2. *The east side of the east-west channel should be natural like the rest of the channel;*
3. *Native plants should predominate the channel and agricultural buffer;*
4. *Burrowing owl habitat should be on the northwest segment of the agricultural buffer, pending confirmation from the City's wildlife biologist;*
5. *The agricultural buffer and east-west channel should be managed for habitat;*
6. *The east-west channel must have a public access easement;*
7. *Trees and pollinator habitat should be disbursed throughout the site, including in parking areas; and*
8. *If the agricultural buffer remains on the "Mace 25" site, the agricultural buffer should be wider."*

Traffic/transportation:

The project description touts alternative forms of transportation to cars, yet it says that one of the "project objectives" is to "Utilize a site with existing access to I-80 for the convenience and benefit of employees, collaborators, suppliers, and goods movement." And the promises of alternative forms of transportation are vague, with some of these, like Uber and Lyft, are still cars even if they don't utilize parking spaces. How can the impact of vague promises of alternative forms of transportation be measured, and how likely is it that they will be any more than a drop in the bucket when a *project objective* is to provide easy access to I-80?

What are *realistic* assumptions for future *growth* in traffic in the area, due to traffic apps like Waze (with Fehr and Peer already documenting that people are driving past the site to avoid I-80 traffic), and the imminent completed construction of the adjacent Nugget Market headquarters (Alhambra/Mace headquarters) and Marriott Residence Inn, with the Hyatt House, Creekside Apartments, and new apartments on Chiles Road slightly further away. (See https://www.cityofdavis.org/home/showdocument?id=10493 for a map of new projects that should be taken into account). This area is already experiencing significant traffic backups, but probable growth must also be taken into account.

How will traffic on 32A be affected, and how will that in turn affect cyclists, farm machinery, refuse trucks, and the railroad crossing? How will it affect the drainage at 32 A and Chiles north of the railroad? How can all of this be determined when the fate of 32A is in limbo while under discussion? (See https://www.davisenterprise.com/local-news/consultant-to-look-at-options-for-relocating-road-32a-railroad-crossing/).

How will *realistic* use of on-site housing by employees, commuting to the site, and parking needs at the site be determined? To give a personal example, as a professor at UC Davis I know that many of my colleagues, especially younger colleagues or colleagues without children, *choose* to live in Sacramento because they prefer a more urban environment. Instead, they drive to Davis to work. Similarly, those who work at ARC may not choose to live there, or may not be able to afford to live there (e.g., clerical staff, janitorial staff) and so may be driving in. Conversely, we already know that many people choose to commute from the Sacramento area to the Bay Area (see, e.g., https://www.sacbee.com/news/local/article190050994.html). We have to expect that this freeway-adjacent location will be attractive to commuters, since housing prices in this area are less than in the Bay Area. Finally, even if some ARC workers do live onsite, how do we take into account partners and adult children who may need to drive to jobs offsite? How do we take into account parents who drive their children to school, something that is on the increase in Davis? (e.g., Davis High School is not nearby). In short, it's not realistic to assume that most people living onsite will be working onsite and vice versa, and other regular driving is likely to be involved, so more realistic numbers need to be developed based on available information to account for the amount of driving that housing will generate.

Area impacts:

How will the environmental analysis take into account all of the changes – *in aggregate* – since 2015 when the MRIC EIR was first drafted, including an increase in students, faculty, and staff on the UC Davis campus as well as the approval of various housing and hotel projects throughout the City, some of which are not yet online? This is essential for a thorough environmental analysis, not just of increased traffic, but also on our limited water supply and the increased production of waste. (See https://www.cityofdavis.org/home/showdocument?id=10493 for a map of new projects that should be taken into account as well as http://www.cityofwoodland.org/1021/Development-Projects for Woodland projects on or near CR 102 that will impact Davis).

Will the proposed project make it more difficult for farmers to the east of the project ("Leland Ranch") to farm effectively and efficiently? Will they be able to access their land and be able to efficiently transport seasonally-required equipment to and from their property?

Climate change impacts/interactions:

In the few years since the DEIR was done, scientists have gained a greater understanding of the severity of climate change impacts and the extent to which they are manifesting now. To quote an IPCC report: “Climate change can exacerbate land degradation processes (*high confidence*) including through **increases in rainfall intensity, flooding**, drought frequency and severity, heat stress, dry spells, wind, sea-level rise and wave action, and permafrost thaw with outcomes being modulated by land management… Climate change has already **affected food security** due to warming, changing precipitation patterns, and greater frequency of some extreme events (*high confidence*).” https://www.ipcc.ch/srccl/chapter/summary-for-policymakers/ [my bolding]. This is true not only globally, but for California as well. A recent UCLA study “found that over the next 40 years, the state will be 300 to 400 percent more likely to have a prolonged storm sequence as severe as the one that caused a now-legendary California flood more than 150 years ago.” http://newsroom.ucla.edu/releases/california-extreme-climate-future-ucla-study

With respect to flooding, “the City [of Davis] does have concerns about potential adverse effects to its facilities and infrastructure resulting from a high water event which causes flooding in the Yolo Bypass. Specifically, the City is concerned about effects to its existing wastewater treatment facility [north of the proposed project] as well as its planned municipal water intake and conveyance system. Besides being subject to flooding by a failure of the Willow Slough Bypass left levee, the wastewater treatment facility and the Yolo County landfill are subject to flooding from breaches in the CCSB west and south levees, the abandoned south levee of the pre-1992 CCSB, and the Yolo Bypass west levee.”
https://www.yolocounty.org/home/showdocument?id=28753

In light of new facts that climate change will lead to increased flooding, together with pre-existing worries about flooding in the area of proposed project, will the ARC project, with its limited drainage, exacerbate the flooding situation? Drainage has been proposed for the site, but is it up to handling a massive flood like those that are predicted? Will the presence of a business park on the site allow for a fast recovery from a flood? What are the other potential impacts of ARC in light of increased flooding?

In light of the new facts that climate change will reduce usable farmland, what are the impacts of the loss of farmland regionally, for California, and beyond? The impact of the loss of prime farmland was considered in the MRIC EIR, but what is the significance of that loss in light of the *increasingly precious and rare* farmland – exacerbated by the loss of farmland to development nationwide. https://www.ecowatch.com/farm-land-lost-to-development-2622961538.html
In light of new facts that agriculture can help reduce climate change through carbon sequestration (https://ww3.arb.ca.gov/cc/natandworkinglands/draft-nwl-ip-1.7.19.pdf) what is the loss of that potential sequestration, especially given the carbon-producing traffic impacts that an ARC project would add?

It might be thought that the climate change impacts described in this section are “speculative,” but, as they are backed up with scientific studies, they are certainly much less speculative than the assumptions that the Mace EIR and ARC Project Description makes about the future of transportation patterns or claims about how many people will be commuting into and out of the ARC project. Thus, if the latter claims are to be part of the analysis, then certainly the former claims must be as well, but the former claims are sufficiently substantiated to be considered regardless.

-----Original Message-----
From: Pam Nieberg <pnieberg@dcn.davis.ca.us>
Sent: Monday, December 9, 2019 4:16 PM
To: Sherri Metzker <SMetzker@cityofdavis.org>; Ashley Feeney <AFeeney@cityofdavis.org>
Subject: comments on ARC

Hello:

I was just alerted that the latest proposal for the business park/housing development proposed for the MRIC/ARC project includes wind turbines.

The impact of wind turbines in this location would be disastrous for numerous species of avian and bat wildlife. Wind turbines are notorious killers of millions of birds and bats every year. This project is virtually next to the the Yolo bypass wildlife area and on the Pacific Flyway. It is also immediately adjacent to a burrowing owl colony that has existed in that area for decades and has been the subject of much debate since the MRIC project was proposed.

The presence of wind turbines is certain death to the burrowing owls and hundreds of bat and avian species that utilize this area. The proposal for wind turbines must be evaluated in the EIR and should not be permitted in this project.

This is rushed to make the 5 p.m. deadline and due to other commitments I had for this afternoon. I will send much more extensive comments during this process.

Pam Nieberg
530-756-6856
pnieberg@dcn.davis.ca.us

(Revision #2) Comments for ARC Scoping Process

Submitted by Ron Oertel

I understand that the city of Davis has determined that a "supplemental" EIR is sufficient to address the significant changes in (both) the ARC proposal itself, as well as changed conditions in the surrounding environment. In fact, the changes have not even been adequately defined in the first place. (The city also certified the initial EIR, without having a defined proposal.)

The justification for the city's decision regarding the choice to allow a supplemental EIR has not been addressed. Nor has a justification been provided for the shortened timeframe, to allow comments.

Within the limited scope of the supplemental EIR, changes in traffic patterns should be thoroughly examined. This would include all new and planned developments within the immediate vicinity (including but not limited to the new Residence Inn, and Nugget headquarters). However, other developments within (and outside) the city will also have an impact on the same streets and freeway access points that are near the proposed site of ARC. This would include all of the new developments in Davis (including but not limited to Nishi, Sterling, Lincoln40, Davis Live, University Research Park, University Mall, Chiles Road apartments, new student housing on campus, etc.).

In addition, new developments in Woodland (including but not limited to the Spring Lake development, and the planned Woodland research park) will also have an impact. For example, some commuters to ARC would come from Woodland. In addition, some commuters to the Woodland research park site would likely use the Mace exit (from westbound I-80), passing right by the ARC site, to Covell and Road 102.) And, would likely use this same path on their return trip toward Sacramento – especially when I-80 is backed-up. (Or, would at least use some of the same freeway access points as ARC commuters.)

The impact and unpredictability of cell-phone applications (such as "WAZE") which are redirecting traffic off of a congested I-80 must be thoroughly examined. Some of the routes suggested by these applications encourage I-80 commuters to pass right by the ARC site, and/or use the same freeway access points as ARC commuters. For example, cell-phone applications are apparently redirecting eastbound traffic from I-80 onto (or across) Road 102 (e.g., from Road 29). This traffic would interact with increased commuter traffic from ARC (to/from Woodland) – possibly creating a need for new signalization at the intersections of Road 102/Road 29 (and/or Road 28H). Traffic on Road 102 is also expected to increase as a result of new development in Woodland - as discussed above.

The impact of cell-phone applications which divert traffic should be examined during various times, days of the weeks, and even seasons – to ensure completeness and accuracy. One of the most impacted times is likely to occur on Friday afternoons.

Impacts on streets and freeway access points on (both) the north side of I-80, as well as the south side must be examined. This would include all freeway access points within the vicinity, including those shared by those negotiating what has commonly been referred to as the "Mace Mess" traffic-calming project that the city recently constructed. (It's likely that ARC commuters would share the freeway access point that's located near the causeway – which is also used by those negotiating the "Mace Mess".) As one freeway access point is impacted, drivers will likely use others, instead – either on their own accord, or via “suggestion” from cell-phone applications. The same is true via ever-changing routes suggested by cell-phone applications.

The impact of increased traffic on I-80 (now, and in the future) should also be examined. Including traffic generated by regional growth, as well as the traffic contribution of ARC, itself. This would also further impact local freeway access points and streets.

ARC would create both inbound and outbound commuters, since there is no way to determine if the planned occupants would actually work at the site. Any estimates regarding the percentage or number of residents who are expected to actually work at the site should be thoroughly examined and supported. Already, Davis has an excess of inbound commuters passing through town, due to employment opportunities at UCD.

Regarding parking, the EIR should address whether or not the planned parking spaces will be sufficient to support the development, and whether or not drivers would end up parking outside the development (e.g., in Mace Ranch). This might be even more of a concern if a pedestrian/bicycle connection is provided over Mace Boulevard, thereby providing a convenient path for commuters (or residents of ARC) to park their cars outside of the development.

The EIR should also determine potential impacts if students (or others connected to UCD) comprise a significant portion of the residents or workers at ARC, as they would likely commute through town – further impacting local traffic.

Also, since ARC doesn’t even fully address the new housing need it would create, the EIR should examine the likely impact this would ultimately have on roads and the city itself. The result would be an increase in commuters, as well as increased pressure to develop even more peripheral lands and dense infill within the city – with all of the resulting traffic.

From: Catherine Portman <cportman@gmail.com>
Sent: Thursday, November 21, 2019 2:12 PM
To: Sherri Metzker <SMetzker@cityofdavis.org>
Subject: Aggie Research Campus

Hi Sherri
We talked on the phone a couple weeks ago about the city-owned 25 acres on CR 104 and its relationship to the Aggie Research Campus project. Do I recall correctly that you said the City is not selling the 25 acres to the developer and that the 25 acres would be incorporated into the required ag buffer?

The drawing on the City's website does not show 25 acres of ag buffer around ARC, but only 150 feet.

Is the developer providing the land that would be the 150 ft ag buffer?

Is the City selling 150 ft ag buffer from the 25 acres to the developer?

--
Catherine Portman
Burrowing Owl Preservation Society
14841 CR 91 B
Woodland, CA 95695
burrowingowls.org

Aggie Research Campus

Scoping Meeting

December 2, 2019

COMMENT

From : ROBERT ROBERT <rcprindle@sbcglobal.net>
Sent: Monday, December 9, 2019, 03:46:04 PM PST
Subject: Re: To: City of Davis, Community Development and sustainability Department

On Monday, December 9, 2019, 3:05:59 PM PST,

Dec. 9.2019

Circumstances the have changed since Sept,19,2017: Traffic

Traffic has increased significantly and will increase more due to the new office buildings and the Hotel to the north of I 80 and west of the "Mace Curve" (Mace/ Covell Blvd.).

In addition, the anticipated closure of Road 32 A by the Railroad will bring even more traffic

The representatives of the proposed Aggie Research Campus project estimated the when built, the project will bring 10,000-12,000 car visits per day!!

A new traffic study should be done to realistically represent to the voters of Davis what the traffic will be like if the the Aggie Research Campus project is built. It would not be fair to create such a negative impact on the quality of life for the people of Davis without advance warning.!!

Robert Prindle

44794 County Road 30

Davis Calif 95618

Submit to

City of Davis
Planning Department
23 Russell Blvd.
Davis, CA 95616

From: Alan Pryor <ozone21@att.net>
Sent: Saturday, December 7, 2019 3:55 PM
To: Sherri Metzker <SMetzker@cityofdavis.org>
Subject: Comments on EIR Scoping

Ms. Metzker - Please consider the following Sustainability Recommendations for the ARC project to be submitted as comments to the scoping outreach. It is requested these Sustainability Recommendations be considered as "alternatives" when preparing the ARC Supplemental EIR

Thank you

Alan Pryor

Aggie Research Center (ARC) Working Group Recommended Project Sustainability Features Submitted as Scoping Comments for the Supplemental EIR - December 7, 2019

Note: The Aggie Research Center Working Group is an ad hoc committee of interested Davis environmentalists with experience in evaluating land use and planning issues in Davis. The Group has collaboratively developed this set of recommended sustainability features for the project and submitted them to the developer in November, 2019. With his knowledge, these recommendations are now formally submitted as scoping comments to the supplemental EIR for the purposes of evaluating desireable sustainability alternatives for the project.

I. SUSTAINABILITY PLAN

Functional Goal: Develop and implement a comprehensive Sustainability Plan and ensure sustainability commitments made in the Plan are embodied in the subsequent Development Agreement and implemented and maintained for life of project.

1. Mandatory, measurable and enforceable.

2. Equivalent in scope and detail to Nishi.

II. TRAFFIC REDUCTION/MITIGATION

Functional Goal: Provide incentive to shift modes to Bicycling, Public Transit, or 4+ car pool to reduce vehicle miles traveled (VMT), project total carbon footprint, and adverse level of service (LOS) traffic impacts on Mace Blvd Covell Blvd and I-80.

1) Install traffic counters to measure in and out traffic to development.

2) Tie phases in project build out to construction of improvements in transit and road improvements.

Phase 1 **–** i) Implement bus rapid (BRT) transit strategies on Mace/Covell for freeway access. Fund study and implementation of bus signal preemption system, ii) Investigate installation of rush-hour bus and HOV lane on the frontage road north of 80 to bypass on-ramp/off-ramp, iii) Implement on-demand electric transit to UCD and scheduled electric transit to Amtrak.

Phase 2 **–** Installation of bus/4+ HOV lanes on I-80 east and west of causeway.

Phase 3 **–** Causeway expansion by bus/4+ HOV lane east and west.

3) Transit stops located throughout complex to ease pedestrian access.

4) Implement a Transportation Demand Management Plan with measurable results to quantitatively shift away from Single Occupancy Vehicle (SOV) use.

III. HOUSING

Functional Goal: a) Provide workforce housing to address increased housing demand due to job creation, and b) Reduce VMT and adverse rush hour LOS traffic impacts.

1. All housing is high-density workforce housing / No single-family standalone homes.

2. Require employer master leasing or ownership of housing units and require employment for residency. Suggest look at Stanford University land ownership model,

company town models, Google and Facebook ownership/master leasing of apartments in Bay Area.

3. Phase housing construction to project's commercial build out.

IV. ENERGY EFFICIENCY AND USAGE

Functional Goal: Reduce energy use to minimize project net carbon footprint.

1. All electric building construction, gas allowed only for manufacturing processes

2. Zero net energy for building envelope and space conditioning and lighting with onsite PV and storage.

3. All structures designed for microgrid implementation with required conduits and wiring.

V. WATER CONSERVATION AND LANDSCAPING

Functional Goal: Reduce demand on groundwater and potable water.

1. All gray water reused onsite.

2. All landscaping adapted for climate change, drought resistant, pollinator friendly, and maintained organically.

3. All onsite storm water retained onsite using bioswales and other methods (not applicable to offsite storm flow onto the property).

VI. PARKING AND STREETS

Functional Goals: Encourage use of public transit, electric vehicles, and bicycling Provide convenient electric charging station to encourage electric vehicle use. Reduce run-off and heat island effect of parking lot. Reduce visual, aesthetic, and quality of life impacts of working/living near parking lot.

1. Transit access given priorities over auto parking.

2. Only high occupancy vehicle (HOV) and electric vehicle (EV) parking allowed adjacent to buildings with EV charging stations pre-installed (exceptions for handicap parking).

3. All more remote parking for single occupancy vehicles (SOV) is prewired to later install charging stations. Have plan to phase-in installation of more EV charging stations as EV charging demand grows.

4. All housing has one Level 2 EV charger and prewired for 2nd charger per unit

5. Paid parking for non-electric SOV for commercial parking. No discounts for monthly parking vs daily parking to encourage occasional bus use.

6. Enforceable landscape and PV shading plan to provide 80% shading of walkways and Class I bike paths and 50% parking lot shading in 15 years or imposition of penalties.

7. All parking surfaces utilizing tree shading use structured soil or suspended substrate to allow successful tree root development. Size pavement treatment area to match trees' intended ultimate tree size.

8. All streets and parking utilize permeable pavement.

From: Cathy Rasmusson <vtrents1@gmail.com>
Sent: Sunday, November 24, 2019 5:28 PM
To: Sherri Metzker <SMetzker@cityofdavis.org>
Subject: Environmental Impact

I received notice of scoping meeting in egards to "Aggie Research Campus Project". What research is being conducted? Are animals, water, or chemicals being used in the research projects?

Cathy Rasmusson
5063 Veranda Terrace
Davis, CA 95618

MEMO

TO: Sherri Metzker, Principal Planner
COPY: Ash Feeney, Assistant City Manager
FROM: Greg Rowe, Planning Commissioner
DATE: December 8, 2019
SUBJECT: Second SEIR Scoping Comments Memo - Aggie Research Campus (ARC) Project

Acronyms Used in this Memo:

ARC = Aggie Research Campus	LRDP = Long Range Development Plan	PD = Project Description
EPS = Economic & Planning Systems, Inc	LUP = Land Use Plan	R&D = Research and Development
F&P = Fehr & Peers (traffic engineers)	MRIC = Mace Ranch Innovation Center	SF = Square Feet
KDA = KD Anderson & Associates	NOP = Notice of Preparation	T&W = Taylor & Wiley

This comment memo is a follow-up to my comment memo dated 11-26-2019. It has been prompted by the Taylor & Wiley (T&W) letter dated 11-27-2019, in which it is stated that the ARC retains the basic land uses that were analyzed in the Mixed-Use Alternative chapter of the MRIC EIR certified by the City Council on 9-19-2017 through adoption of Resolution 17-125. The T&W letter goes on to say (page 2, paragraph 2): Because the Project is substantially similar in both nature and design to the MRIC Mixed-Use Alternative, we believe that the potential environmental impacts of ARC fall squarely within the envelope of impacts analyzed in the MRIC EIR, particularly those in Chapter 8 on the Mixed-Use Alternative…we are asking the City to rely on the certified MRIC EIR as the basis of the CEQA analysis for ARC."

Certification of the MRIC EIR was item 07 on the City Council agenda of 9-19-2017. The resolution certifying the EIR was on pages 5 – 8 of the staff report, and was approved as Resolution 17-125. As unanimously recommended by the Planning Commission on 7-19-2017, the Whereas on the top of page 7 of City Council Resolution 17-125 states the following:

> WHEREAS, on May 24 and July 19, 2017 the Planning Commission held two duly noticed public meetings to consider certification of the FEIR pursuant to Section 15090 of the State CEQA Guidelines, separate from any deliberation or action on the merits of the project, and voted to recommend certification to the City Council including a clarification on page 7-202 of the Draft EIR that the Mixed Use Alternatives is only environmentally superior assuming a legally enforceable mechanism regarding employee occupancy of housing; specifically that at least one employee occupies 60 percent of the 850 on-site units;

It therefore seems on this basis that the equal weight Mixed-Use Alternative that will form the basis of the SEIR analysis must explicitly assume that the conditions of this Whereas are taken into account; i.e., the Mixed Use Alternative must assume that at least one employee of an ARC employer shall reside in 60 percent of the 850 housing units. This would mean that at least 510 of the 850 housing units must be occupied by at least one person working within the boundaries of the ARC in order for a valid analysis to be performed of the potential environmental impacts, including but not limited to air quality, greenhouse gas emissions, transportation and vehicle miles traveled (VMT).

This is an important consideration, as pointed out in an attachment to the staff report to the City Council meeting of 9-19-2017 (Attachment A – Mixed Use Alternative and Employee Housing), pages 29 – 32 of agenda item 07. As stated in the third paragraph on page 07-30,

> As stated above, the analysis shows that the Mixed-Use Alternative continues to provide traffic, VMT and GHG reduction benefits as long as 60 percent of the units are occupied by one employee of the center. Said a different way, the Mixed-Use Alternative is environmentally superior to the project as long as at least approximately 23 percent of the estimated number of residents living in the MRIC housing also work at the site.

Below is another important excerpt regarding the environmentally superior alternative, from page 07-31 of Attachment A (third paragraph), which should be addressed in the SEIR analysis.

> "…as compared to the project, this alternative will achieve reductions in daily VMT and GHG emissions, lower AM and PM peak hour vehicle trips, fewer impacts at Mace Boulevard, and elimination of impacts related to population and housing (see Table 7-7), assuming the execution of a legally enforceable mechanism to ensure that at least 60 percent of the on-site units would be occupied by at least one MRIC employee. This minimum occupation estimate is based on sensitivity testing performed by Fehr & Peers."

In contrast to the provisions of Resolution 17-125, however, the ARC Project Description that currently appears on the City website does not reference the 60 percent criteria stipulated in the resolution and discussed in Attachment A. The Phasing section of page 13 of the PD merely states that "Housing will be permitted on the ARC site at a ratio of one unit for every 2,000 square feet of nonresidential development" so as to maximize the likelihood that employees at the ARC will occupy the units, thereby maximizing the environmental benefits of including housing at the ARC. But, in what is seemingly a hedging effort, this section of the PD concludes by stating "However, the housing at ARC will not be restricted to employees only but will, consistent with Fair Housing requirements, be available to the community at large." This statement seems to be at odds with the 60 percent on-site residency requirement in Resolution 17-125.

The preceding information leads to some pertinent questions that need to be addressed in the SEIR and through other mechanisms, including:

1. What if “the community at large” occupies so much of the available housing units that it is not possible for 60 percent of the units to be occupied by at least one person who works for an ARC employer? In other words, what if becomes impossible for at least 510 of the 850 units to be occupied by at least one employee of an employer located at the ARC?

2. Given the residential construction phasing provisions outlined in the PD and in the T&W letter, how will the 60 percent goal be monitored and achieved? Would it be a requirement that each phase of housing must meet the 60 percent requirement, or would this requirement only go into effect after the last of the 850 units has been constructed and certified for occupancy?

3. What legally enforceable mechanisms have been identified for meeting the 60 percent employee occupancy requirement that is one of the provisions of Resolution 17-125? Will the SEIR identify the available mechanism(s) or will that information be produced through an analysis and document separate from the SEIR?

Comments and Concerns regarding ARC/MRIC Supplemental EIR Scoping

1) A new EIR is needed for the ARC project, not merely a "supplemental" EIR, because the new proposal is substantially different from the MRIC proposal.

A) The ARC project is substantially different from the MRIC project.

a) At the time of the EIR certification the staff stressed that there was only one project under consideration, and that was the 100% business park proposal.

b) The mixed-use alternative, as stated by staff, was done to inform the city's decision of the project that was originally proposed, and *not* as a project proposal.

c) According to Heidi Tschudin, the MRIC project being EIR certified was the 100% business park proposal as "originally submitted" (Note: see video tape below of this statement by Ms. Tschudin at the Sept. 19, 2017 City Council MRIC EIR certification hearing at 59:50).

B) The MRIC mixed-use alternative did *not* have a legitimate equal weight analysis.

The mixed-use alternative was not analyzed at an equal weight. Trying to simply claim it is "equal weight" does *not* make it reach the standards required under CEQA.

2) The MRIC EIR for the mixed-use alternative was dependent upon at least 60% of the 850 housing units being occupied by at least one MRIC (now ARC) employee.

In 2017 the Planning Commission made clear that the MRIC EIR had to meet two conditions (see below language, including screen shot) for the MRIC EIR to be approved for certification and in order to assume that the mixed-use alternative would be "the Environmentally Superior Alternative" and its analysis to be acceptable. This was covered by City Staff at the Sept. 19, 2017 City Council meeting. The screen shot of the Planning Commission's position reads:

Clarification Regarding Environmentally Superior Alternative

- Planning Commission recommended clarification to page 7-202 of Draft EIR

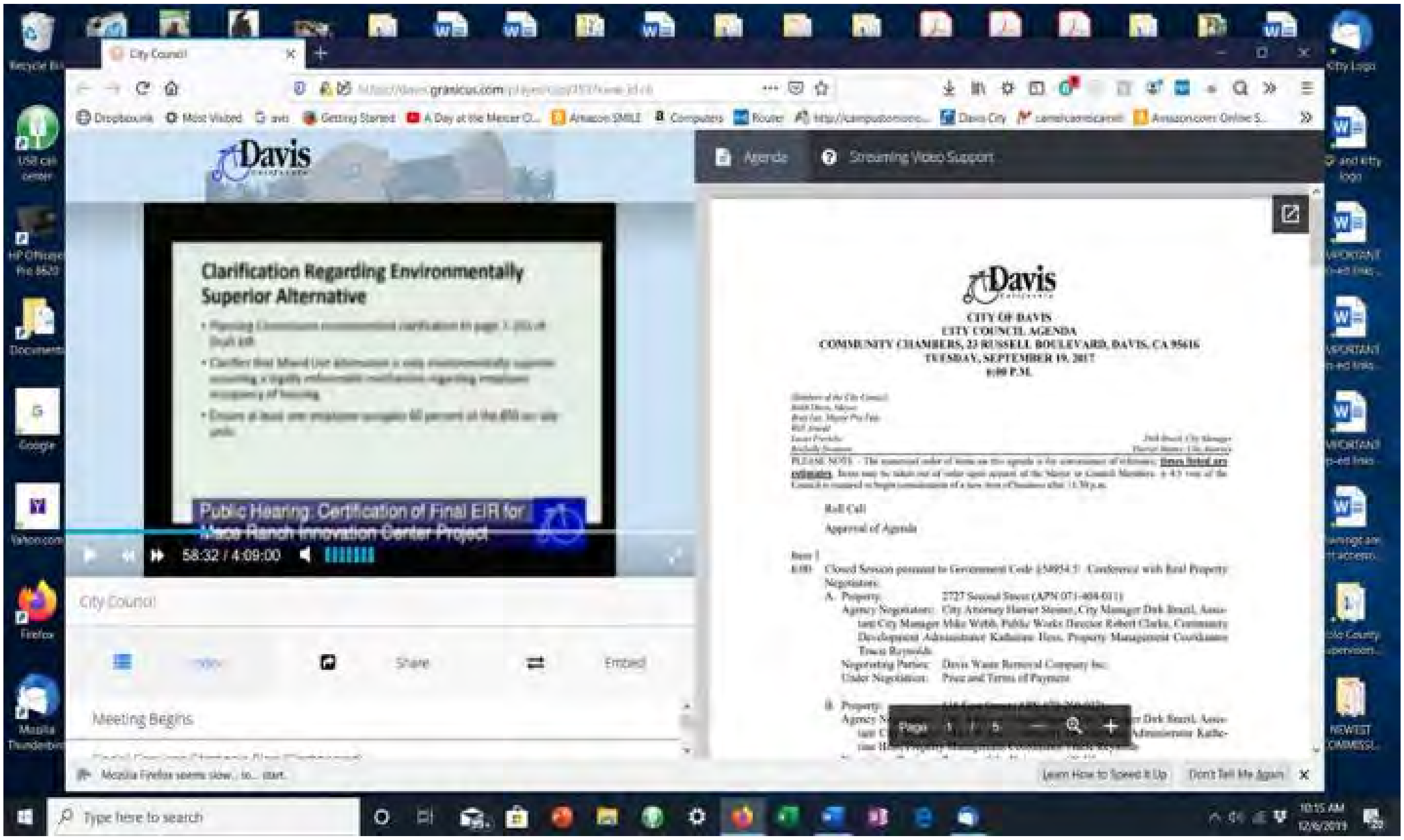
- Clarifies that Mixed-Use Alternative is only environmentally superior assuming a legally enforceable mechanism regarding employee occupancy of housing

- Ensure that at least one employee occupies 60% of the 850 on-site units

The weblink for the video for this Sept. 19, 2017 City Council meeting with this MRIC EIR item starting at 50:45 is at: https://davis.granicus.com/player/clip/753?view_id=6

is at: https://davis.granicus.com/player/clip/753?view_id=6

This Planning Commission summary slide is presented at the 58:40 time interval:



Since there is no enforceable mechanism offered by the developers to ensure that 60% of the 850 housing units, the mixed-use analysis from the earlier (pre-maturely) certified MRIC EIR is invalid. Therefore, a new EIR is required for the vastly different ARC project, not simply a supplemental EIR added to an invalid MRIC mixed-use EIR. This housing occupancy clearly would significantly increase the impacts of the project in many ways including traffic, circulation parking needs, etc.

In fact, *contrary to this condition*, the developers have stated that they are not placing any restrictions on the housing. Note on page 13 of the ARC Project Description that it states that “the ARC housing will not be restricted to employees only”. Now while the term "only" is included, at the same time *there is no explanation of how the 60% employee occupancy is to be achieved,* which is a condition for the EIR to be valid.

https://www.cityofdavis.org/home/showdocument?id=14159

"The housing is planned to include a variety of mixed-use, rental, and for-sale residential options catering to the needs and demands of innovation center employees. However, the housing at ARC will not be restricted to employees only but will, consistent with Fair Housing Act requirements, be available to the community at large."

Furthermore, there would need to be a stipulation that UCD students cannot be considered ARC "employees" in any capacity (volunteer, intern, extern, or paid position) to count toward the requirement for the minimum of 60% of the housing units being ARC workforce "employees". Otherwise, the ARC housing becomes completely susceptible to having a significant number of UCD students being housed, which would increase traffic and circulation impacts due to students needing to also commute to and from UCD frequently. The MRIC EIR is dependent upon 60% of its housing units being occupied by at least one employee living and working on-site (i.e. *not* also needing to commute to and from UCD frequently like the students) to *reduce* traffic and circulation impacts for its certification to be "valid".

3) A new cumulative impacts analysis must be done that includes all recently approved housing projects as well as all projects that have been submitted.

Is the proposal to just do a supplemental EIR an effort to try to avoid this analysis? There are a number of additional large residential and commercial projects in the City that have been approved since the MRIC EIR was certified. Traffic and circulation have changed with significant increases due to new issues like commuters use of the WAZE app diverting traffic off I-80 to other peripheral routes including onto Mace Blvd. for drivers to avoid I-80 back-ups. Plus, now the Mace mess issue on the south side of Mace Blvd. is only compounding the situation. The cumulative impacts study must be done <u>first</u> as well as the fiscal analysis. The cumulative impacts to be included, but not limited to are impacts on traffic, circulation, water, waste water treatment, flood control, and City services particularly fire and police.)

4) The circulation plan must (a) acknowledge the need for, and (b) disclose the location of a grade separated crossing of Mace Blvd.

a) There is an unimproved corridor of vacant land that runs from the Del Valle Place cul-de-sac in Lake Alhambra Estates all the way to Mace Blvd (running along the northern property line of the residential development to the south of Harper Junior High and the northern property line of the new Nugget business center).

b) There are more proposed dwelling units in ARC than in the Cannery project. There was a demand made over and over again for *two* grade separate crossings for that project. There should be *at least* one grade separated crossing to the ARC site.

5) **This new ARC mixed-use project, as proposed, is a high-density housing project with window-dressing commercial**. The original intent of this tech park was to bring revenue to the City. The "bait-and-switch" proposes to shoe-horn in 850 units into this parcel which is much smaller than the original. This just diminishes the revenue that the project would potentially yield since a significant amount of land is being for the housing instead of being focused on commercial. In turn, the housing would bring significantly more costs to the City long-term, in contrast to commercial development which brings typically bring far more revenue than costs.

In the end, the City would gain much less revenue and wind up with more costs to further offset the revenue, as well as significantly more impacts due to this ultra-high-density housing ARC proposal. The “shoe-horn” design of the project due to the enormous amount of housing it is trying to include is hideous, resembling an “ant farm”, *not* an attractive tech park.

(Note: Let’s not forget that at one time the city was promoting the need for *two* 200-acre tech parks and there were serious discussions that the 400 acres was not enough. So, now, the ARC proposal is on a 187-acre parcel with an enormous amount of housing taking up valuable land which should, instead, be devoted entirely to revenue generating commercial. The entire argument of “housing on site” as a vital component to support the tech park is disingenuous at best particularly since there is *no* mechanism offered to implement that 60% of the housing units having occupancy by at least one ARC employee long-term. In addition, the fact that the Signature proper inside the curve could provide housing directly across the street from the ARC, makes it even more clear that the ultra-high-density housing proposal in the mixed-use project should, instead, be used for commercial development,

Furthermore, remember that former Mayor Davis has already stated in open public hearing that the developers – just prior to suspending their MRIC application – said they needed housing, a CFD, and ag mitigation on city-owned land in order to make the project financially attractive enough for them to proceed. If the proposed innovation center is really this fragile, maybe the city and voters need to rethink the need for the project.

6) The fiscal analysis of the ARC mixed-use proposal with 850 housing units needs to be analyzed *first* before doing any more EIR analysis. Since housing typically brings more and more costs to the City with time (particularly after 10-15 years), it needs to first be determined *if* there is a fiscal benefit to the 850-housing unit ARC mixed use project. And *if* there is a “cost benefit” to the ARC mixed-use project it is important compare just *how much* the net revenue is relative to the significant housing costs that the ARC mixed-use project would bring long-term. Then, of course, the recognition of the significant impacts of such an enormous project also needs to be considered to determine if the project is worth all the impacts to the City and its citizens.

7) The industrial development of the ARC proposal should be contiguous, *not* split into two separate business parks.

a) The current land plan is a housing development with two separate business parks which is an illogical, inefficient and simply very bad design. The commercial component needs to have a logical design of being contiguous, being concentrated in one section in the south end of the project closer to I-80.

b) Splitting the industrial land will hamper the buildout of the northern industrial park, setting the stage for the developer to come back and apply to the City convert the commercial land to yet more housing. The Ramos developer group has a history of “bait -and-switch” and the City has a responsibility to not be gullible enough to be complicit in allowing such poor planning with such vulnerability for a future land use change from the needed revenue generating commercial to housing (i.e. the reality is that high-density housing ultimately brings more costs than revenue in the long run.)

c) Any on-site housing needs to be concentrated entirely on the north end of the project adjacent to the city-owned open space.

8) The ag buffer needs to be reconfigured so that it falls exclusively on the developer's property.

a) It makes *no* sense for the bulk of the city's property to fall inside the ag buffer.

b) The city's property was paid for by open space taxes paid by Davis residents, however, the current proposal looks like there is a hidden plan to urbanize the city property. The city should not be subsiding this, or any private development, particularly with tax-payer's money.

9) Prior to any consideration of ARC, the city must make a clear policy statement that *no city property* (either 6.8 acres of the 25-acre parcel, or any portion of Howitt Ranch) will be used for ag buffer or the ag mitigation requirements.

10) Any housing at ARC must fully meet the residential parking ordinance.

a) The developers should not be allowed to escape the City's parking ordinance in their effort to avoid the negative political optics of their parking requirements

b) If there is residential development at ARC, a parking structure should be required – similar to Nishi and Sterling, but with ample parking for employee needs. Employees, particularly with children, need to have a car to provide transportation for their own needs, and the needs of their kids (i.e. school, medical appointments, sports and other activities.)

11) There needs to be clarity on the relationship between the proposed ARC project and UCD.

The terms "Aggie" and that it is a "Campus" insinuate a relationship, but is there? There is nothing in the public record clarifying if there is any formal relationship between ARC and UCD. This project has *no* business implying that it is related to UCD to try to garner political favor with the public support the project. Why not Davis Research Park?

A further concern is in regard to the apparent goal of ARC desiring to make UC one of the first anchor tenants per the EPS contract Task #3:

From Oct. 8, 2019 CC meeting regarding the contract for ARC EPS fiscal study:

EPS – Task #3 (Staff report page 05A-17)

"Particular attention will be given to senarios where UC as an early tenant, and potential catalytic and other effects this may have in terms of project economics."

a. This raises the issue of are any UC or UCD or any other non-profit entity tenant going to be allowed to get away with not paying taxes to the City due to ther non-profit status? This would certainly impact the fiscal analysis. Will there be a "make whole" provision for any of this type of tenant for leasing or purchase? How much land would UC/UCD potentially control?

b. This is to reiterate the concern of UCD attempting to use the ARC for more UCD student housing and then ARC attempting to count UCD students at part of their 60% "workforce" housing requirement.

c. In turn, UCD uses at ARC would inevitably create more traffic and circulation impacts due to the frequency of trips between UCD and ARC by any UCD employees or potentially students) who would be residents at ARC, even if their primary workplace would be at a UCD facility located at ARC.

12) The proposed housing should *not* be accelerated to being built in Phase 1.

a) In the MRIC proposal, housing was proposed to start in Phase 2 (**300 units**) – in the ARC proposal this is accelerated to Phase 1 (**270 units** followed by **350 units** in Phase 2, for a total of **620 units**).

b) The phasing of housing in the MRIC proposal was intended to require the developers to demonstrate a good faith commitment to create jobs before any housing development was allowed (this provision was insisted on by the city council). There is currently no such commitment in the ARC proposal (note: see details below).

c) MRIC phasing proposal as compared to ARC phasing proposal (from the City documents online):

MRIC phasing proposal:

See MRIC DEIR – Chapter 8 – Page 2

Phasing:

Similar to the proposed project, the Mixed-Use Alternative is anticipated to be built out in four phases. In addition, Phase 1 of the proposed project is the same as Phase 1 of the Mixed-Use Alternative. As illustrated in Figure 8-10, Phase 1 is anticipated to consist of approximately 45 acres in the southern portion of the site. Phase 1 is estimated to contain approximately 540,000 sf, which will include 400,000 sf of research/manufacturing space to accommodate the expansion needs of Schilling Robotics, and 140,000 sf of research/office/R&D development which may incorporate ancillary retail of up to 40,000 sf to serve the convenience needs of the innovation center employees. Two access points would be provided for Phase 1: 1) an enlarged intersection at Mace Boulevard and Alhambra Boulevard, and 2) a new southern access point, which would connect to CR 32A, east of the existing park-and-ride lot driveway. The two roadways would connect within the site thereby linking Phases 1A and 1B and creating through-site circulation for vehicles and pedestrians alike. In addition, Phase 1 would include the Transit Plaza which would serve as the focal point of the phase. *Workforce housing is not anticipated as part of Phase 1 but instead would be gradually introduced after the innovation center is established and* *tech employees are actively working on-site causing a demand for housing proximate to their jobs.*

Once established, subsequent phases are anticipated to fill in the project's central core and then move north and east. The proposed development pattern represents a logical sequencing with structures gradually extending from the current urbanized area out toward the City's new urban boundary, although the exact pattern of build-out would be driven by user demand and infrastructure costs.

Phase 2 is anticipated to comprise approximately 29 acres located south of the MDC. The central feature of Phase 2 would be the "Oval" park which is a defining component located adjacent to Mace Boulevard. Total office/commercial square footage for the second phase is projected to be 700,000 sf, including the proposed hotel/conference center, various research/office/R&D centered on the Oval park, and additional ancillary retail space. In addition, *Phase 2 includes the initial offering of up to **300** workforce housing units*, designed to allow those individuals working at the center to live in close proximity to their jobs. The housing is planned to include a variety of mixed-use, rental, and for-sale residential options catering to the needs and demands of innovation center employees.

ARC phasing proposal:

See ARC Project Description – Pages 13-14

*Phase 1 of the proposed Project is anticipated to consist of approximately 45 acres in the western portion of the site and will include 540,000 sf of nonresidential building space and up to **270** residential units comprised of single- and multi-family housing types*. Construction of the residential units will be timed to slightly trail the commercial development so that jobs are created onsite prior to offering housing. Housing will be permitted at the ARC site at a ratio of one unit for every 2,000 square feet of nonresidential development. The goal, if possible, is to time the availability of the homes to be concurrent with the creation of the jobs so that it maximizes the likelihood that employees at the Campus will occupy the units thereby maximizing the environmental benefits of including housing at ARC. The housing is planned to include a variety of mixed-use, rental, and for-sale residential options catering to the needs and demands of innovation center employees. However, the housing at ARC will not be restricted to employees only but will, consistent with Fair Housing Act requirements, be available to the community at large.

Two vehicular access points would be provided for Phase 1: 1) an enlarged intersection at Mace Boulevard and Alhambra Boulevard, and 2) a new southern access point, which would connect to CR 32A, east of the existing park-and-ride lot driveway. The two roadways would connect within the site thereby creating through-site circulation for vehicles and pedestrians alike. In addition, Phase 1 would include the Transit Plaza which would serve as the focal point of the phase.

Phase 2 is projected to be 700,000 sf of commercial structures, including the proposed hotel/conference center, various research/office/R&D proximate to the Oval park, and additional ancillary retail space. Phase 2 also includes the up to **350** workforce housing units, continuing the direct linkage between the creation of jobs and the construction of homes. The central feature of Phase 2 would be the "Oval" park which is a defining component of the Project located adjacent to Mace Boulevard.

13) The developers claim that they will produce housing that is affordable", but where is the data on what the developers are considering "affordable" at the ARC project? For the market rate units? Also, what percentage of the units would be legally affordable housing for lower income people who qualify for affordable housing?

14) The traffic and circulation patterns of the ARC mixed-use project, due to the massive housing component of 850 units, would significantly impact this vicinity of the City. Since this ARC project would be situated just off an already heavily impacted I-80 exit, this Mace overcrossing vicinity is already heavily impacted by the highway exiting traffic, the Target shopping center and soon to add to the impacts will be the Marriott's Hotel, as well as the Nugget home office business park traffic when they are completed. This point is raised to re-emphasize the importance of doing cumulative impacts analysis *first*.

15) Based upon the many problems that the ARC mixed-use proposal presents including: a) the expected long-term costs that the 850 high density units would bring, b) the fact that the developers have no mechanism to ensure that at least 60% of the housing units would be occupied by at least one legitimate ARC employee (i.e. not becoming more UCD student housing), and c) the enormous traffic and circulation problems it would bring, **only an entirely commercial park as first proposed should be considered, or no project.** Housing for a commercial-only park could potentially be provided by the nearby Signature property.

Shawn Smallwood, PhD
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Sherri Metzker, Principal Planner
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Davis, CA 95616
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16 December 2019

Re: Aggie Research Campus

Dear Ms. Metzger,

I write to comment on the scoping phase of the proposed Aggie Research Campus, which I understand would convert 185 acres of farmland into residential, office, and industrial uses, including renewable energy generation and storage. I wish to comment on impacts to wildlife posed by renewable energy generation, and on habitat loss to burrowing owl, Swanson's hawk, and other special-status species of wildlife.

My qualifications for preparing these comments are the following. I earned a Ph.D. degree in Ecology from the University of California at Davis in 1990. My research has been on animal density and distribution, habitat selection, habitat restoration, interactions between wildlife and human infrastructure and activities, conservation of rare and endangered species, and on the ecology of invading species. I performed research and monitoring of wildlife impacts at renewable energy projects for 20 years, and I have authored many peer-reviewed reports, papers, and book chapters on fatality monitoring, fatality rate estimation, mitigation, micro-siting, and other issues related to biological impacts of wind energy generation. I served for five years on the Alameda County Scientific Review Committee (SRC) that was charged with overseeing the fatality monitoring and mitigation measures in the Altamont Pass Wind Resource Area (APWRA), and I prepared many comment letters on proposed renewable energy projects. I collaborate with colleagues worldwide on the underlying science and policy issues related to renewable energy impacts on wildlife. I have also performed research on Swanson's hawks for 30 years, and research on burrowing owls for 20 years, having published multiple papers on each species.

Renewable Energy

I am unaware of any evidence that distributed generation of renewable energy causes harm to wildlife, such as rooftop solar or wind turbines smaller than 2 KW, but I have witnessed firsthand the impacts of industrial-scale renewable energy generation. I have supervised fatality monitoring at wind projects. I used a thermal-imaging camera to perform more than 1,000 hours of nocturnal surveys of bats and birds flying into and around wind turbines, including too many actual collisions and many changes in flight direction and height above ground. I performed >1,500 hours of diurnal visual-scan surveys of wildlife around wind turbines, and I supervised thousands of additional hours of such surveys. I have also analyzed fatality data from all over North America. Industrial-scale wind turbines and solar panels, such as those depicted in the ARC Aerial Perspective Exhibit and an architect's rendering in a Davis Enterprise article (authored by Felicia Avarez), cause injuries and fatalities to many birds and bats, and add energetic costs to volant animals attempting to avoid collision.

Bats are attracted to wind turbines (Kunz et al. 2007, Horn et al. 2008, Cryan et al. 2014, Smallwood unpublished data), which helps explain my estimate of nearly 1 million bat fatalities per year in the USA in 2012 (Smallwood 2013). Since 2012, however, installed capacity of wind energy in the USA has doubled to 100,125 MW (https://www.awea.org/wind-101/basics-of-wind-energy/wind-facts-at-a-glance, last accessed 8 December 2019), and so it is likely that bat impacts have also doubled. With the doubling of installed capacity since 2012, bird fatalities are likely now in the millions annually (Smallwood 2013). Wind turbine impacts coupled with habitat loss and other anthropogenic causes have resulted in a 29% loss of bird abundance across North American over the last 48 years (Rosenberg et al. 2019).

Bat fatalities caused by wind turbine collisions could be substantial at the project site, because a very large colony of Mexican free-tailed bats roosts under the Yolo Causeway bridge (Photo 1). Mexican free-tailed bats are well documented as vulnerable to wind turbine collisions, and I have seen them collide with turbines and I have found them dead and injured under wind turbines, sometimes up to 6 at a time. Mexican free-tailed bats roosting under the Causeway bridge can arrive at the project site within minutes, as the site is very close to the Causeway and bats fly very fast. Mexican free-tailed bats are attracted to wind turbines, so they would fly to any turbines installed on the project site. The project's impacts on bats could be devastating.

Regarding industrial-scale solar projects, such as the PV arrays depicted in the Davis Enterprise article, I recently obtained a large collection of data and fatality monitoring reports from industrial solar projects. I independently estimated fatality rates of birds at three of the projects so far (Smallwood, unpublished data). I found surprisingly high avian fatality rates caused by birds colliding with the panels – not just waterbirds resulting from the so-called "Lake Effect," but all types of birds, including raptors. If industrial-scale solar projects are going to be constructed on site, then City of Davis needs to consider the perpetual bird impacts that will follow.

Wind turbines also kill Swanson's hawks – a species listed as Threatened under the California Endangered Species Act – and large numbers of burrowing owls (Smallwood et al. 2007, 2013). To help minimize impacts of renewable energy, diurnal and nocturnal behavior surveys are needed to characterize bird and bat flight patterns in the project area. Careful siting of renewable energy facilities is the most effective mitigation strategy (Smallwood et al. 2017), and one that needs to be considered here.

Photo 1. Some of the many thousands of Mexican free-tailed bats leaving the west end of the Yolo Causeway Bridge for foraging.

Swanson's hawk

The project site is located in the heart of the highest-density of Swanson's hawks in California (CDFW 2016, Battistone et al. 2019). It typifies the environment where Swaionson's hawks forage (Smallwood 1995, Estep 2008, Swolgaard et al. 2008). An analysis of project impacts on Swanson's hawks is needed, along with appropriate mitigation. The mitigation guidelines of the California Department of Fish and Wildlife need to be followed.

Burrowing owl

Burrowing owls are known to occur at the project site. In fact, the site hosts one of the last small aggregations of burrowing owls in the Davis area. Through a series of decisions made by the Davis City Council, burrowing owls in the Davis area have nearly been extirpated. The owls on the Wildhorse Golf Course and the adjoining Agricultural Buffer were reduced to a single pair in the breeding season of 2019, and I saw no evidence that this pair produced any chicks this year. The City not only abandoned the maintenance of artificial burrows that had been installed years ago, but the shrubs and trees planted since then have grown to heights that are incompatible for burrowing owls.

A breeding colony of burrowing owls once occupied Mace Ranch Park, until RAMCO disked the field they were using and the City Council decided that a mere 3-acre reserve would suffice. It did not, and the burrowing owls were extirpated from Mace Ranch Park within a few years afterwards. What is happening in the Davis area is indicative of what is happening statewide – burrowing owls are rapidly declining (DeSante et al. 2007). Burrowing owls require lots of open space, including sufficient space for relocating from breeding season territories to winter foraging areas (Smallwood et al. 2013 and unpublished data). Burrowing owls also need the burrows and mutual alarm-calling of California ground squirrels (Smallwood and Morrison 2018). The project would eliminate substantial habitat space as well as the ground squirrels needed by burrowing owls to persist.

At a minimum the project needs to implement the detection survey protocol and mitigation guidelines of CDFG (2012). But much more is needed to prevent the extirpation of burrowing owls from the Davis area and Yolo County altogether. The Davis City Council needs to take burrowing owl conservation seriously or future generations of Davisites will no longer be able to see members of this iconic species.

Thank you for your attention,

Shawn Smallwood

Shawn Smallwood, Ph.D.

REFERENCES CITED

Battistone, C. L., B. J. Furnas, R. L. Anderson, J. L. Dinsdale, K. M. Cripe, J. A. Estep, C. S. Y. Chun, and S. G. Torres. 2019. Population and Distribution of Swainson's Hawks (Buteo Swainsoni) in California's Great Valley: A Framework for Long-Term Monitoring. Journal of Raptor Research 53:253-265.

CDFW (California Department of Fish and Wildlife). 2016. Status Review: Swainson's Hawk (Buteo swainsoni) in California. Five-Year Status Report. Sacramento, California.

Cryan, P. M., P. M. Gorresen, C. D. Hein, M. R. Schirmacher, R. H. Diehl, M. H. Huso, D. T. S. Hayman, P. D. Fricker, F. J. Bonaccorso, D. H. Johnson, K. Heist, and D. C. Dalton. 2014. Behavior of bats at wind turbines. Proceedings National Academy of Science 111:15126-15131.

DeSante, D. F., E. D.Ruhlen, and R. Scalf. 2007. The distribution and relative abundance of burrowing owls in California during 1991-1993: Evidence for a declining population and thoughts on its conservation. In Barclay, J. H., K. W. Hunting; J. L. Lincer, J. Linthicum, and T. A. Roberts, Eds.; Proceedings of the California Burrowing Owl Symposium, November 2003. Bird Populations Monographs No. 1.

The Institute for Bird Populations and Albion Environmental, Inc.: Point Reyes Station, CA, USA.

Estep, J. A. 2008. The Distribution, Abundance, and Habitat Associations of the Swainson's Hawk (*Buteo swainsoni*) in Yolo County. Report to Yolo Natural Heritage Program, Woodland, California.

Horn, J. W., E. B. Arnett, and T. H. Kunz. 2008. Behavioral responses of bats to operating wind turbines. Journal of Wildlife Management 72:123-132.

Kunz, T. H., E. B. Arnett, W. P. Erickson, A. R. Hoar, G. D. Johnson, R. P. Larkin, M. D. Strickland, R. W. Thresher, and M. D. Tuttle. 2007. Ecological impacts of wind energy development on bats: questions, research needs, and hypotheses. Frontiers in Ecology and the Environment 5:315-324.

Rosenberg, K. V., A. M. Dokter, P. J. Blancher, J. R. Sauer, A. C. Smith, P. A. Smith, J. C. Stanton, A. Panjabi , L. Helft , M. Parr, and P. P. Marra. 2019. Decline of the North American avifauna. Science 10.1126/science.aaw1313 (2019).

Smallwood, K.S. 1995. Scaling Swainson's hawk population density for assessing habitat-use across an agricultural landscape. J. Raptor Research 29:172-178.

Smallwood, K. S. 2013. Comparing bird and bat fatality-rate estimates among North American wind-energy projects. Wildlife Society Bulletin 37:19-33. + Online Supplemental Material.

Smallwood, K. S. and M. L. Morrison. 2018. Nest-site selection in a high-density colony of burrowing owls. Journal of Raptor Research 52:454-470.

Smallwood, K. S., and L. Neher. 2017. Comparing bird and bat use data for siting new wind power generation. Report CEC-500-2017-019, California Energy Commission Public Interest Energy Research program, Sacramento, California. http://www.energy.ca.gov/2017publications/CEC-500-2017-019/CEC-500-2017-019.pdf and http://www.energy.ca.gov/2017publications/CEC-500-2017-019/CEC-500-2017-019-APA-F.pdf

Smallwood, K. S., L. Neher, and D. A. Bell. 2017. Siting to Minimize Raptor Collisions: an example from the Repowering Altamont Pass Wind Resource Area. M. Perrow, Ed., Wildlife and Wind Farms - Conflicts and Solutions, Volume 2. Pelagic Publishing, Exeter, United Kingdom. www.bit.ly/2v3cR9Q

Smallwood, K. S., L. Neher, J. Mount, and R. C. E. Culver. 2013. Nesting Burrowing Owl Abundance in the Altamont Pass Wind Resource Area, California. Wildlife Society Bulletin: 37:787-795.

Smallwood, K. S., C. G. Thelander, M. L. Morrison, and L. M. Rugge. 2007. Burrowing owl mortality in the Altamont Pass Wind Resource Area. Journal of Wildlife Management 71:1513-1524.

Swolgaard, C. A., K. A. Reeves, and D. A. Bell. 2008. Foraging by Swainson's hawks in a vineyard-dominated landscape. Journal of Raptor Research 42:188-196.

From: Colin Walsh <colintm@gmail.com>
Sent: Wednesday, November 27, 2019 5:08 PM
To: Ashley Feeney <AFeeney@cityofdavis.org>; Mike Webb <MWebb@cityofdavis.org>; Sherri Metzker <SMetzker@cityofdavis.org>
Subject: Re: ARC Notice of Scoping Meeting Questions

Thank you Ash,
Please pass my regards on to your team. I appreciate their efforts. Maybe next time the City should pick a better date not after a holiday weekend.

As to the legal question perhaps you misunderstand. You said the scoping was voluntary, but what you did not address is why after deciding to do a NOP and scoping the city feels it can do less than is legally required in an NOP and scoping.

Best regards,
Colin

On Wed, Nov 27, 2019 at 5:02 PM Ashley Feeney <AFeeney@cityofdavis.org> wrote:

Hi Colin,

The applicant delivered a letter and two associated comparative exhibits today. Our team was able to get them uploaded to our webpage for the project before the holiday closure. Here is the link where you will find the uploaded materials:

https://www.cityofdavis.org/city-hall/community-development-and-sustainability/development-projects/aggie-research-campus

In my email yesterday I attempted to layout the legal requirements and why a scoping meeting for the supplemental is not required. Our CEQA consultant can expand on this at the scoping meeting on Monday. I'm going to sign off for the holiday but wanted to ensure you were notified that the comparative exhibits were delivered and posted as I had committed.

I hope you have a good Thanksgiving too.

Thanks,

Ash

Sent from my iPhone

On Nov 27, 2019, at 1:33 PM, Colin Walsh <colintm@gmail.com> wrote:

Ash,
Thank you for your speedy reply.
Please do keep me apprised of any new information.

I have one more question. You have repeatedly emphasized in your emails the voluntary nature of the scoping meeting that the City is doing on this project. Can you please cite the legal authorities that advise that once the City has decided to undertake a NOP and scoping meeting, (voluntary or otherwise) that it has the authority to short cut the legal requirements (such as proper notice or including a project description) for that NOP and scoping?

Have a good thanksgiving,
and thank you again,
Colin

On Wed, Nov 27, 2019 at 5:28 AM Ashley Feeney <AFeeney@cityofdavis.org> wrote:

Hello Colin,

The applicant has proposed a project that is to be consistent with the project that was analyzed under the mixed-use alternative. We are beginning the CEQA analysis not concluding it with this voluntary scoping meeting. After the public review draft supplemental EIR is complete, there will be a 45-day public review period on the actual document.

The potential impacts related to the level of intensity and overall development area for ARC (excluding the Mace 25) are to be consistent with the mixed-use alternative that is part of the certified EIR for MRIC. The supplemental EIR is to examine conditions that have changed since the time the EIR was certified in 2017 relative to the potential impacts that were previously analyzed.

I have previously requested that the applicant submit a comparison of the ARC proposal to the MRIC mixed-use alternative proposal. Upon receiving it, it will be posted and distributed. I don't see this as a requirement for scoping given that the level of development is to be consistent with what was previously evaluated. As I mentioned earlier, the project is to remain consistent with the overall square footage and unit count that was previously analyzed. The focus of the scoping is about potential changed environmental conditions since the time the mixed-use alternative in the MRIC certified EIR was analyzed.

The project layout, site planning considerations and overall merits will be reviewed and discussed at public meetings. It is likely that there will be changes during the course of review which is common when reviewing development proposals. As long as none of the changes during the process result in an inconsistency with the level of intensity (overall level of square footage, land area, and unit counts) that was previously analyzed, site planning changes can happen throughout the review process.

Thank you for your interest in the project and as new information comes available, it will be shared on our website. Our planning consultant will be making a brief presentation at the beginning of the meeting on Monday further explaining the supplemental EIR scope and process. They will be available to explain process and answer questions throughout the meeting as well. The applicant will also have representatives there to answer questions about the project.

Thank you,

Ash

Sent from my iPhone

On Nov 26, 2019, at 11:22 PM, Colin Walsh <colintm@gmail.com> wrote:

Ash Mike and Sherri,
Thank you for your email. It raises some specific follow up questions.

You state in your email, "...the notice for the scoping meeting was not an official NOP... and did not include a detailed project description it was not determined necessary to do so given that the proposed Aggie Research Campus project is very similar in scope to the Mixed-Use Alternative that was evaluated in the MRIC EIR." What project description for the new ARC project did the City use to determine the "Aggie Research Campus project is very similar in scope to the Mixed-

Use Alternative"? What standard of similarity was used? is there a check list or table the City used in comparison?

Please provide the ARC project description the City used to determine similarity to the Mixed-Use Alternative. I expect this project description to be provided ASAP given the extremely short time the city has allowed for scoping and the fact that you should have it readily available since the City considered it to determine similarity. Frankly it should have been attached to the NOP as would be standard practice.

Please provide any documentation, work sheet, comparison tables or emails where the City did the comparison between the ARC project and the Mixed-Use alternative from the earlier EIR. I requested this at the City Council meeting on November 5th and have yet to be provided with any comparison that the City or consultants have done.

You state that the City's intent is to "solicit input and comments from public agencies and the general public on the proposed supplemental EIR." Specifically what public agencies have been noticed and how? What has been done to notice the public?

Your prompt reply is appreciated given the extreme time constraint.
Colin

On Tue, Nov 26, 2019 at 4:54 PM Ashley Feeney <AFeeney@cityofdavis.org> wrote:

Hello Colin,

The Davis City Council certified the environmental impact report (EIR) for the proposed Mace Ranch Innovation Center (MRIC) Project in September 2017, determining that it adequately evaluated the environmental impacts of the proposed MRIC project and a related Mixed-Use Alternative. The EIR included an analysis of the potential physical environmental impacts of a Mixed-Use Alternative, at the same level of detail performed for the proposed MRIC project. Once an EIR has been certified, any further review associated with subsequent discretionary actions related to the project is guided by Public Resources Code (PRC) Section 21166; California Environmental Quality Act Guidelines ("CEQA Guidelines") Sections 15162 and 15163. Neither PRC Section 21166 nor CEQA Guidelines Sections 15162-15163 include requirements for a new notice of preparation (NOP) and scoping meeting. The only specific requirement for a lead agency to issue a NOP and hold a scoping meeting is at the outset of the initial environmental review of a project (CEQA Guidelines Section 15082). The City of Davis issued a NOP and held a scoping meeting for the MRIC EIR process, as required.

While preparation of a new NOP and subsequent scoping meeting are not required for a subsequent EIR or supplemental EIR, the City of Davis is sensitive to the community's concerns and chose to hold a scoping meeting. As a result, the City has scheduled a scoping meeting for the proposed Aggie Research Campus project on December 2, 2019. The meeting is intended to focus more appropriately on collecting comments related to the changes in circumstances that may have occurred in the project vicinity since the certification of the MRIC EIR in 2017, given that this is an important criterion to consider when preparing further environmental documents for projects, according to CEQA Guidelines Section 15162(a)(2). The intent of the voluntary scoping meeting being held on Monday, December 2, 2019 starting at 5:00 PM and ending at 7:00 PM at Davis City Hall Conference Room, 23 Russell Blvd, Davis, CA 95616 is to solicit input and comments from public agencies and the general public on the proposed supplemental EIR. The intent was to receive comments before or during the scoping meeting. As an additional effort to provide ample opportunities for public engagement and input, City staff will not only hold the voluntary scoping meting but will also extend the period to accept written comments from public agencies and the general public that are interested in providing input as to the scope and content of the supplemental environmental information to Monday, December 9, 2019 at 5:00 PM. Comments can be provided in person at the December 2, 2019 scoping meeting or written scoping comments can be delivered to the City of Davis Community Development and Sustainability Department, 23 Russell Boulevard, Suite 2 Davis, CA 95616 Attn: Sherri Metzker, Principal Planner or via electronic mail to smetzker@cityofdavis.org up until Monday, December 9, 2019 at 5:00 PM.

Kind regards,

Ashley Feeney

Assistant City Manager

(530) 757-5610

From: Colin Walsh <colintm@gmail.com>
Sent: Monday, November 25, 2019 6:26 PM
To: Ashley Feeney <AFeeney@cityofdavis.org>; City Council Members <CityCouncilMembers@cityofdavis.org>
Subject: Re: ARC Notice of Scoping Meeting Questions

Hi Ash,

Thank you for your email.

Considering the "scoping" meeting is on Friday Dec. 2 immediately following the Thanksgiving meeting (leaving only 2 business days between now and then) and I have raised the very serious question that no deadline was announced for when comments are due I would hope the City can get back promptly on this. It is very unclear what process the City is following here, it does not look like it is at all the proper supplemental EIR NOP process.

Colin

On Mon, Nov 25, 2019 at 4:59 PM Ashley Feeney <AFeeney@cityofdavis.org> wrote:

> Hello Colin,
>
> I was forwarded a message where you raised some questions related to the upcoming scoping meeting for ARC. Sherri is out this week but I'll get a response out to you tomorrow.
>
> Thanks,
>
> Ash

Comparison of MRIC general plan amendment and PPD to ARC general plan amendment and PPD and MRIC Mixed-use Alternative PPD.

All places where the MRIC general plan changes or PPD and the MRIC Mixed-use Alternative differ from the new ARC documents must be analyzed as they have changed since the MRIC EIR certification. Detailed charts of these changes follow.

This document is intended as comments for the ARC SEIR. The comments column on the right is supported by the columns to the left that show the specific general plan and PPD changes.

Submitted by
Colin Walsh

Comparison of MRIC general plan update and ARC general plan update

MRIC General Plan Change	ARC General Plan Changes	Differences	Comment
Intent: To provide sites for technology companies conducting research and development activities, such as product development, engineering, sales and administration, as well as ancillary light manufacturing and wholesale uses. It is the desire of the City of Davis to advance technology employment activities, and provide adequate space in which to allow for the growth and evolution of such companies so as to respond to changes in technology and capitalize on new opportunities. It is also the intent of the City of Davis to foster collaboration and the transfer of technology between UC Davis and Innovation Technology Centers.	**Intent:** To provide sites for an array of technology companies conducting research and development activities, such as product development, engineering, sales and administration, as well as ancillary light manufacturing and wholesale uses, and to provide adjacent housing and supportive uses to serve the housing needs of center employees. It is the desire of the City of Davis to advance technology sector employment activities, and provide adequate space in which to allow for the growth and evolution of such companies so as to respond to advancements in technology, changing market demands and to capitalize on new opportunities. It is the intent to holistically design these innovation center spaces to encourage interaction and crosspollination between individuals and companies, emphasizing the concept of “live, work, play.” It is also the intent of the City of Davis to foster collaboration and the transfer of technology between University of California, Davis and the Innovation Centers.	“to provide adjacent housing and supportive uses to serve the housing needs of center employees.” “changing market demands” holistically design these innovation center spaces to encourage interaction and crosspollination between individuals and companies, emphasizing the concept of “live, work, play.”	Since there is no mechanism to assure ARC employees will live in the project the housing must be considered as if no, or few employees live there. The idea that the project will adjust to meet “changing market demands” must be considered in the analysis of impact. With the express flexibility for change, it has to be assumed that the project could be built dramatically differently from what is proposed. These permutations must be studied. Especially an all housing, or almost all housing alternative. The intent states that the project is “featuring proximate freeway access to minimize impacts on the local roadway system.” But we now know that traffic in Davis is deeply linked to traffic on the freeway. The most recent studies, and the most recent use of navigation apps to circumvent traffic must be considered and analyzed in relation to the new ARC project. The new ARC General plan intent is to have a car centric freeway development. That must be considered when analyzing the project. Although the project claims to have reduced parking spaces. The GP intent continues to state that it is a freeway and car dependent project. Traffic analysis must be done with the understanding that the developers intend a car centric freeway oriented project, and it must also take into consideration all of the new external developments. The traffic circumstances have come to be better understood since the MRIC EIR, so this area must have a robust analysis and that analysis should not use the low parking assumptions the developer puts forward, but instead use the idea put forward in the general plan intent stating it is a car and freeway centered development.

MRIC General Plan Change	ARC General Plan Changes	Differences	Comment
The research park shall be of adequate size to accommodate numerous users and be designed so as to create a campus-like environment. The research park shall be characterized by superior site planning, architectural and landscape architectural design; traffic management; and environmental controls. In order to achieve this goal, planned development zoning and design guidelines shall be utilized. It is the intent that a Innovation Technology Center will maximize the internalization of trips by developing many of its own support services and featuring proximate freeway access to minimize impacts on the local roadway system.	The Innovation Center shall be of adequate size to accommodate numerous users and be designed so as to create a campus-like environment. The research park shall be characterized by superior site planning, architectural and landscape architectural design, traffic management, and environmental controls. In order to achieve this goal, planned development zoning and design guidelines shall be utilized. It is the intent that an Innovation Center will maximize the internalization of trips by incorporating a mix of uses, developing many of its own support services and featuring proximate freeway access to minimize impacts on the local roadway system.	ARC adds the idea that "by incorporating a mix of uses"	ARC adds the idea that "by incorporating a mix of uses" will maximize the internalization of trips. But there is no plan in any documentation provided by ARC that suggests it is possible to restrict housing to people who also work in the ARC business park. Without a actual plan or even a single example of where this has worked else where ARC's impacts must be evaluated as if few or no workers liv in the housing. Workers will commute in from else where. Residents will commute to jobs or the campus every day. This higher level of car travel and GHG emissions must be considered when analyzing the project.

MRIC General Plan Change	ARC General Plan Changes	Differences	Comment
Allowable Uses: Offices (including, but limited to headquarters, business, professional and medical), light industry, research and development, light manufacturing and warehousing (as an ancillary use), provided they meet City standards regarding pollution, health and safety factors. Retail uses shall be limited to support commercial uses, which may include lodging, conference space, restaurant, fitness and other services. Said uses should not compete with the downtown and neighborhood shopping centers and shall be appropriately limited in size to achieve the objective of serving the Innovation Technology Center. Related amenities and open spaces serving the research park may also be allowed.	**Allowable Uses:** Offices (including, but limited to headquarters, business, professional and medical), light industrial, research and development, light manufacturing, laboratory, and warehousing (as an ancillary use), provided they meet City standards regarding pollution, health and safety factors. Residential – Medium and High Density, including a variety of housing types, unit sizes, prices and rents, designs, and architecture diversity. Onsite housing is intended to serve the needs of a diverse Innovation Center workforce. Retail uses shall be limited to support commercial uses, which may include lodging, conference space, restaurant, fitness and other convenience services. Said uses should not compete with the downtown and neighborhood shopping centers and shall be appropriately limited in size to achieve the objective of serving the Innovation Center and reducing the need for offsite vehicular trips. Related amenities and green spaces serving the research park are encouraged.	Residential – Medium and High Density, including a variety of housing types, unit sizes, prices and rents, designs, and architecture diversity. Onsite housing is intended to serve the needs of a diverse Innovation Center workforce." green spaces serving the research park are encouraged.	There is no mechanism put forward by the developer to insure the housing in the project will be occupied by the people who work in the ARC project, therefore it must be analyzed as just housing. In fact it is likely illegal under fare housing laws to prevent people who don't work in the project from living there. All traffic and other impacts of housing must be evaluated accordingly. It also must be evaluated in light of the worsening conditions. Studies must be done to take in the compound impacts of increased traffic, other near projects, and Woodland projects on road 102 where the nearest onramp for 80 is at Mace. Because the MRIC mixed-us alternative only looked at the housing as providing unreasonably high levels of onsite worker occupancy, but no mechanism has been shown for how this would be achieved in the ARC this needs to be considered as a change from the MRIC EIR and be analyzed. Because the General plan is being changed to allow for housing as a use for the entire development, a all housing or near all housing altertnative mused be considered in the new EIR analysis. The developer could decide "changing market demands" dictate the need to switch the project to all housing.

MRIC General Plan Change	ARC General Plan Changes	Differences	Comment
Prohibited Uses: Residential housing; major retail or highway commercial; heavy manufacturing; exclusive distribution and exclusive warehousing.	**Prohibited Uses:** Major retail or highway commercial; heavy manufacturing; exclusive distribution and exclusive warehousing.	"residential housing" was prohibited in MRIC	Residential housing is now allowed for the entire project under zoning and that needs to be evaluated in the EIR. The zoning claims that highway commercial will not be allowed, yet the project description states, "The hotel/conference center would be located in the southwestern corner, near the intersection of Mace Boulevard and 2nd Street." This location is the closest to the highway and must be considered as highway commercial. The hotel will be visible from the freeway, and the commercial hotel will surely accept any guests that book, not just ARC visitors. Therefore the hotel must be viewed as a highway draw, and the car trips and GHG must be considered as though it were highway commercial despite the misleading claims in the zoning.

MRIC General Plan Change	ARC General Plan Changes	Differences	Comment
Maximum Floor Area Ratio: 50 percent.	**Floor Area Ratio:** Innovation Center development **should** achieve a fifty percent floor area ratio (0.5 FAR) taking into consideration the unique needs of a diversity of industry types.	With the injection of the word "should" the ARC GP update changes the FAR requirement to a suggestion. It then suggests circumstances that may result in different FAR, "taking into consideration the unique needs of a diversity of industry types"	With the insertion of the word should in the FAR there is now no limit to what the FAR will be in the proposed project. This is different than what was considered in the MRIC EIR or mixed use alternative and is a very significant change to the project. This change of zoning can be seen as allowing the much diminished open space in the project description. Given this change to the GP the project needs to be evaluated in the EIR as having much higher FAR. When there is conflicting information for example, the Project description claims there will be 1,510,000sf of "Office; Research & Development; Laboratory," but the developers chart submitted on Nov. 27 states that there will be 1,610sf of "ffice; Research & Development; Laboratory," the higher number, or even higher, must be used to evaluate the project. Additionally, the language "taking into consideration the unique needs of a diversity of industry types" gives reasons the developer may have a much different FAR in the future.

MRIC General Plan Change	ARC General Plan Changes	Differences	Comment
Size: A single Innovation Technology Center shall not exceed 230 acres.	Size: A single Innovation Center shall not exceed 250 acres.	ARC is allowed a larger area by 20 Acres	An increase in size of the allowable project of 20 acres is a change in ARC that was not considered in the MRIC EIR or MRIC mixed-use alternative. This larger project size must be considered in the EIR. Even though the project description states there is a smaller size, it must be considered that this change will allow a larger project and the project must be considered at that larger scale. The City could allow the developer to use the City's snd street triangle or adjacent 25 acres, and the developer is clearly allowing for such additions to the project with this larger zoning. This change to the project since the EIR was performed must be considered

MRIC General Plan Change	ARC General Plan Changes	Differences	Comment
Policy LU S.1 Innovation Technology Center should include sophisticated land use planning, high quality architectural and landscape design, building flexibility, a variety of amenities and environmental controls.	**Policy LU S.1** Innovation Center should include sophisticated land use planning, a complementary mix of uses to foster innovation, high quality architectural and landscape design, building flexibility, a variety of amenities and environmental controls.	ARC, ads "a complementary mix of uses to foster innovation,"	Far from being "complementary, the ARC project introduces an unusual mix of single family and apartment homes in close proximity to manufacturing and laboratory uses. The chemicals and materials, possibly even specifically hazardous materials present on site for several of the allowed uses and their proximity to housing must be considered as part of the potential environmental impact. This was not considered in the MRIC EIR or mixed use alternative. The impact of manufacturing noise 24/7 as is allowable in the project must be considered in analyzing impact. With housing in closer proximity to the manufacturing than was evaluated in the previous MRIC EIR or Mixed-use alternative, this impact must be considered. This housing may not even be safe or livable given the proximity to manufacturing and laboratory uses. Noise, Effluent, and exhaust impacts on homes, daycares and and other possible uses allowed in the zoning must be considered. The zoning has no set back requirements for any of the uses allowed within it. It would be highly unusual for a chemical manufacturing company to locate adjacent to a daycare, yet that is allowable under the ARC PPD and therefore must be analyzed. Specifically the potential for any allowable use to be located next to another allowable use must be analyzed.

MRIC General Plan Change	ARC General Plan Changes	Differences	Comment
	Policy LU S.2 An Innovation Center should include residential units to, in collaboration with existing housing supply, accommodate sufficient employees so as not to negatively impact the jobs/housing balance of the City. All housing should be designed and priced to accommodate the diverse needs of an Innovation Center workforce.	ARC adds "An Innovation Center should include residential units to, in collaboration with existing housing supply, accommodate sufficient employees so as not to negatively impact the jobs/housing balance of the City. All housing should be designed and priced to accommodate the diverse needs of an Innovation Center workforce."	Since there is non mechanism for how the housing will be filled only by ARC workers or even by large percentages of ARC workers this fluff language must be disregarded and the full impact of this housing must be considered. This is different than was considered in the MRIC Mixed-use alternative, because MRIC claimed the housing would be occupied by workers. The developer has had several years now to put forward a plan or mechanism for how the housing would be filled by workers, but has offered no plan. Fair housing laws would seem to preclude further preclude this. Therefore the new EIR must evaluate the full impact of housing NOT occupied by MRIC workers. Since the developer failed to put forward ANY plan for how this pie in the sky worker housing might work, it must be seen as a change since the EIR was done, and the full impact of the housing must be considered.
Policy LU S.2 An Innovation Technology Center shall mitigate for the loss of agricultural land by preserving no less than 2 acres of agricultural land for every 1 acre developed.		This language is completely removed from the ARC general plan update: "An Innovation Technology Center shall mitigate for the loss of agricultural land by preserving no less than 2 acres of agricultural land for every 1 acre developed."	Removal of 2 to 1 gland mitigation from the general plan would be a dramatic change to the way the City mitigates this new development. This is a enormous change since the MRIC EIR and must be considered in the new EIR. If no mitigation land is required with ARC, that is well outside the recent Davis norms. This change and loss of mitigation must be considered in the new EIR

MRIC General Plan Change	ARC General Plan Changes	Differences	Comment
Policy LU S.3 A maximum of ten percent of the overall square footage may be commercial use provided that the commercial is supportive of the surrounding Innovation Technology Center businesses and that it does not cause significant negative impacts or disturbance of the overall business environment.	**Policy LU S.3** A maximum of ten percent of the non-residential square footage may be commercial use provided that the commercial is supportive of the Innovation Technology Center businesses and residents, and that it does not cause significant negative impacts or disturbance of the overall business environment.		

Comparison of MRIC PPD and ARC PPD

MRIC PPD	MRIC Mixed Use PPD	ARC PPD	Differences	Comment
Purpose.				
The purpose of the Mace Ranch Innovation Center (MRIC) district is to provide an environment where leading-edge institutions and local, regional and international companies cluster and connect with start-ups, businesses incubators, and accelerators as well as the University of California, Davis to foster a creative and productive research and development center.	The purpose of the PPD district for the Mixed-Use Alternative is to provide a setting in which leading-edge institutions and local, regional, and international companies can cluster and connect with start-ups, businesses incubators, and accelerators, as well as UC Davis, to create a productive research and development center.	The purpose of the Aggie Research Campus (ARC) district is to provide an environment where leading-edge institutions and local, regional and international companies cluster and connect with start-ups, businesses incubators, and accelerators as well as the University of California, Davis to foster a creative and productive research and development center where innovators live, work and play.	ARC PPD adds where innovators live, work and play.	The EIR needs to consider the change to zoning which now expresses a 24 hour purpose for the site, that it will be a place "where innovators live, work and play." This is a more intensive 24 use than was included in the original MRIC proposal. Further, the idea that the site will have opportunities for play must also be considered since that is also not in the MRIC Mixed-use alternative. Creating place where people will also play is likely to draw people in from other parts of town, and given the freeway proximity other places in the region. All of the additional traffic impacts of creating a play area in the innovation park must be considered. Unfortunately the project proposal is very vague on what type of play facilities will be included at this time, so the EIR must evaluate it at the highest levels.

MRIC PPD	MRIC Mixed Use PPD	ARC PPD	Differences	Comment
Permitted uses.				
The principal permitted uses of land in the MRIC district are as follows:	The PPD for the Mixed-Use Alternative identifies the following principally permitted uses:	The principal permitted uses of land in the ARC district are as follows:	None	

MRIC PPD	MRIC Mixed Use PPD	ARC PPD	Differences	Comment
(a) Offices: including administrative, executive, headquarters and medical.	Offices: including administrative, executive, headquarters and medical.	(a) Offices: including but not limited to administrative, executive, headquarters, medical, coworking and incubator space.	The ARC PPD greatly expands the use over the MRIC PPD by adding the modifier "but not limited to." The PPD goes on to add "coworking and incubator space"	The ARC PPD greatly expands the use over the MRIC PPD by adding the modifier "but not limited to." This greatly opens what types of businesses can be located here. It essentially sets no limit. With a broader range of businesses able to locate here, build out may happen faster. This change is growth inducing because it expands what businesses can be located here. By adding coworking space the the ARC PPD contemplates a very different model of business than was considered in the MRIC EIR. Coworking spaces provide work spots for individuals instead of companies. Since these individuals are working independently it reduces carpool opportunities and increases the need for parking. This different business model introduced in ARC must be analyzed to consider the different impacts it may have.

MRIC PPD	MRIC Mixed Use PPD	ARC PPD	Differences	Comment
(b) Laboratories: including but not limited to research, design, analysis, development and/or testing of a product	Laboratories: including but not limited to research, design, analysis, development and/or testing of a product.	(b) Laboratories: including but not limited to research, design, analysis, development and/or testing of a product	None	
(c) Light manufacturing, assembly or packaging of products, including but not limited to electrical, pharmaceutical, biomed and food products and devices, and associated warehousing and distribution.	Light manufacturing, assembly, or packaging of products, including but not limited to electrical, pharmaceutical, biomed and food products and devices, and associated warehousing and distribution.	(c) Light manufacturing, assembly or packaging of products, including but not limited to electrical, pharmaceutical, biomed and food products and devices, and associated warehousing and distribution.	None	
(d) Any other technical, research, development or light manufacturing use determined by the Planning Director to be of the same general character as the permitted uses.	Any other technical, research, development, or light manufacturing use determined by the Planning Director to be of the same general character as the permitted uses.	(d) Any other technical, research, development or light manufacturing use determined by the Planning Director to be of the same general character as the permitted uses.	None	

MRIC PPD	MRIC Mixed Use PPD	ARC PPD	Differences	Comment
e) Any use which handles, stores or treats in any fashion hazardous materials as defined in Section 40.01.010 of this chapter in a manner consistent with adopted MRIC performance standards.			“use which handles, stores or treats in any fashion hazardous materials” has been changed from a permitted use to a conditional use.	Because it will now be more difficult to have a business “which handles, stores or treats in any fashion hazardous materials” this will need to be analyzed in the EIR and financial analysis. This is a significant range of businesses that fit into the goals set forth be the developer. Many ag and tech companies need these materials in the regular course of business. With there now being limits on this type of business were contemplated in the analysis of the MRIC and the Mixed-use alternative, the loss must be analyzed. What will the financial impact be on the project? Will the project only be able to attract the more dense office spaces with larger numbers of employees? All of this must be considered and analyzed.

MRIC PPD	MRIC Mixed Use PPD	ARC PPD	Differences	Comment
	Residential: workforce housing with an average density at or above 30 dwelling units per acre. The anticipated density range is between 20 and 50 dwelling units per acre, or higher, depending on product type.	(e) Residential: workforce housing with an average density at or above 30 dwelling units per acre. The anticipated density range is between 15 and 50 dwelling units per acre, or higher, depending on product type.	The entire residential section has been added in comparison to the MRIC PPD. The housing is denser then was analyzed in the MRIC Mixed-use alternative.	More and a wider variety of housing is being considered in the ARC PPD than was considered in the MRIC EIR or Mixed Use Alternative. With more housing it increases the chances that people who work outside of the project will occupy the housing thus increasing cantrips and GHG emissions. This additional housing must be considered in the new EIR. Also with the addition of housing as mentioned above, a all housing or almost all housing alternative must be considered because the developer will likely have the opportunity to increase the amount of housing in the project in the future. By adding residential to the zoning to the entire business park it is possible the developer will develop the entire property, or most of the property to residential. Or much of the property could be converted to residential at a later time. Residential is a more intensive use than is contemplated in the EIR. Zoning the entire property for residential is not contemplated in the MRIC Mixed -use alternative. Therefore a all, or mostly all residential alternative needs to be considered in the SEIR. Additionally the ARC PPD allows for denser housing than the MRIC Mixed-use alternative. The impact of the denser housing needs to be analyzed in the new SEIR.

MRIC PPD	MRIC Mixed Use PPD	ARC PPD	Differences	Comment
	(f) Home Occupation.		"home occupation" was included in the MRIC Mixed-use but has been removed in the ARC PPD.	Allowing for home occupation in the project as was analyzed in the MRIC Mixed-use alternative would have reduced car trips and GHG but it has been dropped from the ARC PPD. Home occupation provided a better option for guaranteeing that some amount of the residents would work in the ARC project. There is no guarantee that employees of ARC will live in the project, and the developer has provided no details of any program that would encourage it. Removing Home occupation from the PPD is a change since the MRIC Mixed-use analysis and therefore must be analyzed.
		(f) Renewable energy generation and storage facilities.	The entire "Renewable energy generation and storage facilities.' Use has been added.	Renewable energy generation and storage facilities where not contemplated as allowed use of any part of the development in the previous development or the MRI Mixed-use alternative. The AARC project description is vague on this with no real mention. The EIR needs to be updated to consider many variations of energy generation on this location.

MRIC PPD	MRIC Mixed Use PPD	ARC PPD	Differences	Comment
				Wind turbine impacts are coming to be well known with bird and bat strikes front and center. Considering there are 2 bird species of interest at or near the ARC site, wind turbine impact on the habitat must be carefully evaluated. Wind energy can have adverse environmental impacts, including the potential to reduce, fragment, or degrade habitat for wildlife, fish, and plants. Furthermore, spinning turbine blades can pose a threat to flying wildlife like birds and bats. Additionally, sound, visual impact, vibration and shadow flicker effects must be considered. With he close proximity to houses, the impact of the turbines on the houses must be considered (Wind turbines generate some noise. At a residential distance of 300 metres (980 ft) this may be around 45 dB.). Wind turbines are required to have aviation lighting, the impact of this lighting on nocturnal animals such as owls and bats must be considered Consider K. Shawn Smallwood, "Comparing bird and bat fatality-rate estimates among North American wind-energy projects", Wildlife Society Bulletin, 26 Mar. 2013.

MRIC PPD	MRIC Mixed Use PPD	ARC PPD	Differences	Comment
				Solar power impacts must also be evaluated. Land use and habitat loss, water use, and the use of hazardous materials in manufacturing must be considered. Large fields of solar power could have dramatic impacts on habitat. Unlike with wind turbines there is no opportunity to colocate with ag uses. This would be a poor choice of use of category 1 ag land and the impact must be considered. With no specified tenant in the development it must be assumed that a energy generation facility is a possible tenant and given the by right inclusion in the PPD all of these uses must be included in the EIR analysis. Renewable energy generation was not considered in the previous EIRs and must be considered now.
(f) Support Retail, single users at or less than 25,000 square feet, including but not limited to food and beverage, restaurant, dry cleaners, fitness center or gym.	(g) Support retail, single users at or less than 25,000 sf, including but not limited to food and beverage, restaurant, dry cleaners, fitness center, or gym.	(g) Support Retail, single users at or less than 25,000 square feet, including but not limited to food and beverage, restaurant, dry cleaners, fitness center or gym.	None	
(g) Lodging or Hotel.	(h) Lodging or Hotel.	(h) Lodging or Hotel.	None	

MRIC PPD	MRIC Mixed Use PPD	ARC PPD	Differences	Comment
(h) Conference Space.	(i) ConferenceSpace.	(i) ConferenceSpace.	None	
(i) Agriculture, except the raising of fowls or animals for commercial purposes, or the sale of any products at retail on the premises.	(j) Agriculture, except the raising of fowls or animals for commercial purposes, or the sale of any products at retail buildings on the premises.	(j) Agriculture, including open air or greenhouse cultivation of crops and the tasting and/or sale of any products cultivated or produced on the premises, but excepting the raising of fowls or animals for commercial purposes.	The ARC adds "including open air or greenhouse cultivation of crops and the tasting and/or sale of any products cultivated or produced on the premises" but all of these uses would seem to be included in the general term agriculture.	The impacts of "open air or green house cultivation of crops and the tasting and/or sale of any products cultivated or produced on the premises" have been added since the MRIC EIR and Mixed-use PPD. The impacts of this must be considered. The impacts on residents in close proximity of this area must be considered. These operations need to be reviewed as conventional agriculture and the use of pesticides and impacts not he surrounding areas must be considered. This needs to include the use of rodenticides and the resulting impacts on birds of prey, and on ground squirrels who's burrows are essential for the burrowing owl population know to be in the area.

MRIC PPD	MRIC Mixed Use PPD	ARC PPD	Differences	Comment
		(k) Higher Education: extensions or graduate programs; public, semipublic or private.	"Higher Education: extensions or graduate programs; public, semipublic or private." Has been added since the MRIC EIR or Mixed-use alternative	Adding, "Higher Education: extensions or graduate programs; public, semipublic or private." Adds a higher traffic use to the ARC project over what was previously considered. With the remote and freeway adjacent location of the project this use will certainly draw many of its participants by car and by the freeway. While it is true that MRIC is proposing a shuttle to UCD, there is no reason to believe that it will be UCD who opens the Higher ed extensions. UCD is focusing its innovation center development in Sacramento at Aggie Square, so it is in fact unlikely UCD will be interested in colocating at ARC. This could be. Location for a community college extension that would be a regional draw for example. The resulting GHG and increased car trips resulting from these uses must be considered. Adding the higher education uses is likely to be growth inducing as it will attract new students to Davis. This impact must be considered.

MRIC PPD	MRIC Mixed Use PPD	ARC PPD	Differences	Comment
(	(k). Any use which handles, stores, or treats in any fashion hazardous materials as defined in Section 40.01.010 of the Davis Municipal Code in a manner consistent with adopted City standards.	(l) Any use which handles, stores or treats in any fashion hazardous materials as defined in Section 40.01.010 of this chapter in a manner consistent with adopted ARC performance standards.	The use of hazardous materials is retained in the ARC PPD, but the PPD also adds housing with no guideline to proximity to the hazardous materials.	The EIR must evaluate the proximity of housing added in the ARC PPD to hazardous materials. Although some housing was added in the MRIC Mixed-use alternative, the housing is closer to the facilities that will be allowed to use hazardous materials in the ARC project map, thus there are potentially new impacts that must be understood. Additionally, the MRIC EIR or Mixed use alternative did not properly consider the proximity of hazardous materials to housing so this analysis has not bee properly done, and no proper mitigations have been considered. The addition of the language, "in a manner consistent with adopted ARC performance standards." Is meaning less since these standards have not been set forward and therefore worst case scenarios must be considered.
Accessory uses.				

MRIC PPD	MRIC Mixed Use PPD	ARC PPD	Differences	Comment
the following accessory uses are permitted in the MRIC district:		The following accessory uses are permitted in an ARC district:		
		(a) Home occupations subject to the provisions of Sections 40.01.010 and 40.26.150;		The MRIC Mixed-use alternative considers home occupation as an allowed use, but ARC only allows it as a conditional use. This will discourage people from having home businesses and is a change that must be analyzed.
antenna, telecommunications		(b) Antenna and telecommunications;		
child care/day care facility,		(c) child care/day care facility;		
parking garage,		(d) parking garage; and		
signs.		(e) stand-alone corporate signage.		
Conditional uses.				
The following conditional uses may be permitted in the MRIC district:		The following conditional uses may be permitted in the ARC district:		
(a) Support Retail, single users larger than 25,000 square feet.	(a) Support Retail, single users larger than 25,000 sf.	(a) Support Retail, single users larger than 25,000 square feet.		

MRIC PPD	MRIC Mixed Use PPD	ARC PPD	Differences	Comment
(b) Public and semipublic, including public utility uses necessary and appropriate to the MRIC district.	(b) Public and semi-public, including public utility uses necessary and appropriate to the MRIC district.	(b) Public and semipublic, including public utility uses necessary and appropriate to the ARC district.		
(c) Any use which handles, stores or treats in any fashion hazardous materials as defined in Section 40.01.010 of this chapter in a manner deemed to exceed or inconsistent with the adopted MRIC performance standards.	(c). Any use which handles, stores, or treats in any fashion hazardous materials as defined in Section 40.01.010 of the Davis Municipal Code in a manner deemed to exceed or be inconsistent with the adopted City standards.	(c) Any use which handles, stores or treats in any fashion hazardous materials as defined in Section 40.01.010 of this chapter in a manner deemed to exceed or inconsistent with the adopted ARC performance standards.	There is a difference in what standards are set	There are no adopted performances standards in ARC and there is housing added to the project. The proximity of housing and daycares to hazardous materials needs to be properly considered. The new maps locate housing closer to likely sites were these materials will be used than in the MRIC mixed-use alternative so this needs to be more thoroughly evaluated. With no adopted standards it has to be assumed that the intention is to weeken City standards, since City standards are what was set out in the ARC PPD. This weakening of City standards must be analyzed.
Prohibited uses.				
The following uses are prohibited in the MRIC district:		The following uses are prohibited in the ARC district:		

MRIC PPD	MRIC Mixed Use PPD	ARC PPD	Differences	Comment
(a) Surface mining operations and mineral extraction, including but not limited to natural gas extraction. This prohibition does not apply to the importation or exportation of overburden and fill material used in grading and/or site preparation.		(a) Surface mining operations and mineral extraction, including but not limited to natural gas extraction. This prohibition does not apply to the importation or exportation of overburden and fill material used in grading and/or site preparation.		

Architectual standards

MRIC PPD	ARC Project Description	Difference	Comment
Architectural standards and approval.			
(a) The City Council has adopted Design Guidelines for the MRIC district at a public hearing. All proposed new structures or additions to existing structures consistent with the adopted guidelines may be approved by the community development and sustainability department subject to site plan and architectural review as identified in Section 40.31.040(r) of this Code or as otherwise prescribed in the guidelines;	…The final planned development and accompanying tentative map(s) and design review will need to identify a greater degree of specificity, such as precise locations and configurations of lots and buildings, including all dimensions necessary to indicate size of structure, setbacks and yard areas, etc.. **Subsequent entitlements will also establish design standards and ensure consistency therewith**. Proposed buildings will need to submit elevations and design details sufficient to determine consistency with Design Guidelines, such as landscaping, fencing, and screening, etc. In sum, there will be a series of subsequent entitlements at which time more definitive detail will be proposed. It is anticipated that much of the building design and structural configuration proposals will be user driven.	No Design standards yet for ARC	To the extent the design and architectural standards effect EIR review, review and analysis can not happen until design standards are set. Many design decisions can effect the impact of a project. Building materials, heights, landscaping and many other factors that fall into design could change the considerations of the EIR. This is a changed circumstance since the MRIC EIR since the MRIC standards have not been carried forward. With no set standards I am not sure how they can even be properly considered, so a worst case scenario will have to be used for the EIR. With now landscape guidelines or plans a full analysis of possible plantings will be needed. This could include water intensive non native and invasive species.

MRIC PPD	ARC Project Description	Difference	Comment
(b) The community development and sustainability director or designee shall utilize the Mace Ranch Innovation Center (MRIC) design guidelines in reviewing public and private projects within the MRIC district boundary for which site plan and architectural approval is required;			
(c) Site plan and architectural approval shall be required for all projects as specified in the design review process section of the guidelines;			
(d) The MRIC Design Guidelines have been adopted by the city to serve as a guide to the city staff, citizen and project proponent in regard to development within the MRIC district boundary; and			
(e) The MRIC Design Guidelines are approved to be consistent with and implement the general plan, applicable zoning regulations, and other applicable land use regulations.			
Special conditions.			

MRIC PPD	ARC Project Description	Difference	Comment
(a) All uses permitted by this article, shall be subject to review by the community development director for a determination of consistency with design guidelines and performance standards.			
(b) All uses shall be conducted wholly within a completely enclosed building, except for use specific testing facilities, off-street parking and loading facilities, cafes and eateries, and public utility substations.			WIth no standard requiring enclosed buildings, it will need to be assumed and analyzed with functions happening in the open air. This will increase noise, and emissions. This is different than the circumstances at the time of the MRIC EIR and therefore must be considered in the SEIR. Further, the maps show these activities likely to occur closer to residential housing in the new ARC project than they would have in the old MRIC project and that must also be taken into consideration. What will the impacts of open air activities be on adjacent housing?

Growing Pains: Thirty Years in the History of Davis

Chapter 6 - Mace Ranch: A Disturbing Challenge

Davis was unprepared in 1986 for a high-stakes political showdown over development along its borders, and its slow-growth policies were largely to blame. The crisis came swiftly, without much warning, demonstrating that the growth-control policies were more fragile and more susceptible to damage from political forces beyond the city's borders than officials had believed. Davis city suddenly found itself tormented by a recurring nightmare, where new houses, shopping centers, and industrial projects kept popping up just outside of the city's borders, just beyond the city's control. Looking back, Dave Rosenberg, mayor from 1986-88 and again in 1994-95, acknowledged the crisis caught Davis by surprise. "I think it's fair to say that," he said. "Mace Ranch changed everything."

In the early 1980s, motorists headed north on Mace Boulevard were greeted by a pastoral panorama as they mounted the overpass across Interstate 80. Off to the left, was an expanse of more than 600 acres of farmland located within the Mace Curve, the stretch of road where Mace bends to the west and eventually becomes Covell Boulevard. The site's prime soils were particularly suitable for row crops such as tomatoes and sugar beets, but could sustain other crops such as walnuts and alfalfa. Still, the land seemed a likely candidate for development: housing lay adjacent to part of its western boundary, the freeway ran just to the south, and the Mace Curve appeared to be a natural boundary for urban development on the east. City officials could accept that the land might be developed someday, but didn't expect that day to come anytime soon.

Developer Frank Ramos of West Sacramento, though, had other ideas for about 530 acres owned by him and his partners in Mace Ranch Investors. The partnership purchased the land around 1981 and soon afterward approached the city informally about their plans. According to Ramos, he got no encouragement from City Manager Howard Reese and Planning Director Fred Howell. Late in 1984, the partnership filed plans with the city for a 94-acre project called the Davis Technology Center. Proposed for land located north of Second Street just east of the city limits, it was to feature an industrial park, as well as land for research and development firms. At about the same time, Ramos unveiled a master plan for the entire site, without submitting plans for the remaining 434 acres. The master plan included a 198-acre research-and-development business park and set aside 67 acres for an industrial park. Houses would be built on 146 acres, a conference and cultural center on 37 acres and a hotel on 28 acres. An energy cooperative that would use solar energy to generate electricity would need another 11 acres, a winery would take up 12 acres and public streets would cover 37 acres.

The master plan created a major dilemma for the city, but also created a political backlash against Ramos. The city's dilemma sprang largely from a decision to maintain a small sphere of influence, a decision dictated by its growth-control policies. In California, a sphere of influence generally delineates which land outside a city's borders it anticipates needing for development during the following 20 years. Davis kept its sphere of influence very small, because it intended to grow slowly. Placing more land into the sphere of influence would have allowed Davis to exert more control over the land, but also would have created an expectation that it would be developed. Ramos filed the 94-acre project because that land was within the city's sphere of influence. The remaining 434 acres weren't, and Davis was abuzz with rumors that Ramos might ask Yolo County officials to approve development there over any city objections. Ramos could argue any proposal for the 434-acre site should go to the county, because city officials gave up their chance to take control of the site when they declined to put it in the sphere of influence. City officials loathed the idea, because county approval of the project would imperil city growth-control policies. Moreover, the county would get tax revenue that normally would go to the city, but Davis likely would have to cope with traffic and other problems created by the project.

Normally, Davis officials wouldn't have worried much about the county's intentions. County planning policies clearly said urban development proposed for land located within the Davis urban area, but outside of the city limits area should be annexed to the city. "Yolo County shall require urban uses to be placed within city limits in the urban areas of Davis, Woodland and Winters, and within the urban service areas of all unincorporated urban areas," said one of those policies. [1] Moreover, the county Board of Supervisors generally had been faithful to that principle since adopting it in the mid-1960s after it allowed El Macero to be built outside the city limits and Davis responded by annexing huge tracts of farmland where South Davis stands today.

Circumstances had changed by the time the crisis began to unfold, however. The county was in the midst of an on-going fiscal crisis and was looking for ways to increase its revenue. To some county supervisors, Davis was partly to blame for the county's predicament, because the county's tax revenues would grow more rapidly if the city allowed more development. On the horizon was a potential answer to their prayers: a major development that could be built on unincorporated land, so the county would not have to share new tax revenues with a city. At the time, experts often clashed over whether new development actually was a boon to local governments, once the cost of expanding services was weighed against expected increases in tax revenue. Residential development was particularly iffy, but experts tended to agree that a project heavy with industrial or commercial land could be advantageous.

In the spring of 1986, Davis debated whether to approve Davis Technology Center, the 94-acre project located within the city's sphere of influence. Ramos needed the city to approve an annexation request and to change the site's designation on the Davis General Plan land-use map from agricultural reserve to industrial. "The project sponsors propose to construct over a period of years a series of quality facilities for the housing of appropriate technology firms. The intent is to provide a campus-like atmosphere, with distinctive architectural style and innovative site planning," developers explained in a project description. [2] They emphasized the project could lure high-technology firms wanting to be near UCD and would provide badly needed jobs for local residents with technical expertise. Ramos estimated the 94-acre project would create about 3,000 permanent jobs and add about $1 million to city coffers annually through property, sales and other taxes. In the project description, Ramos and his partners noted that the city was reviewing only the 94-acre project, not the entire master plan. "Since the project, as presently envisioned, involves no residential construction, there is no conflict with the city's goal of 50,000 residents within the Davis urban area by the year 2000. Provision of residential uses on the north end of the project may be desired by some as a buffer to the Davis Manor subdivision," they said referring to the existing residential neighborhood located north of the 94-acre site. "However, the project sponsors do not believe this inclusion of residential zoning is desirable or necessary at this time." [3] In a March 1986 letter to Davis Planning Director Tom Lumbrazo, Michael A. Hackard, an attorney for the developers, noted that only the 94-acre project was before the city for consideration. "Because land adjacent to the project site is also owned by the project applicants, the planning department required the possible future uses to be assessed in the environmental impact report," he wrote. "It should be emphasized, however, that there are no proposals now being considered by the city for anything other than the 94 acres campus research park site." [4]

Such arguments, though, weren't convincing to some Davis residents, who couldn't get the other 434 acres of their minds. Adding to their anxiety was the environmental impact report prepared by Jones & Stokes Associates Inc. of Sacramento, which at the city's behest looked at the entire master plan area, rather than just the 94 acres. The EIR confirmed what many Davis residents already suspected: the community would have a hard time meeting its population goals if the master plan was built out. It estimated the project would add 3,340 residents to the city, more than half of the growth still available before the city would reach its anticipated General Plan buildout population of 53,540. At the time, California Department of Finance estimates pegged the urban area's population at slightly more than 47,000 people, including almost 41,000 within the city limits and more than 6,000 in unincorporated urban areas such as El Macero and the Binning Tract. Explained the EIR, "Taking into account the estimated indirect population generation of the proposed project, construction of the project in the near term would result in the city's population objective being severely exceeded." [5] The population analysis contained another conclusion that was certain to alarm city slow-growth advocates. "One additional impact of the project is the potential for inducing development of other properties currently located outside the city limits, thereby further increasing the Davis area population," it said. [6]

Two citizen groups left no doubt about their views in an eight-page letter responding to the draft EIR. "In conclusion, we, the Citizens for the General Plan and the members of the East Davis Neighborhood Committee, are completely opposed to the Campus Research Park proposal," their letter said. "The proposal clearly violates county and regional planning and totally ignores the principles of the Davis General Plan." [7] The draft EIR included an estimate that couldn't help but alarm slow-growth advocates: the master plan would not only add about 3,320 people directly, but could also could add thousands more to the area indirectly, because of new off-site jobs that would be created to serve on-site employers and employees. Other responses to the draft EIR raised apprehensions about the project. In a December, 1986 letter, for instance, the California Department of Transportation indicated the project could require widening the Mace Interchange, preferably to five lanes. The letter said the improvements would have to rely solely on local funding, saying no state money would be available. [8]

After public hearings during the spring of 1986, the city rejected the 94-acre project decisively. On May 13, the Planning Commission voted 7-0 against an annexation request, preliminary development plans and recommended changes to the General Plan land-use map, giving several reasons: no need for the project had been demonstrated, it was contrary to city growth and farmland-preservation regulations, and the project might be better suited for a site somewhere else in the county. Ramos appealed the decision to the council, which voted 5-0 on May 21, 1986, to follow the commission's lead and reject the project. "It should be stressed that, while the EIR was certified, the document shows that there would be significant impacts in the area of land use, population, employment and transportation for which there are no feasible mitigation measures," Mayor Rosenberg explained in a July 1986 letter to county Supervisor Bob Black, noting that Ramos did not give the city a plan for reducing those impacts. [9] Rosenberg also emphasized the city rejected the industrial part of the project without prejudice, so Ramos could submit an application for that part at any time. "If this finding was not made, the applicant would have to wait at least a year to submit a new application, or, if a new application was submitted within the year, the Planning Commission would have to find that the new application is substantially different than the one denied," Rosenberg explained. [10]

The city's idea was to have Ramos return with an industrial park proposal for the southern 33 acres of the 94-acre site. During the meeting, council members emphasize they weren't committing the city to approving the smaller project, saying Ramos would have to demonstrate the city needed more industrially zoned land and the project would be a financial boon, rather than boondoggle for the city. To Councilman Jerry Adler, the idea had merit for two reasons: the site seemed appropriate for industrial uses because it was located next to a steel plant, trucking company and greenhouses and the city's willingness to consider a smaller version of the project could help thwart any move by Ramos to approach the county and argue he was being treated unfairly by the city. "That, I think, is a very significant point," Adler said the day following the meeting. [11] Project Manager Larry Asera sought to ease the city's concerns that the project would end in the hands of county officials. "I have no directive to take this project to the county," he said, responding to a question from Rosenberg. "If the city turns us down, we'll try again." [12] Afterward, Asera questioned the city about how fast it could review the smaller version. City Planning Director Tom Lumbrazo responded in a July 14 letter, outlining a timeline that would take about three months.

Already, though, the city's opportunity to use the 33-acre proposal as a bargaining chip was slipping away. Circumstances were changing rapidly, and Ramos saw no point in continuing to bargain with the city, as Asera noted in a July 18 letter responding to Lumbrazo. "Since the city's denial of our application for development of the 94-acre Campus Research Park project on May 21, 1986, several events have occurred which would make reapplication to the city both an exercise in futility and a waste of resources," Asera wrote, nonetheless thanking Lumbrazo for the suggestion that Ramos file an application for the 33-acre project. Asera added that the time had come for Ramos to take his remaining 434 acres to the county for review, noting the county was bound to be interested because its revenue base was shrinking because of West Sacramento's decision to incorporate as a city. "The county needs development, especially development such as that which we propose, which will provide substantial revenue to the county," Asera concluded. [13]

He pointed specifically to three events that called into question the community's willingness to accept new growth, including the 33-acre project. The most significant occurred on June 3, when approximately 56 percent of the city's voters cast ballots in favor of Measure L, an initiative sponsored by Citizens for the General Plan. The measure was advisory, and thus would not bind the hands of council members or county supervisors in the dispute over Mace Ranch. Still, the council could hardly ignore the underlying message: voters wanted Davis to stay on a slow-growth course. "Should the following advisory statement of growth policy be adopted?" Measure L asked, advising city and county representatives to heed three principles:

- Davis should grow as slowly as it legally could;
- Future growth should be concentrated on lands already within the city limits and additional annexations should be discouraged; and
- The county should not approve development on the periphery of Davis unless the city gives its stamp of approval by ruling it consistent with the Davis General Plan. Measure L included several findings, including the beliefs that "the prime agricultural land surrounding Davis is a resource of local, state and national importance" and "the growth of Davis is an issue best determined by Davis citizens without outside pressure or influence."

The second event was voter approval of Measure S, a city initiative on the same ballot that didn't deal directly with Campus Research Park, but strengthened the conviction that voters were in a slow-growth mood. The measure was sponsored by a group known as Save Open Space that included former Mayor Maynard Skinner among its leaders and gained the support of almost 58 percent of the voters. The measure's passage derailed the city's plans for having an 85,000-square-foot shopping center built on the Arden-Mayfair Lot, vacant, city-owned land north of Third Street between B and C streets. The lot was used as a parking lot at the time, and Central Park covered only the block just north of the lot. Measure S was an ordinance requiring the city to extend Central Park southward across the lot, with the understanding that up to one-third of the lot could be used for parking and public buildings. In the same election, Councilwoman Ann Evans was re-elected to a second term and Mike Corbett was elected to the council. Both were outspoken champions of slow growth, as was Rosenberg, who the council chose to serve as mayor. In his letter, Asera cited the council's choice of Rosenberg to be mayor as the third event that caused Ramos to reassess his plans. "One cannot deny that growth in this part of the county will occur," Asera concluded. "Growth is not only inevitable, but essential in light of Yolo County's financial needs. If approved, our project will help to satisfy those needs." [14]

A fiscal-impact report prepared for Ramos by Ralph Andersen & Associates estimated, at build-out, Mace Ranch would generate an annual revenue surplus of more than $1.75 million in 1986-87 dollars for the county if the project was developed outside of the city and the county had responsibility for providing services to the area. The report said the surplus would be even larger if some services were financed through assessment districts. As it noted, the report analyzed only estimated ongoing revenues and service costs for the county, and did not attempt to gauge fiscal impacts on the city, the Davis Joint Unified School District and local special districts.

Even before the Asera letter went out, Ramos began declaring his intent to approach the county, and Davis was sending an olive branch to the county, while saying it was willing to fight if necessary. At a meeting on July 16, 1986. council members voted unanimously to adopt a largely symbolic resolution saying the city would consider the needs of the county and university in its planning process, indicating the council was simply reaffirming long-standing city policies. They also agreed the city should undertake a comprehensive review of the Davis General Plan over the next year, and made public some of the events that led Ramos to try his luck with the county. Adler, for example, reported county intermediaries approached the council, detailing plans for an industrial research park generally in keeping with the city's size preferences. According to Adler, both the county and developers wanted a clear signal from council members that they would approve the project after it had gone through the review process. The council considered the proposal briefly during an executive session because it involved possible litigation, but decided it couldn't give the desired signal. At the time, Asera acknowledged that the county may have approached the city, but emphasized it was not acting on behalf of the Ramos group.

In a September 1986 letter to Supervisor Black, Mayor Rosenberg sought to counter attacks on the city's growth-control policies. "Some persons, both on and off the Yolo County Board of Supervisors, have from time to time suggested that Davis is a no-growth community," Rosenberg wrote, emphasizing that Davis grew faster than other cities and the county as a whole between 1970-86. [15] During that period, Davis saw its population grow by 74.3 percent, giving it an average annual rate of 3.59 percent. Woodland's population grew by 64.9 percent, or 3.23 percent per year, while Winters was growing 37.7 percent, or 2..05 percent per year. "By any calculation, Davis is hardly a no-growth community, and it has certainly accepted more than its fair share of growth in Yolo County,'' Rosenberg concluded, saying its growth-control policies allowed the community to temper outside pressures that otherwise would have forced the city to grow too rapidly. [16]

Ramos filed an application for the remaining 434 acres with the county in August 1986, naming the project Mace Ranch Park and making some major changes to the master plan. The research and development park remained, and was to cover nearly 160 acres. The amount of land set aside for housing increased from 146 to 180 acres, including 93 for standard single-family houses, 45 for single-family clustered houses and 42 for apartments. The hotel stayed in the plans, but its share of the site dropped from 28 to 8 acres. Nearly 47 acres of commercial uses were added to the project, along with 10 acres of park land. The conference and cultural center, winery, and energy cooperative disappeared from the master plan.

The city had little choice but to seek a compromise agreement that would allow Ramos to build his project, but ensure it was annexed to the city. Rosenberg recalled that two questions were critical to him: By refusing to extend city services to the site, could the city thwart any move by the county to approve the project? Could Davis successfully challenge county approval in the courts? Tom Lumbrazo, the city's planning director at the time, raised the first issue in a December 1986 letter to the county, saying the council wanted the county's EIR to address what alternatives would be available if the city declined to provide sewage, water, fire-protection and other services to the site. Rosenberg said that threat lost its appeal to him after the Davis Public Works Department responded to his inquiries by saying Ramos could afford to build a sewage-treatment plant if he couldn't use city facilities. Relying on such a threat also was risky because it could backfire. Forcing Ramos to build his own waste-treatment plant, for example, would increase the cost of the project significantly, but a new plant with leftover capacity could promote additional development outside of the city's borders. Responding to the second question, the city's attorneys told Rosenberg that Davis could delay, but not stop the project by challenging county approval in the courts. "It was going to happen either in the county or the city," Rosenberg said, explaining his decision to seek a compromise to ensure Mace Ranch was developed in the city. "That decision was easy for me."

Slowly, but surely, Ramos, the city and county worked during the following months to defuse the crisis. After intense, behind-the-scenes negotiations, the city, county and Mace Ranch Investors agreed to a settlement that gained the council's backing on a unanimous vote at a meeting on May 20, 1987. Councilwoman Debbie Nichols-Poulos presented the details: Ramos was to submit a master-plan application to the city, county officials were to delay certifying an EIR on the 434-acre project still before them, Davis was to revise its General Plan by Dec. 31, 1987, and Ramos was to work with the city on drafting the East Davis Specific Plan, a blueprint for development of Mace Ranch and nearby properties. Everyone understood that if the city did not proceed in good faith, the county could step in and regain control of the project. On Sept. 1, 1987, John P. Yeager, an attorney for Ramos, announced in a hand-delivered letter to city officials that an application for Mace Ranch would be submitted to Davis. The letter indicated, though, that Ramos remained leery, saying the application did not imply his consent to annexation and that Mace Ranch Investors retained the right to fight annexation if necessary. [17]

Now that it had an accord on how to handle the Ramos project, Davis needed a strategy for avoiding similar predicaments in the future. Its solution was an historic accord with the county reached in November 1987. Known as the Davis-Yolo Pass-Through Agreement, the accord is based on a simple principle: the county can approve urban development near Davis if it wants to, but it's going to take a big hit financially if it does. County officials kept their legal authority to decide whether unincorporated lands near Davis should be developed or not, but the practical impact has been to give the city control of a planning area that stretches from County Road 27 on the north, the Yolo Bypass on the east, County Road 35 and the Interstate 80 interchange at Pedrick Road on the south and County Road 97D on the west. The planning area covers about 84 square miles of territory, including the seven square miles of land located within the city limits at the time.

The city's ace up its sleeve was its plans for setting up a redevelopment agency for the downtown area and South Davis to raise revenue for a host of major traffic projects, including construction of a new freeway overpass across Interstate 80 and widening of the Mace Boulevard interchange. Typically, a city's redevelopment agency gets money by claiming a large share of property tax revenue created by new developments in redevelopment areas, siphoning off funds that otherwise would go to the city general fund, county and other local government agencies. In the agreement with Yolo County, Davis agreed to pass along to the county and a local library district tax revenue that normally could be claimed by the city's redevelopment agency. Rosenberg emphasized the county retained its authority to determine whether projects proposed for land located outside the city's sphere of influence should be approved or not. The pass-through deal would last, however, only as long as the county did not approve urban development over any city objections. Informal procedures were worked out for the county to notify the city when projects were proposed for unincorporated lands located within the Davis planning area and for the city to notify the county whether the projects are considered to be urban development.

As part of its agreement with the county, Davis was given until June 30, 1988, to enter into a development agreement with Mace Ranch Investors or submit to the county a development agreement city officials were willing to approve that was consistent with the East Davis Specific Plan. In the latter case, the county would have to rule whether the terms were reasonable. Ironically, at about the same time the city and county were agreeing to terms of the pass-through agreement, an attorney for Ramos was sending the council a letter demonstrating that many obstacles remained. In the Nov. 18 letter, Bill Holliman raised a long list of concerns about the East Davis Specific Plan, including phasing of Mace Ranch, the fees and exactions facing Ramos, the amount of parkland provided in the plan and proposed park fees. [18] A summary of the Holliman letter was part of a long chronology of written communications and meetings cited by Corbett in an October 1988 letter sent to give the county an update on the city's efforts to negotiate a development agreement with Ramos.

The chronology also cited a marathon council meeting that lasted until 2 a.m. on Dec. 23, 1987, where the council adopted the East Davis Specific Plan and a General Plan that envisioned the community's population growing to 75,000 by the year 2010. During the meeting, the council also voted 3-2 with Nichols-Poulos and Adler dissenting to locate a new freeway overpass at Pole Line Road, rather than County Road 103. Nichols-Poulos favored placing it somewhere in the vicinity of Road 103 and Adler supported a third site. Said Rosenberg of the new General Plan, "It's a good vision for the future. The city can be proud of it." Almost immediately, however, critics appeared, complaining that the city's new blueprint for the future was forced on the city by Ramos and was drafted without adequate public input. Among the most controversial features was a decision to include several major housing projects other than Mace Ranch in the General Plan for possible development by 2010, including Aspen and Evergreen in West Davis and Northstar, Crossroads and Wildhorse in North Davis. Still, the plan provided for an annual growth rate of only about 2 percent.

In January 1988, the city sent a draft development agreement to Ramos. The conflict wasn't over yet, though. On March 9, Holliman sent the city a letter chastising it for not moving quickly enough, saying Ramos was still awaiting estimated costs for offsite infrastructure, development fees and exactions. "It is imperative that we experience no further delays and that the related processes discussed in this letter be completed expeditiously," Holliman said. [18] Two months later, Bill Owen, one of the city's attorneys, sent the council a memo warning that Holliman was convinced the city was asking too much of developers. "He states that the figures which have been given to MRI by the city reflect development costs of $32 million," Owen wrote, indicating Holliman thought that was about $15 million too high. [19] Holliman blamed about $10 million on excessive demands for amenities such as parks and greenbelts. Still, Owen had some encouraging news: Holliman now was saying the fate of the development agreement had been narrowed to three issues: overall costs, the cost of a low-cost housing proposal made by Corbett, and phasing. Ramos and Rosenberg said the meetings were cordial, not confrontational. The Davis councilman, though, recalled an underlying tension and the frenzied pace as city officials sought to hammer out an agreement with the county and Mace Ranch Investors, pointing out that the city had a host of time-consuming tasks to complete: revamp the Davis General Plan, draft the East Davis Specific Plan, negotiate a development agreement with Ramos, set up the redevelopment agency and draw up its plans, establish a special assessment district to help finance public projects in the area, and expand the city's sphere of influence.

Two of the most sensitive tasks were deciding how fast Ramos could build his housing and whether a phasing plan should be set up by the city for industrial development and other non-residential parts of the project. The first was sensitive because of the city's slow-growth policies, and its habit of holding a housing allocation every couple of years or so, where developers would present their plans, the city would decide how many new houses were needed and city officials then would distribute the houses among developers. A new era was about to be ushered in, however, because the development agreement would commit the city in advance to allocating a specified number of houses and apartments annually for Mace Ranch. The city wanted to keep the total as low as possible to help keep a lid on growth and ensure a reasonable amount of housing was left over for other homebuilders. Ramos naturally wanted the number to be as high as possible, and needed it to be high enough to make financing the project's infrastructure costs feasible. At an August, 1988 meeting cited in Corbett's chronology of events, Mace Ranch Investors indicated it wanted a guaranteed allocation of 150 units per year. Corbett, the mayor at the time, stated the city's thinking in the letter that accompanied the chronology, telling the county, "Our initial review of phasing has resulted in a tentative determination that the rate of residential development of the MRI project should be in the range of 75 to 170 dwelling units per year." [20] Corbett noted the city was awaiting more detailed information from Ramos on his project's anticipated infrastructure costs.

The lack of a consensus on the issue was readily apparent when it came to the council for a decision on Oct. 24, 1988. Holliman, the attorney for developers, noted that Ramos initially proposed 150 per year, but recently had discussed 122 units per year with a subcommittee of council members. Later in the meeting, council members got their chance to debate the issue. Councilman Gerry Adler proposed 122 houses and apartments per year, Maynard Skinner suggested 110, and Evans added that 75 should be enough. Rosenberg argued for 105 and Corbett came out in favor of 95. Rosenberg then made a motion to approve 105, but lost on a 2-3 vote, gaining only Adler's support. Corbett moved 95, but failed to get a second. Skinner moved 110, but he lost 2-3, winning support from Adler. Skinner then joined forces with Rosenberg and Adler on a 3-2 vote in favor of 105 units per year.

Next, the council tackled a second thorny issue: whether the city should require phasing of office, industrial and business park development in Mace Ranch "We cannot, and will not, accept any arbitrary restrictions upon the rate of development of the non-residential portions of Mace Ranch Park," Holliman said in a Oct. 12 letter to the city. "Such restrictions seriously restrict the landowner's ability to market these portions of the property to large-scale users. Moreover, such restrictions are unprecedented in the city and have not been applied to business park developments in the vicinity of Mace Ranch Park." [21] Nonetheless, at the Oct. 24 meeting, the council voted 4-1 with Skinner dissenting to approve a phasing plan that would allow 50 percent of the office, industrial and business park development to occur during the first five years of the development agreement, 25 percent during the second five years and the remaining 25 percent in the following five-year period. Afterward, council members voted unanimously to declare that terms in a draft development agreement and preannexation agreement were acceptable to the city and should be sent to the county so it could determine whether the terms were reasonable. In the end, the non-residential phasing stayed in the development agreement, even though Ramos didn't like it.

Mace Ranch still had one obstacle to hurdle. Opponents of the project launched a drive to put the development agreement and a prezoning application before city voters. "The approval of the development agreement with Ramos is a litmus test that will be used by the citizens of Davis to see how serious public representatives are in carrying out the wishes as expressed in Measure L,'' said William and Peri Drips, two leaders of the drive, in a letter to the city. "It is not in the public interest to bow to special-interest pressure and approve projects or take actions that conflict with expressed concerns of the citizens of Davis.'' [22] The drive succeeded in putting both issues on the ballot, but 63.6 percent of the electorate ratified the prezoning by voting for Measure P and 60.1 percent voted to approve the development agreement by casting ballots for Measure Q.

Looking back, Rosenberg said he believes the city did what it had to do during the crisis. "We did the best we could under the circumstances," he said, indicating he remains convinced the 1987 General Plan was a solid blueprint for the city's future, noting that it provided for completing development of South Davis. Ramos, on the other hand, isn't necessarily content about how things turned out, realizing the project likely would have been much cheaper to build under county control. The city demanded too much parkland, he said. It required Mace Ranch to meet the water drainage needs for much of East Davis. It required Ramos to pay for improving much of Second Street. And, it convinced him to pay for 34 percent of the improvements proposed for the Mace freeway interchange. Still, his agreement with the city brought to an end a costly battle that could have delayed construction of Mace Ranch for years.

Continue to Chapter 7...

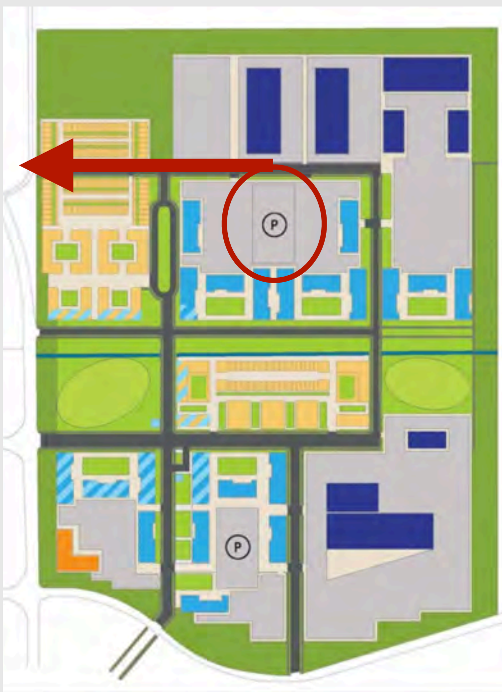
ARC Comments

Please accept the below comment submitted by Colin Walsh
colintm@gmail.com

Traffic

There are differences in the ARC Project Description from the MRIC Mixed-use alternative that must be considered in new traffic analysis as part of the SEIR.

More traffic will flow to road 32A in the new project.

MRIC Mixed Use Alternative	ARC
	
Parking has more direct access to Mace	Straightened Eastern road and parking closer to CR32A will change traffic patterns.

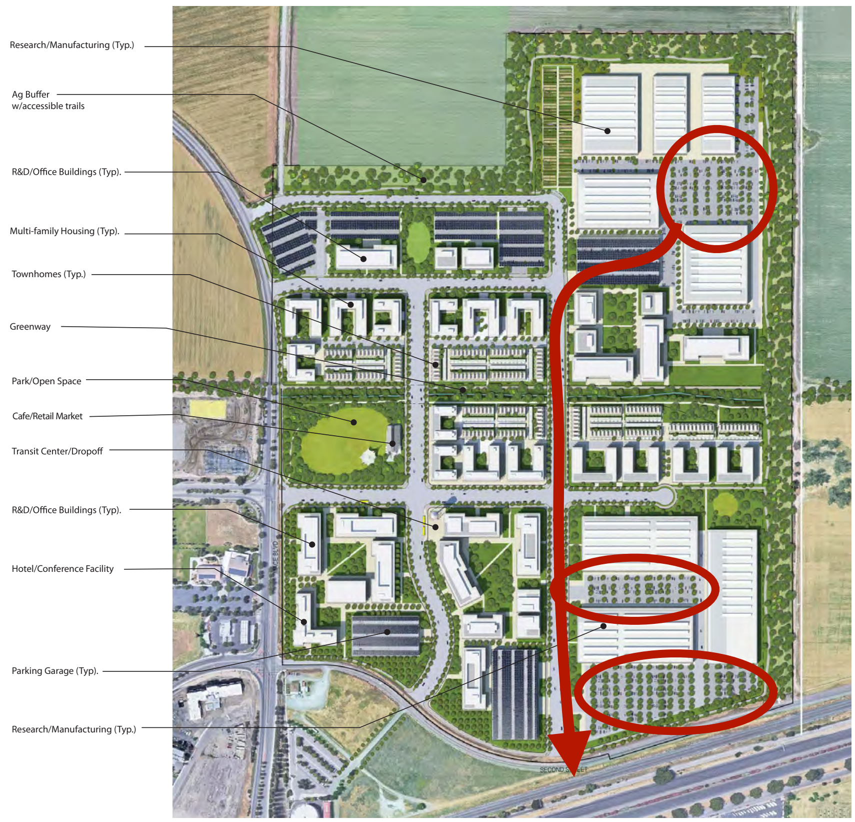
The parking lots have moved closer to road 32A

The Eastern most road as shown in the developers materials has been straightened providing a direct link for parking to road 32A.

Road 32A's connection to Mace Blvd bust be reconsidered. This is close to the overpass and directly across from second street which already backs up. An influx of cars from the newly located parking lots will distinctly change traffic patterns from what was considered in MRIC Mixed-use alternative.

Routing of additional traffic to road 32A east of ARC will also have distinct new traffic patterns different from what was considered in the MRIC Mixed-use development. This traffic will compete more with the only bike route to and from Sacramento on a narrow 2 lane road. This will discourage bikers from using this route and possibly biking at all since there will now be no safe route. These bikers will likely drive instead and that additional I80 traffic must be considered.

Further, the relocation of the parking lots may encourage more drivers to rout to the on and off ramps immediately adjacent to the causeway causing more back ups there. This is different from what was considered in the MRIC mixed-use project and must be considered.



In the new exhibit released on December 9th (the day comments were due for the SEIR) titled 2019-12-09-ARC-Site Illustrative we see more detail on parking lots. These additional lots continue in the same pattern with easier access to road 32a.

Additional traffic on road 32A will interfere with garbage trucks going to the Yolo County Landfill. The additional travel time and use of fossil fuels in delivering trash to the landfill will also need to be considered.

This heavier use of 32A with no plans for a redesign are very problematic and the cumulative impacts of increased 32A with increased traffic must be considered.

CR 32A Closure

At the Dec. 3 scoping meeting a representative of the developer stated that it was likely that CR 32A would be closed. This possibility was not considered in the MRIC analysis or the mixed use alternative. This possibility needs to be considered in the analysis.

This could lead to rerouting of garbage trucks to Mace Blvd as they come over the causeway and head to the Yolo landfill. It could also lead to agricultural vehicles rerouting to Mace Blvd. This additional traffic will have a cumulative effect and must be considered as it mixes with the new ARC traffic.

Additionally, since the MRIC EIR was done, Road 32A has come to be a popular alternative to interstate 80 and has much heavier traffic than before. The rerouting of this traffic will need to be considered in the new analysis

Residential parking on Dec 9 Site plan

(2019-12-09-ARC-Site Illustrative)

This new site plan shows no parking for any of the residential units. Other images produced by the developer on the same day like ARC Ground View Rendering Exhibit show these buildings may be 5 stories tall.

Given these apartments are freeway adjacent without easy access to a grocery store not including parking is an extremely impractical and unlikely design. The EIR must assume that these residents will have and drive cars and the traffic analysis needs to be done based on their use of cars despite the developers omission of parking. One change in the ARC project from the MRIC project is a reduction in parking, but we now see that this reduction in parking is unrealistic, and the higher amount of parking cars and drivers in the original MRIC plan must be assumed.

Rideshare Traffic

The ARC proposal contemplates and encourages ride share services such as Uber and Lyft servicing the the transit plaza. "a convenient drop-off/pick-up zone for rideshare services such as Uber and Lyft." With less parking than would be typically found at similar business parks, it is likely these services will be a necessity. Because over all parking has been reduced from 6,032 spaces as stated in the 2019-11-27-Parking-Comparison-Table-ARC-MRIC document to 4,340 parking spaces this is a significant change in the need for ride shares from what was considered in the MRIC Mixed-use analysis. At the same time the project has actually add +100,000 SF of office space according to the developers table 2019-11-27-Land-Use-Comparison-Table-ARC-MRIC.pdf as compared with what is actually in the MRIC documents.

The full traffic impact of Rideshare services must be considered. Because a car travels to and from the destination as opposed to a traditional car that only travels in one direction typically, arriving in the morning, and departing in the evening, the ride share cars produce twice the trips. This doubling of trips must be considered in GHG emissions and must be considered in traffic studies.

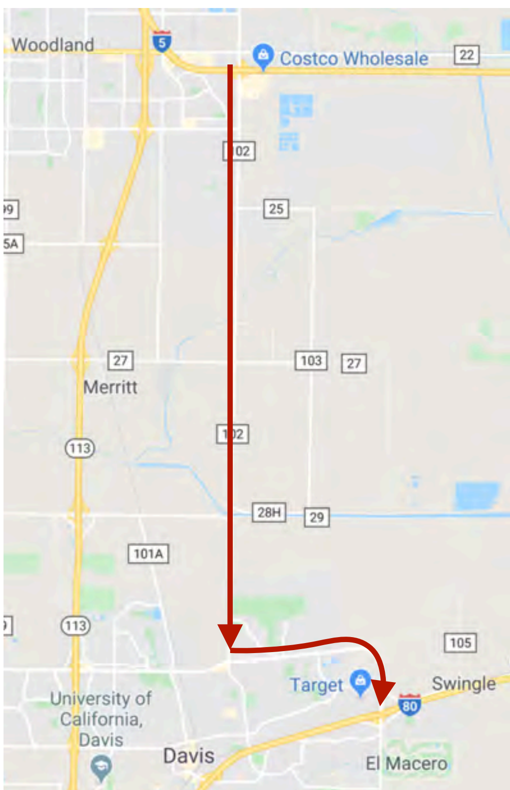
Parking and additional cars

The project description states, "The Project applicant proposes creation of a parking reservoir to allow the allotted 3,490 nonresidential parking stalls to be distributed throughout the Project site as needed, rather than strict parking ratios being applied at the issuance of each building permit based upon use type." this approach avoids applying City of Davis parking minimums for each building. Since the City minimums are based on anticipate use, and there is no comprehensive traffic plan offered by the developer for analysis in the EIR process, the EIR consultants and traffic consultants must consider the higher number of cars likely based on City minimums and industry standards. This number is likely closer to 9,000 parking spaces and associated trips pre day. This was not considered in the MRIC EIR.

The project development contemplates fewer cars and car trips being needed do to the onsite housing, "the demand for parking will be reduced in the future as the following occur: critical mass of employees is achieved on-site; the on-site jobs/housing balance is realized." But the developer has put forward no mechanism for how the housing will be reserved for employees. Indeed fair housing laws would seem to prohibit the developer setting aside the housing for ARC employees only. With no plan for how this jobs housing balance could be achieved it can not be considered in the analysis. Or the very least the project must be analyzed Sith few employees living in the onsite housing and the housing rented on the open market. This is specifically different than what was analyzed in the MRIC mixed use alternative and therefore must be analyzed.

The housing is parked at very low percentages. With fewer parking spaces than in the City minimums. This is impractical for a freeway adjacent business park/housing development. The developer offers no evidence or plan that would justify the low amount of parking. Analysis of car trips needs to be based on higher numbers to understand the true impact of this project. This is very different from the MRIC Mixed-use alternative that assumes fewer cars will be needed because a very high percentage of people living in the project will work in the project.

Woodland Impacts on Traffic.



Several new projects are planned along road 102 in Woodland. The cumulative new traffic from these projects must be considered in the SEIR. This projects were not considered in the MRIC EIR and several of them have been approved since the MRIC EIR was certified. This additional development is a change since the MRIC EIR. The route illustrated in this map shows the quickest route to 80 from road 102 Woodland.

What happens in this part of Woodland effects Davis and Davis traffic. For example. Petrovich Development reports that 41% of the Costco store members at their woodland Gateway location are from Davis

Woodland Commerce Center: Located at the northwest corner of East Main Street and County Road 102, the project invovles the annexation for 146-acre site with a general plan land designation of Industrial and pre-zoned Industrial.

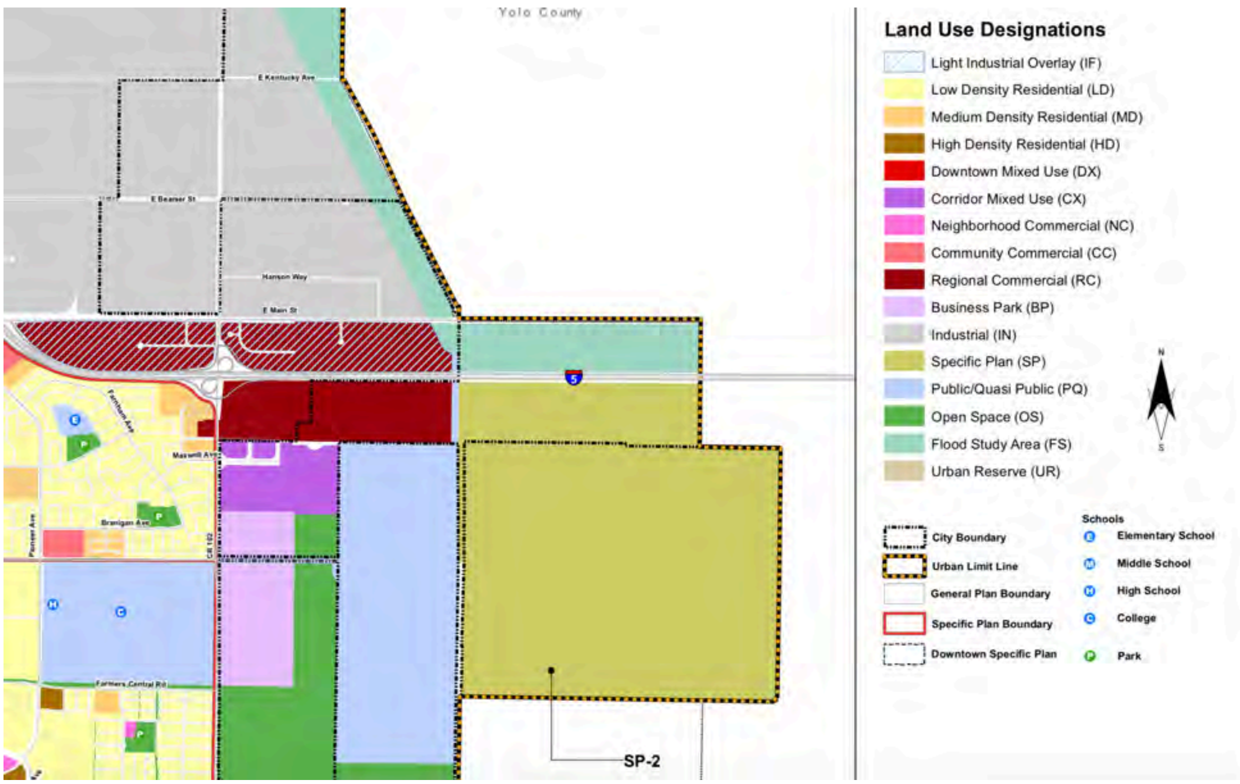
Kentucky Ave Industrial Logistics/Distribution Project: Located at the northwest corner of Kentucky Avenue and CR-102, the project is for future development of a 150-acre Industrial site.

Solara Ranch Subdivision, Spring Lake: 19.23 acres (94 residential lots) within the R-5 zone of the Spring Lake Planning Area.

Gateway II project in woodland must also be considered

The woodland general plan sets out Policy 3.A.15 to designate County Road 102, north of I-5, as a State Highway. Coordinate with Caltrans to consider including County road 102 north of I-5 as part of the state highway system. This could result in more traffic on the Mace, coeval 102 connection to I80 and must be analyzed. It is a change since the MRIC EIR was certified.

The Woodland General plan designates large new areas by road 102 as regional commercial, corridor mixed use, industrial, business park and specific plan. These large areas that are being opened to development is a change since the MRIC EIR was certified. These large new uses will have a compounding effect on regional traffic and a specific effect at Mace Blvd. these changes must be considered in the SEIR.



The Woodland general plan sets out Policy 2.D.3 “technology Sector. Grow the technology sector in Woodland by leveraging the research strength at UC Davis. Establish business parks in the Southern Gateway at CR 25 and SR 113 and along CR 102. Encourage smaller companies and start-ups to locate in incubator spaces Downtown and in areas with the Light Industrial Overlay designation.” This type of development will generate more traffic on Road 102 and have a cumulative impact on Mace Blvd. This policy is new since the approval of the MRIC EIR and therefore must be considered in the SEIR.

The City of Woodland general plan sets out Goal 2.I “Mixed-Use Corridors. Create memorable and engaging retail, residential, and mixed -use places along Main Street, East Street, Kentucky Avenue, and CR 102.” This is new site the approval of the MRIC

EIR. The cumulative impact of Woodland's increased development along road 102 must be considered in the SEIR for ARC.

Woodland general plan Policy 2.1.9 Cr 102. "Develop CR 102 south of East Main Street as an attractive corridor with a mix of commercial, office, and residential uses that support employment growth targets. Incorporate new job- generating uses into the corridor, including medical services, offices, and business park development." This policy is new since the approval of the MRIC EIR and must be considered as a change in circumstance. ARC is in a direct route from this new development area to Interstae 80. The cumulative impact of traffic on Mace must be considered.

The CR 102 corridors is one of Woodlands, "Focus Areas for Economic Growth" as stated in the general plan which was approved since the certification of the MRIC EIR. This is a new circumstance and must be considered in assessing the cumulative traffic impacts on Ice Blvd around the ARC project.

Telecomuting
At the Dec 2 Scoping meeting the developers attorney stated that one of the ways the project was able to have so little parking was that so many people telecommute now. While it is true that telecommuting has become more popular and widely used, it has also had specific impacts on the work place. As a result of telecommuting companies are now offering less space to their workers, using shared space and hoteling options for workers who only occasionally come to the office. As a result, companies can use less space per worker. This negates any benefit to traffic from telecommuting for this project. New companies will rent smaller spaces to account for telecommuters diminished presence in the office, thus more companies and more overall workers will work from the ARC office space. This is a changed circumstance since the MRIC EIR and must be considered. Additionally, Additionally, the new ARC plans including language allowing for industrial and manufacturing spaces to be converted to office space if not filled. This is a change and also needs to be considered.

Aggie Square
The newlsey announce Aggie Square innovation park must be considered. On December 20,2017 UC Davis Chancellor May with Sacramento Mayor Darrell Steinberg announced the Aggie Square Innovation Center project. Aggie Square was announced after the MRIC economic feasibility study and after the MRIC EIR. The effects of Aggie Square on the ARC project must be considered.

The UCDavis website reports:

> Located on the UC Davis Sacramento Campus, Aggie Square will house business partners and community-based programs with UC Davis innovation and research to create a stronger and healthier shared community.
>
> Aggie Square will create a unique live/learn/work/play environment to foster collaboration and creativity. Entrepreneurs, companies and workers can thrive

in our technology campus that values inclusion and creates chance encounters among creative people.

The campus will feature state-of-the-art research facilities, modern office and mixed-use space, world-class amenities and a dynamic, thriving community. https://leadership.ucdavis.edu/aggie-square/about

This very closely matches the language in the first paragraph of the ARC project description:

Aggie Research Campus – Overview

The Aggie Research Campus is an innovation center that offers a live/work environment through a comprehensive sustainable site design and broad array of complementary land uses. The Campus features office, research & development, laboratory, prototyping, advanced manufacturing, recreation, open space, and housing, all in one compact location. This mix of uses will serve to attract new economy incubators, entice UCD-spawned businesses seeking a growth location, and provide large-scale locational opportunities for well established companies, particularly those with research ties to the University.

The ARC has no actual UCD involvement. The developers attorney reported to me at the scoping meeting on Dec 2 that the developer had yet to entice UCD to participate in the project, despite having offered UCD half a free floor in the first building built. With ARC pinning its hopes on UCD's involvement, but UCD clearly focused on their own innovation center project it seems unlikely that ARC will be able to attract the businesses they project. This must be considered in the SEIR.

In addition to Aggie Square, the Woodland innovation center also has the same goal. It is beyond unlikely that UCD will spawn 3 new innovation parks. The park most likely to succeed will be the park with the crossest ties to UCD, Aggie Square.

ARC will have a massive environmental impact, and without UCD's partnership, it will not have any of the payout it promises. Importantly, it will not have the resources to undertake any environmental mitigations and so the impact of that too must be considered.

All Housing Alternative

With open ended zoning that would allow for several forms of housing, an additional study should be considered for an all housing alternative.
Housing demand is much higher in the area than is commercial and industrial uses, so the EIR should consider that the developer may adjust the project to be an all, or mostly housing project. Commencing study at this time on an all or mostly housing alternative will provide greater understanding of the impacts of such a project. Given the developers history of offering a business park and actually building housing as can

be seen at this link https://www.cityofdavis.org/about-davis/history-symbols/davis-history-books/growing-pains-chapter-6. This past history must be considered as part of the SEIR. I have included the referenced link for consideration.

Ag land mitigation

The MRIC mixed use alternative states under City objectives, "Mitigate with agricultural land on a 2 to 1 acre basis." The MRIC GP update states, "Policy LU S.2 An Innovation Technology Center shall mitigate for the loss of agricultural land by preserving no less than 2 acres of agricultural land for every 1 acre developed." But the ARC project description makes no mention of ag land mitigation. And the ARC General plan update removes the Ag mitigation language. These are specific changes to the project that have happened since the MRIC EIR and must be considered. The lose of class 1 farmland without mitigation is very significant impact, and with all mitigation language absent from the project the impact must be analyzed.

Further, the Yolo county ag land mitigation policy requires a 3/1 mitigation. Because there is better mitigation as county land, an alternative for the project must be considered under county mitigation.

Renewable Energy Generation and Storage

Renewable energy and storage has been added as a use in the ARC PPD. This is a significant change from the MRIC EIR and must be evaluated in the SEIR. Renewable energy generation and storage facilities where not contemplated as allowed use of any part of the development in the previous development or the MRI Mixed-use alternative. The AARC project description is vague on this with no real mention. The EIR needs to be updated to consider many variations of energy generation on this location.

This photo was provided by the MRIC developer to the Davis Enterprise and was published on the front page April 14, 2016. This photo shows wind turbines on the north east corner of the development. These Wind turbines appear to be placed in the required ag buffer. This is evidence of the developers intention to have a wind energy generation facility at the new ARC project.

This placement of wind turbines in the ag buffer needs to be evaluated in the new EIR analysis.

Wind turbines can be compatible with some ag uses, but placing them in the Ag buffer is outside of what would be normal for City of Davis Ag buffers. Placing these turbines on the edge of the project will increase their impacts on adjacent habitat. This placement must be considered in the EIR.

Wind turbine impacts are coming to be well known with bird and bat strikes front and center. Considering there are 2 bird species and 1 bat species that are both species of special concern at or near the ARC site, wind turbine impact on the habitat must be carefully evaluated. Wind energy can have adverse environmental impacts, including the potential to reduce, fragment, or degrade habitat for wildlife, fish, and plants. Spinning turbine blades can pose a threat to flying wildlife like birds and bats.

Of great concern is that the MRIC Biological Survey failed to consider the Yolo Causeway Bat Colony. This colony is one of the largest seasonal Mexican free-tailed bat (Tadarida brasiliensis) colonies in California. An estimated 250,000 individual bats live there. The Mexican free tail bat is considered a species of special concern in California as a result of declining populations. The yolo causeway bat colony is 2.5 miles from the ARC proposed project. That is well within the 30 mile daily hunting area of the causeway bats. Further considering many of the bats insect prey are agricultural pests, it is very likely the bats hunt at the current ARC site.

B. Survey Dates, Personnel, and Coverage

Biological and botanical surveys conducted for this project are summarized in Table 1 below.

Table 1. Survey Dates and Personnel

Date(s)	Personnel	Area(s) Surveyed	Surveys Conducted
7 October 2014	Mike Bower, M.S.	Entire BSA	Reconnaissance survey
10 December 2014	Mike Bower, M.S. Noosheen Pouya, B.S.	Entire BSA	Biological and botanical survey. Wetland delineation fieldwork
23 December 2014	Chuck Hughes, M.S.	Entire BSA	Arborist survey
19 May 2015	Mike Bower, M.S. Juan Mejia, B.S.	Entire BSA	Botanical survey

C. Problems Encountered and Limitations That May Influence Results

The botanical surveys were not conducted at a time of year when all special-status plants would be expected to be evident and identifiable. No other problems or limitations were encountered.

Table 1 from appendix D.

The MRIC biological surveys were all conducted in the winter. Apedex D in table 1 states that the biological survey was conducted in December. The Mexican brown free tail bat is migratory and would not be in California at that time. In fact all of the survey dates, where at times when no, or almost no bats would be expected. This lack of summer surveys is specific insufficiency to the survey that is now compounded by the change allowing renewable energy generation at ARC.

The biological survey conducted in December also would have missed all of the summer migratory birds that use Yolo Bypass Wildlife Area were there are approximately 16,600 acres and is a haven for fish, waterfowl, shorebirds and wading birds, neotropical migratory birds, raptors, invertebrates, snakes, turtles, toads, and bats. Vegetation community types include managed seasonal and permanent wetland, natural seasonal wetland, natural perennial wetland, and riparian woodland. This is part of the Pacific Flyway, and many of the birds visit the ARC site at times other than when the bio survey was done. This is certainly shows a changed condition from when the survey was done, and shows that a new biological survey must be done at a more appropriate time of year. Because of the previous deficient biological survey, an new survey must be done in the summer months.

The migratory birds that where missed in the biological survey are at specific harms way from the addition of renewable power generation that has been added as an allowable use in the ARC PPD. This change must be studied, and a new biological survey will need to be done to study it since the previous survey was insufficient.

Additionally, sound, visual impact, vibration and shadow flicker effects must be considered. With he close proximity to houses, the impact of the turbines on the houses must be considered (Wind turbines generate some noise. At a residential distance of 300 metres (980 ft) this may be around 45 dB.). Wind turbines are required to have aviation lighting, the impact of this lighting on nocturnal animals such as owls and bats must be considered
Consider K. Shawn Smallwood, "Comparing bird and bat fatality-rate estimates among North American wind-energy projects", Wildlife Society Bulletin, 26 Mar. 2013.

Woodland Inovation Park

Since the MRIC EIR Woodland has received an application for the development of an innovation park.this application was received on March 6, 2017, and is currently in review.

The City of woodland website states:

> The proposed Woodland Research and Technology Park Specific Plan is envisioned as a new technology hub for the City of Woodland, intended to serve an array of research and technology companies interested in locating and growing near U. C. Davis, and other research and technology institutions within the Sacramento region. Ideally located along the Highway 113 corridor, the Specific Plan will offer a unique business environment, supporting research and development, technology, and science and engineering-based companies. Consisting of approximately 351 acres, the Specific Plan is proposed as a new type of employment center that also includes a range of housing options, a commercial mixed-use town center focused around a central green and connected by a multi-modal street network and trail system.

https://www.cityofwoodland.org/583/Woodland-Research-Technology-Park

This plan is very close to what is proposed for ARC. It is also a “research and technology campus.” It is also linking to UC Davis. It is also located on a highway a short drive from UC Davis. It also has “mixed-use town center focused around a central green.”

The approval of such a similar project so close to ARC will effect the viability of ARC. This must project must be considered in the impact report for ARC

The Woodland general plan sets out Policy 2.D.3 “technology Sector. Grow the technology sector in Woodland by leveraging the research strength at UC Davis. Establish business parks in the Southern Gateway at CR 25 and SR 113 and along CR 102. Encourage smaller companies and start-ups to locate in incubator spaces Downtown and in areas with the Light Industrial Overlay designation.” this policy is new since the approval of the MRIC EIR and therefore must be considered in the SEIR. This type of development will compete directly with ARC and must be considered in assessing the financial viability of the ARC project.

City of Woodland General Plan

The City of Woodland adopted a new general plan on May 16, 2017, this is after the EIR for MRIC was approved. This changed circumstance must be considered in the SEIR for ARC. The woodland General plan has a enormous amount of growth

Colin Walsh
900 Kent Dr.
Davis, CA 95616

December 23, 2019

Asley Feeney
Assistant City Manager
City of Davis
23 Russell Boulevard,
Davis, CA 95616

Dear Mr. Feeney,

I am writing to draw your attention to a significant omission in the Mace Ranch Innovation Center Project Final Environmental Impact Report dated January 2016. At no place in the FEIR is there any consideration for Mexican free-tailed bats (*Tadarida brasiliensis*), or for Hoary bats (*Lasiurus cinereus*).

Just over 2 miles from the MRIC/ARC site is “One of the largest seasonal Mexican free-tailed bat (*Tadarida brasiliensis*) colonies in California. An estimated 250,000 individuals strong.” (https://baynature.org/2013/07/25/yolo-bats/). This colony roosts under the Yolo Causeway bridge and has been well documented in the Davis Enterprise and the Sacramento Bee (https://www.davisenterprise.com/community/see-bats-at-the-causeway/, https://www.sacbee.com/news/local/environment/article31141712.html).

I have personally observed bats flying over the MRIC/ ARC site during summer months, but there is no mention of bats in the FEIR, or any of the underlying documentation.

Hoary bats have been mist netted by biologists and received into wild rescue by NorCal Bats in the area as well. They generally roost in trees, so it is possible that they roost on the MRIC/ARC site or nearby.

It appears the MRIC EIR Biological Survey missed the bats because it was performed only in winter months when the bats migrate and/or are less active. The Biological Resources Evaluation for the Mace Ranch Innovation Center Project prepared by Sycamore Environmental Consultants in August 2015 indicates the Biological Survey was conducted on December 10.

B. Survey Dates, Personnel, and Coverage

Biological and botanical surveys conducted for this project are summarized in Table 1 below.

Table 1. Survey Dates and Personnel

Date(s)	Personnel	Area(s) Surveyed	Surveys Conducted
7 October 2014	Mike Bower, M.S.	Entire BSA	Reconnaissance survey
10 December 2014	Mike Bower, M.S. Noosheen Pouya, B.S.	Entire BSA	Biological and botanical survey. Wetland delineation fieldwork
23 December 2014	Chuck Hughes, M.S.	Entire BSA	Arborist survey
19 May 2015	Mike Bower, M.S. Juan Mejia, B.S.	Entire BSA	Botanical survey

(MRIC-BRE-Aug2015.docx 8/10/2015, Page 9)

Unfortunately, it is very unlikely a survey conducted in December would find the Mexican free-tailed bat or the Hoary bat, because they are migratory and/or dormant in the winter. This information is widely known and publicized. For example, an Atlas Obscura headline, “Bats of Yolo Causeway: **Each summer**, the **migratory** bats living beneath the bypass form "batnadoes" **at dusk**.” (https://www.atlasobscura.com/places/yolo-causeway-bats).
The Davis Enterprise reported, “About 250,000 Mexican free-tailed bats call the Yolo Bypass Wildlife Area home. Each **evening**, **in the summer**, these beneficial animals each [eat] millions [of] insects.” The Yolo Basin Foundation who work to protect and conserve the Yolo causeway habitat area including the bat roost state, “Range: **Migratory**.”

The Mexican free-tailed bat can fly more than 40 miles a day hunting for food, and they feed on many agricultural pests. There is every reason to believe they are present at the site of the ARC project through the summer months. As stated earlier, I have seen them there myself.

The Hoary bat can travel 24 miles while foraging and could be roosting and/or foraging at the MRIC/ARC site in the spring and fall.

Also, there is no information in the Biological Resources Survey as to the time of day of the biological survey. A survey done during daylight hours would also make it unlikely to find bats since they are nocturnal and emerge to hunt at the MRIC/ARC site only at twilight.

Additionally, there are known summer nesting sites for heron and other birds near road 105. These birds may also be foraging in the summer months on the MRIC/ARC site and would have been missed with a December survey.

New Biological Surveys in the spring, summer and fall months at the proper times must be done to assess the presence of Mexican free-tailed bats, Hoary bats, and summer migratory birds so that proper mitigation measures can be planned.

It is also notable that these bats are a food source for Swainson’s Hawks, a designated Threatened Species in California, so knock-on impacts on the hawks resulting from impacts on the bats must also be considered.

Although *Tadarida brasiliensis*, “is widely regarded as one of the most abundant mammals in North America, and is not on any Federal lists… its proclivity towards roosting in large numbers in relatively few roosts makes it especially vulnerable to human disturbance and habitat destruction.” Since this major roost is so close to the ARC site, the potential impacts on the roost must be understood and mitigated before moving forward with the project.

(http://wbwg.org/western-bat-species/). The Western Bat Working Group further notes “Documented declines at some roosts are cause for concern.” Bat Conservation International (BCI) notes, “The world is a dangerous place for bats. Although they provide vital environmental and economic services, bat populations are declining around the globe, largely as a result of human activity… Loss of habitat remains the most widespread peril worldwide.” (http://www.batcon.org/why-bats/bats-are/bats-are-threatened)

BCI Founder and President Merlin Tuttle and Jessica Kerns, University of Maryland, inspect bats killed at wind turbines (photo by Merlin Tuttle, BCI.)

BCI also reports that bats are further threatened by White-nose syndrome: "over 5.7 million of bats have been killed by White-nose Syndrome, a wildlife disease that continues its spread across the continent. Caused by a cold-loving fungus called Pseudogymnoascus destructans, WNS attacks hibernating bats, causing mortality rates that approach 100 percent at some sites." WNS was announced in CA last summer in Plumas County. Now that it has arrived in CA it could rapidly decimate the remaining bat populations.

BCI further reports that, "The dramatic growth of wind energy throughout much of the world is also taking a huge toll on bats."

"The cumulative impact of wind power facilities in killing migratory bats threatens to become an environmental crisis that cannot be ignored (O'Shea et al. 2016). By 2012, more than 600,000 bats were being killed annually, and the number grows each year (Hayes 2013)."
https://www.merlintuttle.org/resources/careless-wind-energy-development/

"Scientists estimate that hundreds of thousands of bats are killed each year in the United States by collisions with the spinning blades of wind turbines or rapid pressure change at turbines that can rupture blood vessels. BCI and its partners have been working since 2004 to minimize bat fatalities at wind sites" according to BCI.

These impacts of renewable energy generation on bats is a point of concern in relation to the ARC project. On April 14th, 2016 the Davis Enterprise published this illustration of the MRIC/ARC project provided by the developer. (https://www.davisenterprise.com/local-news/mace-ranch-innovation-center-put-on-hold/attachment/mace-innovationw/) The illustration clearly shows the developers are considering placing several wind turbines at the project.

The illustration was used again in the California Aggie on December 10, 2019 in what appears to be a developer press release story. (https://theaggie.org/2019/12/10/initiative-to-build-research-campus-gains-support-throughout-davis/)

The inclusion of wind turbines in the project is also supported in the ARC PPD zoning changes. The Aggie Research Campus – Proposed Preliminary Planned Development (PPD) specifically adds a permitted use, "(f) Renewable energy generation and storage facilities" This did not appear previously in the MRIC PPD and constitutes a change that must be studied in the SEIR. This land use designation also does not exist in the current Davis Municipal code and thus lacks definition. It certainly can be read to include wind energy generation.

Renewable energy generation at the ARC site needs to be studied in the EIR. In order to understand its impacts, a new Biological Survey needs to be performed in spring, summer, and fall months. The biological survey that was conduct on only one day in December was not a sufficient biological study to base the MRIC FEIR on and clearly missed biological resources on the site. Even if no wind generation is planned for the site, a proper biological survey that can determine the presence in spring, summer, and fall of migratory animals including bats needs to be done before this project can move forward.

Sincerely,

Colin Walsh

CC: Davis City Council, Davis City Manager Mike Webb, Sherri Metzker Principal Planner City of Davis, Yolo Basin Foundation, Yolo County Board of Supervisors, California Department of Fish and Wildlife Bay Delta Region, Central Coast Bat Survey, Bat Conservation International, Northern California Bats, Western Bat Working Group, Sierra Club Yolano Group

Colin Walsh
900 Kent Drive
Davis, CA 95616

January 6, 2020

Sherri Metzker,
Principal Planner
City of Davis
Community Development and Sustainability Department,
23 Russell Boulevard, Suite 2
Davis, CA 95616

Dear Ms. Metzker,

I am writing regarding new information about the developer's plans for the ARC business park that came to light during the City of Davis Social Services Commission meeting the evening of December 16th. This new information was not provided to the public until after the 5PM December 16th deadline for ARC EIR scoping comments, but the information is directly relevant to the supplemental EIR process and needs to be considered in the new environmental evaluation of the site. Since the developer was late in providing this new information, it is incumbent upon the City to include this new information in the SEIR process.

Specifically, the new information is different than what was stated in the project description used as the bases for the MRIC EIR or for the MRIC Mixed-use Alternative included in that EIR. It is also different than any information in the previously provided ARC project description. Because this new information shows a change, it needs to be considered in the SEIR process. Since the developer did not bring this information to the public until after the closing date for scoping comments, this new information needs to be considered even though this comment has been submitted past the scoping deadline.

At the Social Services Commission meeting, the Social Services Commission and Mayor Lee expressed a preference for integrating required affordable housing into the ARC project. When asked about this, the developer stated some willingness to include affordable housing in the multifamily housing, but also stated that, "I think that if I had a magic crystal ball here…I think that chances are we are going to have to identify sites other places and team up with affordable developers and help to finance an affordable developer product."

It was clear in the meeting the developer intends to locate affordable housing in a location other than the proposed ARC site. This additional offsite development was not considered in the MRIC EIR and must now be considered in the SEIR. As of the Social Services Commission meeting it has become clear that ARC is only part of the new construction the developer will bring to Davis, and the additional induced growth needs to be considered.

The current ARC proposal includes 850 housing units at the ARC site east of Mace Boulevard. The current interim affordable housing ordinance would require 15% affordable housing. Under the current ordinance this could result in 150 units built off site at a yet to be identified location in Davis. These 150 new units would be in addition to the 850 units on site for a total of 1,000 housing units built in Davis. These 150 new units are in addition to anything that was included in the MRIC EIR Mixed-use alternative and therefore must be considered in the SEIR.

One difficulty is that the current affordable housing ordinance is only an interim ordinance, and the actual required housing could be much more. The social services voted to recommend applying whatever ordinance is in place when more specific project proposals come forward. The previous ordinance would have required 35% affordable housing. The previous ordinance would have required an additional 458 housing units if they are built offsite. 850 units at ARC plus the offsite 458 units would result in 1308 total units being built as part of the ARC project. Since the Social Services Commission has expressed a desire to increase the amount of affordable housing required in new developments in Davis, it is reasonable to believe that as many as 458 more units will be built by the developer offsite. Analysis of these potential additional 458 offsite units must be done since they are tied to the ARC project and were not considered in the MRIC EIR or the MRIC EIR Mixed-use Alternative.

For comparison purposes, the Canner is 547 units and Sterling apartments is 198 units. 150-458 new units is a very sizable new development to add to Davis and all the impacts must be analyzed in the EIR.

This becomes more complicated by the fact that the Social Services Commission went on to pass a recommendation that included, “The commission strongly recommends onsite affordable housing.” The difficulty is that this is incompatible with the MRIC Mixed-use EIR report that assumes there will be, “1.62 employees per household,” in other words, that “approximately 1,215 to 1,377 of the innovation center employees are anticipated to live and work on the Mixed-Use Site.” (Table 8-18)

With 1.62 ARC employees on average per household is a high number already. It assumes many couples would both work at jobs located in the ARC development and/or that people who work together would be likely to share apartments. That high requirement already assumes that all or nearly all of the apartments would be filled with employees, so where would the affordable housing go? Or would there be employees who qualified for affordable housing? What about very low affordable housing? The closer scrutiny of the need for employees to live at ARC to meet the EIR goals, and the need for affordable housing makes it clear how unlikely it is the developer can achieve both on site at the same time. Or that to obtain this the resident selection process would have to be very restrictive and would likely not be legal. Thus, it is very unlikely the developer can meet the affordable housing requirement and the very high MRIC EIR goals for employees living in the ARC project at the same time. This reinforces the developer’s statements that affordable housing would be built at a different location. The induced growth at another location needs to be considered in the EIR.

But to make this even more complicated, on July 19, 2017 the City of Davis Planning Commission passed a resolution recommending certification of the MRIC FEIR that included a clarification that the Mixed Use Alternative is only environmentally superior assuming a legally enforceable mechanism regarding employee occupancy of housing; specifically that at least one employee occupies 60 percent of the 850 onsite units. City Council Resolution 17-125 to certify the MRIC FEIR on September 19, 2017, included this language, “the Mixed Use Alternative is only environmentally superior assuming a legally enforceable mechanism regarding employee occupancy of housing; specifically that at least one employee occupies 60 percent of the 850 on-site units.”

If 15% of on-site units were to be put aside for affordable housing, that leaves even fewer units to be filled by employees, unless the employees happen to qualify for affordable housing. And since there is no mechanism to give employees housing preference over non-employees, it becomes that much more unlikely that the promised average number of employees in on-site units can simply occur on its own.

Given the developer's already stated preference for off-site affordable housing, it seems highly suspect to believe the developer will be able to house so many employees on site AND have affordable housing also on site. It seems beyond unlikely that both will happen, but there is a real lack of information at this time because the project application offers absolutely no detail on the affordable housing plan, and absolutely no detail on how the developer will attract such a high percentage of people employed in ARC to live in ARC. In either case, this is different than what was included in the MRIC EIR and therefore must be analyzed.

With this lack of information, the SEIR will just have to analyze the likely outcomes. The induced growth of offsite affordable housing will need to be analyzed and the possibility that few or no people employed at ARC will live at ARC both need to be analyzed. All of these possibilities are different from what was included in the MRIC EIR and the MRIC EIR Mixed-use Alternative and therefore must be analyzed.

Sincerely,

Colin Walsh

CC: Davis City Council, City Manager Web, Assistant City Manager Feeney, City of Davis Planning Commission, City of Davis Social Services Commission

Sherri Metzger, Principal Planner <smetzger@cityofdavis.org>
Ashley Feeney, Assistant City Manager <afeeney@cityofdavis.org>
City of Davis Community Development and Sustainability Department
23 Russell Boulevard
Davis, CA 95616

Sherri and Ash,

Respectfully, I am of the very strong opinion that the current process for the Aggie Research Campus (ARC) is totally upside down. Currently the City has created a timeline that places the Environmental Review process ahead of the Economic Review process, which is problematic on a number of levels, specifically:

1. ARC and its predecessor Mace Ranch Innovation Center (MRIC) have been justified to the citizens of Davis by the developer, Council, staff and consultants (EPS, et.al) based on the fiscal impact of its economic development component and jobs addition to the Davis community.
2. That economic impact has never been presented by the developer, staff, or the consultants to the either the Finance and Budget Commission (FBC) or the public in any FBC meeting.
3. The 2015-2016 EPS report and the 2015-2016 EIR assumed, in writing, a lead tenant in the form of FMC Schilling Robotics, bringing additional high-tech jobs to both MRIC and the Davis community.
4. FMC Schilling Robotics no longer is the lead tenant, and in light of their publicized commitment to moving to West Sacramento, the jobs addition they represented in 2016 is now a jobs reduction for the community. That is a massive "changed circumstance" that needs to be included in any current Environmental Review.
5. Further, Resolution 17-125 (attached) passed and adopted by City Council on September 19, 2017 clearly states, *"The FEIR is hereby modified to including [sic] a clarification to page 7-202 of the Draft EIR that the Mixed Use Alternative is only environmentally superior assuming a legally enforceable mechanism regarding employee occupancy of housing; specifically that at least one employee occupies 60 percent of the 850 on-site units."*
6. The current ARC application provides no such legal mechanism. Further, absent FMC Schilling Robotics, ARC has not demonstrated any verifiable cohort of the employees referenced in the Resolution.
7. Further, it is believed, based on hearsay remarks in the public, that ARC is going to use UC Davis as its demonstrable "lead tenant." If those hearsay remarks are true, the justification based on the fiscal impact of the economic development component and jobs addition becomes elusive at best for both those criteria.
8. Any positive fiscal impact of UC Davis as the lead tenant at ARC evaporates due to the tax-exempt status of UC Davis. Already in at least a dozen existing properties in Davis, the City receives none of the property tax revenues that would be received if the tenant were a private company.
9. It is also questionable, as well as undocumented, whether the UC Davis jobs in such a lead tenant situation would be net additional jobs for the Davis community, or simply the

relocation of existing jobs. Relocation of existing jobs produces very little, if any additional revenues for Davis.

10. Further, relocation of existing jobs makes compliance with a "legally enforceable mechanism regarding employee occupancy" very difficult, if not impossible. That too is a massive "changed circumstance" that needs to be included in any current Environmental Review.
11. The Long Range Calendar on the September 9, 2019 FBC meeting agenda (attached) shows February 10, 2020 as the date the FBC will receive and discuss the Aggie Research Campus project fiscal analysis. Delaying the Environmental Review process until after February 10, 2020 adds only 90 days on the front end of the consideration of the ARC project application, but taking that step will improve the quality and reduce the legal risks associated with the Environmental Review.

All of the above problems, and many others would be clearly, transparently, and correctly addressed/remedied if the currently proposed EIR process were put on hold until the developer, staff and consultants has presented to the Finance and Budget Commission, and the public, the updated ARC fiscal analysis commissioned by the City with EPS, as well as the underlying April 2016 MRIC fiscal analysis completed by EPS, et. al.

I strongly believe that once the ARC and MRIC fiscal information is presented, additional changes to the many facets of the project will become starkly apparent.

Respectfully submitted.

Matt Williams
Speaking as an Individual, not as a representative of any Commission or Organization

CC: Zoe Mirabile, City Clerk <zmirabile@cityofdavis.org>
Finance and Budget Commission members <fbc@cityofdavis.org>

APPENDIX B

ARC CalEEMod
On-Site Construction

ARC - Construction Phase I (Overlap)

Yolo County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Research & Development	540.00	1000sqft	12.40	540,000.00	0
Other Asphalt Surfaces	0.60	Acre	0.60	26,136.00	0
Parking Lot	568.00	Space	5.11	227,200.00	0
Unenclosed Parking with Elevator	723.00	Space	6.51	289,200.00	0
Apartments Mid Rise	181.00	Dwelling Unit	4.76	181,000.00	518
Condo/Townhouse	28.00	Dwelling Unit	1.75	28,000.00	80

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	6.8	**Precipitation Freq (Days)**	54
Climate Zone	2			**Operational Year**	2028
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	198.63	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - CO2 Intensity Factor adjusted to reflect PG&E's calculated progress towards RPS

Land Use - Based on Phase I of ARC

Construction Phase - Construction schedule adjusted based on applicant provided information and to account for overlap of building construction

Trips and VMT - Haul truck trip lengths adjusted per project-specific route of material movement; number of haul trucks based on 12 CY capacity trucks

Grading - Grading area updated for project construction information and off-site improvement areas

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	35.00	1,782.00
tblConstructionPhase	NumDays	35.00	365.00
tblConstructionPhase	NumDays	500.00	1,782.00
tblConstructionPhase	NumDays	500.00	365.00
tblConstructionPhase	NumDays	45.00	28.00
tblConstructionPhase	NumDays	35.00	10.00
tblConstructionPhase	NumDays	20.00	7.00
tblConstructionPhase	NumDaysWeek	5.00	7.00
tblConstructionPhase	NumDaysWeek	5.00	7.00
tblConstructionPhase	NumDaysWeek	5.00	7.00
tblConstructionPhase	NumDaysWeek	5.00	7.00
tblConstructionPhase	NumDaysWeek	5.00	7.00
tblConstructionPhase	NumDaysWeek	5.00	7.00
tblConstructionPhase	NumDaysWeek	5.00	7.00
tblGrading	AcresOfGrading	70.00	112.50
tblGrading	MaterialExported	0.00	130,000.00
tblProjectCharacteristics	CO2IntensityFactor	641.35	198.63
tblTripsAndVMT	HaulingTripLength	20.00	2.15
tblTripsAndVMT	HaulingTripNumber	16,250.00	10,833.00

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022	1.0686	5.1152	4.0958	0.0148	61.7044	0.1277	61.8321	6.3273	0.1199	6.4472	0.0000	1,352.580 8	1,352.580 8	0.1321	0.0000	1,355.882 9
2023	7.5037	12.1892	12.0782	0.0454	221.5068	0.2975	221.8043	22.4685	0.2813	22.7498	0.0000	4,148.607 4	4,148.607 4	0.2986	0.0000	4,156.071 4
2024	1.9589	5.8886	5.8886	0.0225	111.9347	0.1321	112.0667	11.3540	0.1248	11.4788	0.0000	2,055.887 0	2,055.887 0	0.1469	0.0000	2,059.559 4
2025	1.7113	5.6253	5.6542	0.0220	111.0457	0.1137	111.1594	11.2638	0.1074	11.3713	0.0000	2,011.7389	2,011.7389	0.1435	0.0000	2,015.326 5
2026	1.6940	5.5830	5.5071	0.0217	111.0457	0.1135	111.1592	11.2638	0.1073	11.3711	0.0000	1,982.493 9	1,982.493 9	0.1418	0.0000	1,986.038 4
2027	0.5995	1.8465	1.8049	7.1600e-003	37.3971	0.0379	37.4350	3.7933	0.0359	3.8291	0.0000	654.1367	654.1367	0.0466	0.0000	655.3019
Maximum	**7.5037**	**12.1892**	**12.0782**	**0.0454**	**221.5068**	**0.2975**	**221.8043**	**22.4685**	**0.2813**	**22.7498**	**0.0000**	**4,148.607 4**	**4,148.607 4**	**0.2986**	**0.0000**	**4,156.071 4**

2.1 Overall Construction

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022	1.0686	5.1152	4.0958	0.0148	0.8282	0.1277	0.9559	0.2527	0.1199	0.3726	0.0000	1,352.5803	1,352.5803	0.1321	0.0000	1,355.8824
2023	7.5037	12.1892	12.0782	0.0454	2.1193	0.2975	2.4168	0.5764	0.2813	0.8577	0.0000	4,148.6063	4,148.6063	0.2986	0.0000	4,156.0703
2024	1.9589	5.8886	5.8886	0.0225	1.0706	0.1320	1.2027	0.2911	0.1248	0.4160	0.0000	2,055.8864	2,055.8864	0.1469	0.0000	2,059.5588
2025	1.7113	5.6253	5.6542	0.0220	1.0623	0.1137	1.1760	0.2889	0.1074	0.3963	0.0000	2,011.7383	2,011.7383	0.1435	0.0000	2,015.3259
2026	1.6940	5.5830	5.5071	0.0217	1.0623	0.1135	1.1758	0.2889	0.1073	0.3961	0.0000	1,982.4933	1,982.4933	0.1418	0.0000	1,986.0379
2027	0.5995	1.8465	1.8049	7.1600e-003	0.3575	0.0379	0.3954	0.0972	0.0359	0.1331	0.0000	654.1365	654.1365	0.0466	0.0000	655.3017
Maximum	**7.5037**	**12.1892**	**12.0782**	**0.0454**	**2.1193**	**0.2975**	**2.4168**	**0.5764**	**0.2813**	**0.8577**	**0.0000**	**4,148.6063**	**4,148.6063**	**0.2986**	**0.0000**	**4,156.0703**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**99.01**	**0.00**	**98.88**	**97.30**	**0.00**	**96.18**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**5-1-2022**	**7-31-2022**	2.4690	2.4690
2	**8-1-2022**	**10-31-2022**	2.2348	2.2348
3	**11-1-2022**	**1-31-2023**	3.9972	3.9972
4	**2-1-2023**	**4-30-2023**	7.8020	7.8020
5	**5-1-2023**	**7-31-2023**	8.0435	8.0435

6	**8-1-2023**	**10-31-2023**	8.0544	8.0544
7	**11-1-2023**	**1-31-2024**	6.6857	6.6857
8	**2-1-2024**	**4-30-2024**	3.2455	3.2455
9	**5-1-2024**	**7-31-2024**	3.3104	3.3104
10	**8-1-2024**	**10-31-2024**	3.3141	3.3141
11	**11-1-2024**	**1-31-2025**	2.8282	2.8282
12	**2-1-2025**	**4-30-2025**	1.7944	1.7944
13	**5-1-2025**	**7-31-2025**	1.8485	1.8485
14	**8-1-2025**	**10-31-2025**	1.8517	1.8517
15	**11-1-2025**	**1-31-2026**	1.8528	1.8528
16	**2-1-2026**	**4-30-2026**	1.7794	1.7794
17	**5-1-2026**	**7-31-2026**	1.8333	1.8333
18	**8-1-2026**	**10-31-2026**	1.8364	1.8364
19	**11-1-2026**	**1-31-2027**	1.8374	1.8374
20	**2-1-2027**	**4-30-2027**	1.7650	1.7650
21	**5-1-2027**	**7-31-2027**	0.0725	0.0725
		Highest	8.0544	8.0544

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	22.9464	0.3606	25.5777	0.0435		3.3757	3.3757		3.3757	3.3757	320.9072	93.1080	414.0152	0.3024	0.0244	428.8313
Energy	0.0669	0.6012	0.4604	3.6500e-003		0.0462	0.0462		0.0462	0.0462	0.0000	1,213.3022	1,213.3022	0.0932	0.0288	1,224.2110
Mobile	0.9100	8.0909	9.2300	0.0493	246.8486	0.0293	246.8779	25.2555	0.0273	25.2828	0.0000	4,570.7389	4,570.7389	0.1488	0.0000	4,574.4594
Waste						0.0000	0.0000		0.0000	0.0000	27.8463	0.0000	27.8463	1.6457	0.0000	68.9880
Water						0.0000	0.0000		0.0000	0.0000	88.5557	138.7882	227.3438	9.1158	0.2190	520.4876
Total	**23.9233**	**9.0527**	**35.2680**	**0.0964**	**246.8486**	**3.4511**	**250.2998**	**25.2555**	**3.4492**	**28.7047**	**437.3091**	**6,015.9372**	**6,453.2464**	**11.3059**	**0.2721**	**6,816.9772**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	22.9464	0.3606	25.5777	0.0435		3.3757	3.3757		3.3757	3.3757	320.9072	93.1080	414.0152	0.3024	0.0244	428.8313
Energy	0.0669	0.6012	0.4604	3.6500e-003		0.0462	0.0462		0.0462	0.0462	0.0000	1,213.3022	1,213.3022	0.0932	0.0288	1,224.2110
Mobile	0.9100	8.0909	9.2300	0.0493	246.8486	0.0293	246.8779	25.2555	0.0273	25.2828	0.0000	4,570.7389	4,570.7389	0.1488	0.0000	4,574.4594
Waste						0.0000	0.0000		0.0000	0.0000	27.8463	0.0000	27.8463	1.6457	0.0000	68.9880
Water						0.0000	0.0000		0.0000	0.0000	88.5557	138.7882	227.3438	9.1158	0.2190	520.4876
Total	**23.9233**	**9.0527**	**35.2680**	**0.0964**	**246.8486**	**3.4511**	**250.2998**	**25.2555**	**3.4492**	**28.7047**	**437.3091**	**6,015.9372**	**6,453.2464**	**11.3059**	**0.2721**	**6,816.9772**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	5/1/2022	5/7/2022	7	7	
2	Grading	Grading	5/8/2022	6/4/2022	7	28	
3	Paving	Paving	6/5/2022	6/14/2022	7	10	
4	Building Construction	Building Construction	6/15/2022	5/1/2027	7	1782	
5	Architectural Coating	Architectural Coating	6/29/2022	5/15/2027	7	1782	
6	Building Construction 2	Building Construction	1/1/2023	12/31/2023	7	365	
7	Architectural Coating 2	Architectural Coating	1/15/2023	1/14/2024	7	365	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 112.5

Acres of Paving: 12.22

Residential Indoor: 423,225; Residential Outdoor: 141,075; Non-Residential Indoor: 810,000; Non-Residential Outdoor: 270,000; Striped Parking Area: 32,552 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Architectural Coating	Air Compressors	1	6.00	78	0.48
Building Construction 2	Cranes	1	7.00	231	0.29
Building Construction 2	Forklifts	3	8.00	89	0.20
Building Construction 2	Generator Sets	1	8.00	84	0.74
Building Construction 2	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction 2	Welders	1	8.00	46	0.45
Architectural Coating 2	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	7	18.00	0.00	0.00	10.00	7.00	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	10,833.00	10.00	7.00	2.15	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.00	7.00	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	551.00	200.00	0.00	10.00	7.00	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	110.00	0.00	0.00	10.00	7.00	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction 2	9	551.00	200.00	0.00	10.00	7.00	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating 2	1	110.00	0.00	0.00	10.00	7.00	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Site Preparation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0632	0.0000	0.0632	0.0348	0.0000	0.0348	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0111	0.1158	0.0689	1.3000e-004		5.6400e-003	5.6400e-003		5.1900e-003	5.1900e-003	0.0000	11.7038	11.7038	3.7900e-003	0.0000	11.7984
Total	**0.0111**	**0.1158**	**0.0689**	**1.3000e-004**	**0.0632**	**5.6400e-003**	**0.0689**	**0.0348**	**5.1900e-003**	**0.0400**	**0.0000**	**11.7038**	**11.7038**	**3.7900e-003**	**0.0000**	**11.7984**

3.2 Site Preparation - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.9000e-004	1.2000e-004	1.2800e-003	0.0000	0.0478	0.0000	0.0478	4.8500e-003	0.0000	4.8500e-003	0.0000	0.3789	0.3789	1.0000e-005	0.0000	0.3791
Total	**1.9000e-004**	**1.2000e-004**	**1.2800e-003**	**0.0000**	**0.0478**	**0.0000**	**0.0478**	**4.8500e-003**	**0.0000**	**4.8500e-003**	**0.0000**	**0.3789**	**0.3789**	**1.0000e-005**	**0.0000**	**0.3791**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0632	0.0000	0.0632	0.0348	0.0000	0.0348	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0111	0.1158	0.0689	1.3000e-004		5.6400e-003	5.6400e-003		5.1900e-003	5.1900e-003	0.0000	11.7038	11.7038	3.7900e-003	0.0000	11.7984
Total	**0.0111**	**0.1158**	**0.0689**	**1.3000e-004**	**0.0632**	**5.6400e-003**	**0.0689**	**0.0348**	**5.1900e-003**	**0.0400**	**0.0000**	**11.7038**	**11.7038**	**3.7900e-003**	**0.0000**	**11.7984**

3.2 Site Preparation - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	1.9000e-004	1.2000e-004	1.2800e-003	0.0000	4.4000e-004	0.0000	4.4000e-004	1.2000e-004	0.0000	1.2000e-004	0.0000	0.3789	0.3789	1.0000e-005	0.0000	0.3791
Total	**1.9000e-004**	**1.2000e-004**	**1.2800e-003**	**0.0000**	**4.4000e-004**	**0.0000**	**4.4000e-004**	**1.2000e-004**	**0.0000**	**1.2000e-004**	**0.0000**	**0.3789**	**0.3789**	**1.0000e-005**	**0.0000**	**0.3791**

3.3 Grading - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1758	0.0000	0.1758	0.0576	0.0000	0.0576	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0508	0.5438	0.4066	8.7000e-004		0.0229	0.0229		0.0211	0.0211	0.0000	76.3484	76.3484	0.0247	0.0000	76.9658
Total	**0.0508**	**0.5438**	**0.4066**	**8.7000e-004**	**0.1758**	**0.0229**	**0.1987**	**0.0576**	**0.0211**	**0.0787**	**0.0000**	**76.3484**	**76.3484**	**0.0247**	**0.0000**	**76.9658**

3.3 Grading - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0124	0.5787	0.0741	1.0000e-003	0.8857	7.0000e-004	0.8864	0.0901	6.7000e-004	0.0907	0.0000	94.6380	94.6380	0.0111	0.0000	94.9159
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.6000e-004	5.3000e-004	5.7100e-003	2.0000e-005	0.2126	1.0000e-005	0.2126	0.0215	1.0000e-005	0.0216	0.0000	1.6841	1.6841	4.0000e-005	0.0000	1.6850
Total	**0.0132**	**0.5792**	**0.0798**	**1.0200e-003**	**1.0983**	**7.1000e-004**	**1.0990**	**0.1116**	**6.8000e-004**	**0.1123**	**0.0000**	**96.3221**	**96.3221**	**0.0112**	**0.0000**	**96.6010**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.1758	0.0000	0.1758	0.0576	0.0000	0.0576	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0508	0.5438	0.4066	8.7000e-004		0.0229	0.0229		0.0211	0.0211	0.0000	76.3484	76.3484	0.0247	0.0000	76.9657
Total	**0.0508**	**0.5438**	**0.4066**	**8.7000e-004**	**0.1758**	**0.0229**	**0.1987**	**0.0576**	**0.0211**	**0.0787**	**0.0000**	**76.3484**	**76.3484**	**0.0247**	**0.0000**	**76.9657**

3.3 Grading - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0124	0.5787	0.0741	1.0000e-003	9.4800e-003	7.0000e-004	0.0102	2.6200e-003	6.7000e-004	3.2900e-003	0.0000	94.6380	94.6380	0.0111	0.0000	94.9159
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	8.6000e-004	5.3000e-004	5.7100e-003	2.0000e-005	1.9500e-003	1.0000e-005	1.9700e-003	5.2000e-004	1.0000e-005	5.3000e-004	0.0000	1.6841	1.6841	4.0000e-005	0.0000	1.6850
Total	**0.0132**	**0.5792**	**0.0798**	**1.0200e-003**	**0.0114**	**7.1000e-004**	**0.0122**	**3.1400e-003**	**6.8000e-004**	**3.8200e-003**	**0.0000**	**96.3221**	**96.3221**	**0.0112**	**0.0000**	**96.6010**

3.4 Paving - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	5.5100e-003	0.0556	0.0729	1.1000e-004		2.8400e-003	2.8400e-003		2.6100e-003	2.6100e-003	0.0000	10.0138	10.0138	3.2400e-003	0.0000	10.0948
Paving	7.4800e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0130**	**0.0556**	**0.0729**	**1.1000e-004**		**2.8400e-003**	**2.8400e-003**		**2.6100e-003**	**2.6100e-003**	**0.0000**	**10.0138**	**10.0138**	**3.2400e-003**	**0.0000**	**10.0948**

3.4 Paving - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.3000e-004	1.4000e-004	1.5300e-003	0.0000	0.0570	0.0000	0.0570	5.7700e-003	0.0000	5.7700e-003	0.0000	0.4511	0.4511	1.0000e-005	0.0000	0.4514
Total	**2.3000e-004**	**1.4000e-004**	**1.5300e-003**	**0.0000**	**0.0570**	**0.0000**	**0.0570**	**5.7700e-003**	**0.0000**	**5.7700e-003**	**0.0000**	**0.4511**	**0.4511**	**1.0000e-005**	**0.0000**	**0.4514**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	5.5100e-003	0.0556	0.0729	1.1000e-004		2.8400e-003	2.8400e-003		2.6100e-003	2.6100e-003	0.0000	10.0138	10.0138	3.2400e-003	0.0000	10.0947
Paving	7.4800e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0130**	**0.0556**	**0.0729**	**1.1000e-004**		**2.8400e-003**	**2.8400e-003**		**2.6100e-003**	**2.6100e-003**	**0.0000**	**10.0138**	**10.0138**	**3.2400e-003**	**0.0000**	**10.0947**

3.4 Paving - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.3000e-004	1.4000e-004	1.5300e-003	0.0000	5.2000e-004	0.0000	5.3000e-004	1.4000e-004	0.0000	1.4000e-004	0.0000	0.4511	0.4511	1.0000e-005	0.0000	0.4514
Total	**2.3000e-004**	**1.4000e-004**	**1.5300e-003**	**0.0000**	**5.2000e-004**	**0.0000**	**5.3000e-004**	**1.4000e-004**	**0.0000**	**1.4000e-004**	**0.0000**	**0.4511**	**0.4511**	**1.0000e-005**	**0.0000**	**0.4514**

3.5 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1706	1.5616	1.6363	2.6900e-003		0.0809	0.0809		0.0761	0.0761	0.0000	231.7252	231.7252	0.0555	0.0000	233.1131
Total	**0.1706**	**1.5616**	**1.6363**	**2.6900e-003**		**0.0809**	**0.0809**		**0.0761**	**0.0761**	**0.0000**	**231.7252**	**231.7252**	**0.0555**	**0.0000**	**233.1131**

3.5 Building Construction - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0499	2.0039	0.3286	5.3600e-003	10.6539	4.0600e-003	10.6580	1.0862	3.8900e-003	1.0901	0.0000	508.9523	508.9523	0.0236	0.0000	509.5419
Worker	0.1690	0.1046	1.1227	3.6600e-003	41.8402	2.5300e-003	41.8428	4.2395	2.3300e-003	4.2418	0.0000	331.4095	331.4095	7.2100e-003	0.0000	331.5898
Total	**0.2189**	**2.1085**	**1.4513**	**9.0200e-003**	**52.4941**	**6.5900e-003**	**52.5007**	**5.3256**	**6.2200e-003**	**5.3319**	**0.0000**	**840.3618**	**840.3618**	**0.0308**	**0.0000**	**841.1317**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.1706	1.5616	1.6363	2.6900e-003		0.0809	0.0809		0.0761	0.0761	0.0000	231.7250	231.7250	0.0555	0.0000	233.1128
Total	**0.1706**	**1.5616**	**1.6363**	**2.6900e-003**		**0.0809**	**0.0809**		**0.0761**	**0.0761**	**0.0000**	**231.7250**	**231.7250**	**0.0555**	**0.0000**	**233.1128**

3.5 Building Construction - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0499	2.0039	0.3286	5.3600e-003	0.1207	4.0600e-003	0.1248	0.0351	3.8900e-003	0.0390	0.0000	508.9523	508.9523	0.0236	0.0000	509.5419
Worker	0.1690	0.1046	1.1227	3.6600e-003	0.3846	2.5300e-003	0.3872	0.1027	2.3300e-003	0.1050	0.0000	331.4095	331.4095	7.2100e-003	0.0000	331.5898
Total	**0.2189**	**2.1085**	**1.4513**	**9.0200e-003**	**0.5053**	**6.5900e-003**	**0.5119**	**0.1378**	**6.2200e-003**	**0.1440**	**0.0000**	**840.3618**	**840.3618**	**0.0308**	**0.0000**	**841.1317**

3.5 Building Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2870	2.6252	2.9645	4.9200e-003		0.1277	0.1277		0.1202	0.1202	0.0000	423.0437	423.0437	0.1006	0.0000	425.5596
Total	**0.2870**	**2.6252**	**2.9645**	**4.9200e-003**		**0.1277**	**0.1277**		**0.1202**	**0.1202**	**0.0000**	**423.0437**	**423.0437**	**0.1006**	**0.0000**	**425.5596**

3.5 Building Construction - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0669	3.0310	0.5026	9.5700e-003	19.4433	2.9600e-003	19.4463	1.9823	2.8300e-003	1.9851	0.0000	909.5964	909.5964	0.0318	0.0000	910.3916
Worker	0.2887	0.1716	1.8797	6.4300e-003	76.3584	4.5200e-003	76.3630	7.7370	4.1600e-003	7.7412	0.0000	581.9999	581.9999	0.0118	0.0000	582.2948
Total	**0.3556**	**3.2025**	**2.3823**	**0.0160**	**95.8018**	**7.4800e-003**	**95.8093**	**9.7193**	**6.9900e-003**	**9.7263**	**0.0000**	**1,491.5963**	**1,491.5963**	**0.0436**	**0.0000**	**1,492.6864**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2870	2.6252	2.9645	4.9200e-003		0.1277	0.1277		0.1202	0.1202	0.0000	423.0432	423.0432	0.1006	0.0000	425.5590
Total	**0.2870**	**2.6252**	**2.9645**	**4.9200e-003**		**0.1277**	**0.1277**		**0.1202**	**0.1202**	**0.0000**	**423.0432**	**423.0432**	**0.1006**	**0.0000**	**425.5590**

3.5 Building Construction - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0669	3.0310	0.5026	9.5700e-003	0.2203	2.9600e-003	0.2232	0.0640	2.8300e-003	0.0669	0.0000	909.5964	909.5964	0.0318	0.0000	910.3916
Worker	0.2887	0.1716	1.8797	6.4300e-003	0.7019	4.5200e-003	0.7065	0.1874	4.1600e-003	0.1916	0.0000	581.9999	581.9999	0.0118	0.0000	582.2948
Total	**0.3556**	**3.2025**	**2.3823**	**0.0160**	**0.9222**	**7.4800e-003**	**0.9297**	**0.2515**	**6.9900e-003**	**0.2585**	**0.0000**	**1,491.5963**	**1,491.5963**	**0.0436**	**0.0000**	**1,492.6864**

3.5 Building Construction - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2693	2.4602	2.9585	4.9300e-003		0.1122	0.1122		0.1056	0.1056	0.0000	424.2839	424.2839	0.1003	0.0000	426.7921
Total	**0.2693**	**2.4602**	**2.9585**	**4.9300e-003**		**0.1122**	**0.1122**		**0.1056**	**0.1056**	**0.0000**	**424.2839**	**424.2839**	**0.1003**	**0.0000**	**426.7921**

3.5 Building Construction - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0651	3.0095	0.4808	9.5400e-003	19.4966	2.8900e-003	19.4995	1.9877	2.7600e-003	1.9904	0.0000	906.0438	906.0438	0.0310	0.0000	906.8181
Worker	0.2723	0.1552	1.7438	6.2000e-003	76.5676	4.4300e-003	76.5721	7.7582	4.0800e-003	7.7623	0.0000	560.8071	560.8071	0.0107	0.0000	561.0735
Total	**0.3374**	**3.1647**	**2.2247**	**0.0157**	**96.0642**	**7.3200e-003**	**96.0715**	**9.7459**	**6.8400e-003**	**9.7527**	**0.0000**	**1,466.8509**	**1,466.8509**	**0.0416**	**0.0000**	**1,467.8916**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2693	2.4602	2.9585	4.9300e-003		0.1122	0.1122		0.1056	0.1056	0.0000	424.2834	424.2834	0.1003	0.0000	426.7916
Total	**0.2693**	**2.4602**	**2.9585**	**4.9300e-003**		**0.1122**	**0.1122**		**0.1056**	**0.1056**	**0.0000**	**424.2834**	**424.2834**	**0.1003**	**0.0000**	**426.7916**

3.5 Building Construction - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0651	3.0095	0.4808	9.5400e-003	0.2209	2.8900e-003	0.2238	0.0642	2.7600e-003	0.0670	0.0000	906.0438	906.0438	0.0310	0.0000	906.8181
Worker	0.2723	0.1552	1.7438	6.2000e-003	0.7039	4.4300e-003	0.7083	0.1880	4.0800e-003	0.1920	0.0000	560.8071	560.8071	0.0107	0.0000	561.0735
Total	**0.3374**	**3.1647**	**2.2247**	**0.0157**	**0.9247**	**7.3200e-003**	**0.9321**	**0.2522**	**6.8400e-003**	**0.2590**	**0.0000**	**1,466.850 9**	**1,466.850 9**	**0.0416**	**0.0000**	**1,467.891 6**

3.5 Building Construction - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2496	2.2757	2.9355	4.9200e-003		0.0963	0.0963		0.0906	0.0906	0.0000	423.2530	423.2530	0.0995	0.0000	425.7403
Total	**0.2496**	**2.2757**	**2.9355**	**4.9200e-003**		**0.0963**	**0.0963**		**0.0906**	**0.0906**	**0.0000**	**423.2530**	**423.2530**	**0.0995**	**0.0000**	**425.7403**

3.5 Building Construction - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0631	2.9722	0.4593	9.4500e-003	19.4433	2.8100e-003	19.4461	1.9822	2.6900e-003	1.9849	0.0000	897.9538	897.9538	0.0299	0.0000	898.7023
Worker	0.2563	0.1403	1.6083	5.9300e-003	76.3584	4.3300e-003	76.3628	7.7370	3.9900e-003	7.7410	0.0000	536.7750	536.7750	9.6100e-003	0.0000	537.0152
Total	**0.3194**	**3.1125**	**2.0675**	**0.0154**	**95.8017**	**7.1400e-003**	**95.8089**	**9.7192**	**6.6800e-003**	**9.7259**	**0.0000**	**1,434.7288**	**1,434.7288**	**0.0396**	**0.0000**	**1,435.7176**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2496	2.2757	2.9355	4.9200e-003		0.0963	0.0963		0.0906	0.0906	0.0000	423.2525	423.2525	0.0995	0.0000	425.7398
Total	**0.2496**	**2.2757**	**2.9355**	**4.9200e-003**		**0.0963**	**0.0963**		**0.0906**	**0.0906**	**0.0000**	**423.2525**	**423.2525**	**0.0995**	**0.0000**	**425.7398**

3.5 Building Construction - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0631	2.9722	0.4593	9.4500e-003	0.2202	2.8100e-003	0.2230	0.0640	2.6900e-003	0.0667	0.0000	897.9538	897.9538	0.0299	0.0000	898.7023
Worker	0.2563	0.1403	1.6083	5.9300e-003	0.7019	4.3300e-003	0.7063	0.1874	3.9900e-003	0.1914	0.0000	536.7750	536.7750	9.6100e-003	0.0000	537.0152
Total	**0.3194**	**3.1125**	**2.0675**	**0.0154**	**0.9222**	**7.1400e-003**	**0.9293**	**0.2515**	**6.6800e-003**	**0.2582**	**0.0000**	**1,434.7288**	**1,434.7288**	**0.0396**	**0.0000**	**1,435.7176**

3.5 Building Construction - 2026

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2496	2.2757	2.9355	4.9200e-003		0.0963	0.0963		0.0906	0.0906	0.0000	423.2530	423.2530	0.0995	0.0000	425.7403
Total	**0.2496**	**2.2757**	**2.9355**	**4.9200e-003**		**0.0963**	**0.0963**		**0.0906**	**0.0906**	**0.0000**	**423.2530**	**423.2530**	**0.0995**	**0.0000**	**425.7403**

3.5 Building Construction - 2026

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0618	2.9446	0.4461	9.3900e-003	19.4433	2.7500e-003	19.4460	1.9822	2.6300e-003	1.9849	0.0000	892.6791	892.6791	0.0293	0.0000	893.4105
Worker	0.2430	0.1281	1.4966	5.7100e-003	76.3584	4.2100e-003	76.3626	7.7370	3.8800e-003	7.7409	0.0000	516.7938	516.7938	8.7500e-003	0.0000	517.0124
Total	**0.3047**	**3.0727**	**1.9427**	**0.0151**	**95.8017**	**6.9600e-003**	**95.8087**	**9.7192**	**6.5100e-003**	**9.7258**	**0.0000**	**1,409.4728**	**1,409.4728**	**0.0380**	**0.0000**	**1,410.4228**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2496	2.2757	2.9355	4.9200e-003		0.0963	0.0963		0.0906	0.0906	0.0000	423.2525	423.2525	0.0995	0.0000	425.7398
Total	**0.2496**	**2.2757**	**2.9355**	**4.9200e-003**		**0.0963**	**0.0963**		**0.0906**	**0.0906**	**0.0000**	**423.2525**	**423.2525**	**0.0995**	**0.0000**	**425.7398**

3.5 Building Construction - 2026

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0618	2.9446	0.4461	9.3900e-003	0.2202	2.7500e-003	0.2230	0.0640	2.6300e-003	0.0667	0.0000	892.6791	892.6791	0.0293	0.0000	893.4105
Worker	0.2430	0.1281	1.4966	5.7100e-003	0.7019	4.2100e-003	0.7062	0.1874	3.8800e-003	0.1913	0.0000	516.7938	516.7938	8.7500e-003	0.0000	517.0124
Total	**0.3047**	**3.0727**	**1.9427**	**0.0151**	**0.9222**	**6.9600e-003**	**0.9291**	**0.2515**	**6.5100e-003**	**0.2580**	**0.0000**	**1,409.4728**	**1,409.4728**	**0.0380**	**0.0000**	**1,410.4228**

3.5 Building Construction - 2027

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0827	0.7544	0.9731	1.6300e-003		0.0319	0.0319		0.0300	0.0300	0.0000	140.3113	140.3113	0.0330	0.0000	141.1358
Total	**0.0827**	**0.7544**	**0.9731**	**1.6300e-003**		**0.0319**	**0.0319**		**0.0300**	**0.0300**	**0.0000**	**140.3113**	**140.3113**	**0.0330**	**0.0000**	**141.1358**

3.5 Building Construction - 2027

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0201	0.9673	0.1442	3.1000e-003	6.4456	8.9000e-004	6.4465	0.6571	8.6000e-004	0.6580	0.0000	294.3435	294.3435	9.4600e-003	0.0000	294.5799
Worker	0.0761	0.0388	0.4625	1.8300e-003	25.3133	1.3300e-003	25.3147	2.5649	1.2200e-003	2.5661	0.0000	165.4058	165.4058	2.6400e-003	0.0000	165.4718
Total	**0.0962**	**1.0061**	**0.6067**	**4.9300e-003**	**31.7589**	**2.2200e-003**	**31.7611**	**3.2220**	**2.0800e-003**	**3.2241**	**0.0000**	**459.7492**	**459.7492**	**0.0121**	**0.0000**	**460.0516**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.0827	0.7544	0.9731	1.6300e-003		0.0319	0.0319		0.0300	0.0300	0.0000	140.3111	140.3111	0.0330	0.0000	141.1357
Total	**0.0827**	**0.7544**	**0.9731**	**1.6300e-003**		**0.0319**	**0.0319**		**0.0300**	**0.0300**	**0.0000**	**140.3111**	**140.3111**	**0.0330**	**0.0000**	**141.1357**

3.5 Building Construction - 2027

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0201	0.9673	0.1442	3.1000e-003	0.0730	8.9000e-004	0.0739	0.0212	8.6000e-004	0.0221	0.0000	294.3435	294.3435	9.4600e-003	0.0000	294.5799
Worker	0.0761	0.0388	0.4625	1.8300e-003	0.2327	1.3300e-003	0.2340	0.0621	1.2200e-003	0.0634	0.0000	165.4058	165.4058	2.6400e-003	0.0000	165.4718
Total	**0.0962**	**1.0061**	**0.6067**	**4.9300e-003**	**0.3057**	**2.2200e-003**	**0.3079**	**0.0834**	**2.0800e-003**	**0.0854**	**0.0000**	**459.7492**	**459.7492**	**0.0121**	**0.0000**	**460.0516**

3.6 Architectural Coating - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.5402					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0190	0.1310	0.1687	2.8000e-004		7.6000e-003	7.6000e-003		7.6000e-003	7.6000e-003	0.0000	23.7453	23.7453	1.5500e-003	0.0000	23.7839
Total	**0.5592**	**0.1310**	**0.1687**	**2.8000e-004**		**7.6000e-003**	**7.6000e-003**		**7.6000e-003**	**7.6000e-003**	**0.0000**	**23.7453**	**23.7453**	**1.5500e-003**	**0.0000**	**23.7839**

3.6 Architectural Coating - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0314	0.0194	0.2084	6.8000e-004	7.7682	4.7000e-004	7.7686	0.7871	4.3000e-004	0.7875	0.0000	61.5303	61.5303	1.3400e-003	0.0000	61.5638
Total	**0.0314**	**0.0194**	**0.2084**	**6.8000e-004**	**7.7682**	**4.7000e-004**	**7.7686**	**0.7871**	**4.3000e-004**	**0.7875**	**0.0000**	**61.5303**	**61.5303**	**1.3400e-003**	**0.0000**	**61.5638**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.5402					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0190	0.1310	0.1687	2.8000e-004		7.6000e-003	7.6000e-003		7.6000e-003	7.6000e-003	0.0000	23.7452	23.7452	1.5500e-003	0.0000	23.7839
Total	**0.5592**	**0.1310**	**0.1687**	**2.8000e-004**		**7.6000e-003**	**7.6000e-003**		**7.6000e-003**	**7.6000e-003**	**0.0000**	**23.7452**	**23.7452**	**1.5500e-003**	**0.0000**	**23.7839**

3.6 Architectural Coating - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0314	0.0194	0.2084	6.8000e-004	0.0714	4.7000e-004	0.0719	0.0191	4.3000e-004	0.0195	0.0000	61.5303	61.5303	1.3400e-003	0.0000	61.5638
Total	**0.0314**	**0.0194**	**0.2084**	**6.8000e-004**	**0.0714**	**4.7000e-004**	**0.0719**	**0.0191**	**4.3000e-004**	**0.0195**	**0.0000**	**61.5303**	**61.5303**	**1.3400e-003**	**0.0000**	**61.5638**

3.6 Architectural Coating - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.0600					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0350	0.2378	0.3305	5.4000e-004		0.0129	0.0129		0.0129	0.0129	0.0000	46.5969	46.5969	2.7900e-003	0.0000	46.6666
Total	**1.0950**	**0.2378**	**0.3305**	**5.4000e-004**		**0.0129**	**0.0129**		**0.0129**	**0.0129**	**0.0000**	**46.5969**	**46.5969**	**2.7900e-003**	**0.0000**	**46.6666**

3.6 Architectural Coating - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0576	0.0343	0.3753	1.2800e-003	15.2440	9.0000e-004	15.2449	1.5446	8.3000e-004	1.5454	0.0000	116.1887	116.1887	2.3500e-003	0.0000	116.2476
Total	**0.0576**	**0.0343**	**0.3753**	**1.2800e-003**	**15.2440**	**9.0000e-004**	**15.2449**	**1.5446**	**8.3000e-004**	**1.5454**	**0.0000**	**116.1887**	**116.1887**	**2.3500e-003**	**0.0000**	**116.2476**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.0600					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0350	0.2378	0.3305	5.4000e-004		0.0129	0.0129		0.0129	0.0129	0.0000	46.5968	46.5968	2.7900e-003	0.0000	46.6665
Total	**1.0950**	**0.2378**	**0.3305**	**5.4000e-004**		**0.0129**	**0.0129**		**0.0129**	**0.0129**	**0.0000**	**46.5968**	**46.5968**	**2.7900e-003**	**0.0000**	**46.6665**

3.6 Architectural Coating - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0576	0.0343	0.3753	1.2800e-003	0.1401	9.0000e-004	0.1410	0.0374	8.3000e-004	0.0383	0.0000	116.1887	116.1887	2.3500e-003	0.0000	116.2476
Total	**0.0576**	**0.0343**	**0.3753**	**1.2800e-003**	**0.1401**	**9.0000e-004**	**0.1410**	**0.0374**	**8.3000e-004**	**0.0383**	**0.0000**	**116.1887**	**116.1887**	**2.3500e-003**	**0.0000**	**116.2476**

3.6 Architectural Coating - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.0629					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0331	0.2230	0.3313	5.4000e-004		0.0112	0.0112		0.0112	0.0112	0.0000	46.7245	46.7245	2.6300e-003	0.0000	46.7903
Total	**1.0960**	**0.2230**	**0.3313**	**5.4000e-004**		**0.0112**	**0.0112**		**0.0112**	**0.0112**	**0.0000**	**46.7245**	**46.7245**	**2.6300e-003**	**0.0000**	**46.7903**

3.6 Architectural Coating - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0544	0.0310	0.3481	1.2400e-003	15.2857	8.8000e-004	15.2866	1.5488	8.1000e-004	1.5496	0.0000	111.9579	111.9579	2.1300e-003	0.0000	112.0110
Total	**0.0544**	**0.0310**	**0.3481**	**1.2400e-003**	**15.2857**	**8.8000e-004**	**15.2866**	**1.5488**	**8.1000e-004**	**1.5496**	**0.0000**	**111.9579**	**111.9579**	**2.1300e-003**	**0.0000**	**112.0110**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.0629					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0331	0.2230	0.3313	5.4000e-004		0.0112	0.0112		0.0112	0.0112	0.0000	46.7245	46.7245	2.6300e-003	0.0000	46.7903
Total	**1.0960**	**0.2230**	**0.3313**	**5.4000e-004**		**0.0112**	**0.0112**		**0.0112**	**0.0112**	**0.0000**	**46.7245**	**46.7245**	**2.6300e-003**	**0.0000**	**46.7903**

3.6 Architectural Coating - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0544	0.0310	0.3481	1.2400e-003	0.1405	8.8000e-004	0.1414	0.0375	8.1000e-004	0.0383	0.0000	111.9579	111.9579	2.1300e-003	0.0000	112.0110
Total	**0.0544**	**0.0310**	**0.3481**	**1.2400e-003**	**0.1405**	**8.8000e-004**	**0.1414**	**0.0375**	**8.1000e-004**	**0.0383**	**0.0000**	**111.9579**	**111.9579**	**2.1300e-003**	**0.0000**	**112.0110**

3.6 Architectural Coating - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.0600					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0312	0.2091	0.3302	5.4000e-004		9.4000e-003	9.4000e-003		9.4000e-003	9.4000e-003	0.0000	46.5969	46.5969	2.5400e-003	0.0000	46.6604
Total	**1.0912**	**0.2091**	**0.3302**	**5.4000e-004**		**9.4000e-003**	**9.4000e-003**		**9.4000e-003**	**9.4000e-003**	**0.0000**	**46.5969**	**46.5969**	**2.5400e-003**	**0.0000**	**46.6604**

3.6 Architectural Coating - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0512	0.0280	0.3211	1.1800e-003	15.2440	8.7000e-004	15.2448	1.5446	8.0000e-004	1.5454	0.0000	107.1602	107.1602	1.9200e-003	0.0000	107.2081
Total	**0.0512**	**0.0280**	**0.3211**	**1.1800e-003**	**15.2440**	**8.7000e-004**	**15.2448**	**1.5446**	**8.0000e-004**	**1.5454**	**0.0000**	**107.1602**	**107.1602**	**1.9200e-003**	**0.0000**	**107.2081**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.0600					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0312	0.2091	0.3302	5.4000e-004		9.4000e-003	9.4000e-003		9.4000e-003	9.4000e-003	0.0000	46.5968	46.5968	2.5400e-003	0.0000	46.6604
Total	**1.0912**	**0.2091**	**0.3302**	**5.4000e-004**		**9.4000e-003**	**9.4000e-003**		**9.4000e-003**	**9.4000e-003**	**0.0000**	**46.5968**	**46.5968**	**2.5400e-003**	**0.0000**	**46.6604**

3.6 Architectural Coating - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0512	0.0280	0.3211	1.1800e-003	0.1401	8.7000e-004	0.1410	0.0374	8.0000e-004	0.0382	0.0000	107.1602	107.1602	1.9200e-003	0.0000	107.2081
Total	**0.0512**	**0.0280**	**0.3211**	**1.1800e-003**	**0.1401**	**8.7000e-004**	**0.1410**	**0.0374**	**8.0000e-004**	**0.0382**	**0.0000**	**107.1602**	**107.1602**	**1.9200e-003**	**0.0000**	**107.2081**

3.6 Architectural Coating - 2026

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.0600					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0312	0.2091	0.3302	5.4000e-004		9.4000e-003	9.4000e-003		9.4000e-003	9.4000e-003	0.0000	46.5969	46.5969	2.5400e-003	0.0000	46.6604
Total	**1.0912**	**0.2091**	**0.3302**	**5.4000e-004**		**9.4000e-003**	**9.4000e-003**		**9.4000e-003**	**9.4000e-003**	**0.0000**	**46.5969**	**46.5969**	**2.5400e-003**	**0.0000**	**46.6604**

3.6 Architectural Coating - 2026

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0485	0.0256	0.2988	1.1400e-003	15.2440	8.4000e-004	15.2448	1.5446	7.7000e-004	1.5454	0.0000	103.1712	103.1712	1.7500e-003	0.0000	103.2148
Total	**0.0485**	**0.0256**	**0.2988**	**1.1400e-003**	**15.2440**	**8.4000e-004**	**15.2448**	**1.5446**	**7.7000e-004**	**1.5454**	**0.0000**	**103.1712**	**103.1712**	**1.7500e-003**	**0.0000**	**103.2148**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	1.0600					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0312	0.2091	0.3302	5.4000e-004		9.4000e-003	9.4000e-003		9.4000e-003	9.4000e-003	0.0000	46.5968	46.5968	2.5400e-003	0.0000	46.6604
Total	**1.0912**	**0.2091**	**0.3302**	**5.4000e-004**		**9.4000e-003**	**9.4000e-003**		**9.4000e-003**	**9.4000e-003**	**0.0000**	**46.5968**	**46.5968**	**2.5400e-003**	**0.0000**	**46.6604**

3.6 Architectural Coating - 2026

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0485	0.0256	0.2988	1.1400e-003	0.1401	8.4000e-004	0.1410	0.0374	7.7000e-004	0.0382	0.0000	103.1712	103.1712	1.7500e-003	0.0000	103.2148
Total	**0.0485**	**0.0256**	**0.2988**	**1.1400e-003**	**0.1401**	**8.4000e-004**	**0.1410**	**0.0374**	**7.7000e-004**	**0.0382**	**0.0000**	**103.1712**	**103.1712**	**1.7500e-003**	**0.0000**	**103.2148**

3.6 Architectural Coating - 2027

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.3921					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0115	0.0773	0.1221	2.0000e-004		3.4800e-003	3.4800e-003		3.4800e-003	3.4800e-003	0.0000	17.2345	17.2345	9.4000e-004	0.0000	17.2580
Total	**0.4036**	**0.0773**	**0.1221**	**2.0000e-004**		**3.4800e-003**	**3.4800e-003**		**3.4800e-003**	**3.4800e-003**	**0.0000**	**17.2345**	**17.2345**	**9.4000e-004**	**0.0000**	**17.2580**

3.6 Architectural Coating - 2027

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0170	8.6400e-003	0.1030	4.1000e-004	5.6382	3.0000e-004	5.6385	0.5713	2.7000e-004	0.5716	0.0000	36.8418	36.8418	5.9000e-004	0.0000	36.8564
Total	**0.0170**	**8.6400e-003**	**0.1030**	**4.1000e-004**	**5.6382**	**3.0000e-004**	**5.6385**	**0.5713**	**2.7000e-004**	**0.5716**	**0.0000**	**36.8418**	**36.8418**	**5.9000e-004**	**0.0000**	**36.8564**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.3921					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0115	0.0773	0.1221	2.0000e-004		3.4800e-003	3.4800e-003		3.4800e-003	3.4800e-003	0.0000	17.2344	17.2344	9.4000e-004	0.0000	17.2580
Total	**0.4036**	**0.0773**	**0.1221**	**2.0000e-004**		**3.4800e-003**	**3.4800e-003**		**3.4800e-003**	**3.4800e-003**	**0.0000**	**17.2344**	**17.2344**	**9.4000e-004**	**0.0000**	**17.2580**

3.6 Architectural Coating - 2027

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0170	8.6400e-003	0.1030	4.1000e-004	0.0518	3.0000e-004	0.0521	0.0138	2.7000e-004	0.0141	0.0000	36.8418	36.8418	5.9000e-004	0.0000	36.8564
Total	**0.0170**	**8.6400e-003**	**0.1030**	**4.1000e-004**	**0.0518**	**3.0000e-004**	**0.0521**	**0.0138**	**2.7000e-004**	**0.0141**	**0.0000**	**36.8418**	**36.8418**	**5.9000e-004**	**0.0000**	**36.8564**

3.7 Building Construction 2 - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2870	2.6252	2.9645	4.9200e-003		0.1277	0.1277		0.1202	0.1202	0.0000	423.0437	423.0437	0.1006	0.0000	425.5596
Total	**0.2870**	**2.6252**	**2.9645**	**4.9200e-003**		**0.1277**	**0.1277**		**0.1202**	**0.1202**	**0.0000**	**423.0437**	**423.0437**	**0.1006**	**0.0000**	**425.5596**

3.7 Building Construction 2 - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0669	3.0310	0.5026	9.5700e-003	19.4433	2.9600e-003	19.4463	1.9823	2.8300e-003	1.9851	0.0000	909.5964	909.5964	0.0318	0.0000	910.3916
Worker	0.2887	0.1716	1.8797	6.4300e-003	76.3584	4.5200e-003	76.3630	7.7370	4.1600e-003	7.7412	0.0000	581.9999	581.9999	0.0118	0.0000	582.2948
Total	**0.3556**	**3.2025**	**2.3823**	**0.0160**	**95.8018**	**7.4800e-003**	**95.8093**	**9.7193**	**6.9900e-003**	**9.7263**	**0.0000**	**1,491.5963**	**1,491.5963**	**0.0436**	**0.0000**	**1,492.6864**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Off-Road	0.2870	2.6252	2.9645	4.9200e-003		0.1277	0.1277		0.1202	0.1202	0.0000	423.0432	423.0432	0.1006	0.0000	425.5590
Total	**0.2870**	**2.6252**	**2.9645**	**4.9200e-003**		**0.1277**	**0.1277**		**0.1202**	**0.1202**	**0.0000**	**423.0432**	**423.0432**	**0.1006**	**0.0000**	**425.5590**

3.7 Building Construction 2 - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0669	3.0310	0.5026	9.5700e-003	0.2203	2.9600e-003	0.2232	0.0640	2.8300e-003	0.0669	0.0000	909.5964	909.5964	0.0318	0.0000	910.3916
Worker	0.2887	0.1716	1.8797	6.4300e-003	0.7019	4.5200e-003	0.7065	0.1874	4.1600e-003	0.1916	0.0000	581.9999	581.9999	0.0118	0.0000	582.2948
Total	**0.3556**	**3.2025**	**2.3823**	**0.0160**	**0.9222**	**7.4800e-003**	**0.9297**	**0.2515**	**6.9900e-003**	**0.2585**	**0.0000**	**1,491.5963**	**1,491.5963**	**0.0436**	**0.0000**	**1,492.6864**

3.8 Architectural Coating 2 - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	4.9768					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0336	0.2287	0.3179	5.2000e-004		0.0124	0.0124		0.0124	0.0124	0.0000	44.8096	44.8096	2.6800e-003	0.0000	44.8766
Total	**5.0104**	**0.2287**	**0.3179**	**5.2000e-004**		**0.0124**	**0.0124**		**0.0124**	**0.0124**	**0.0000**	**44.8096**	**44.8096**	**2.6800e-003**	**0.0000**	**44.8766**

3.8 Architectural Coating 2 - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0554	0.0329	0.3609	1.2400e-003	14.6593	8.7000e-004	14.6601	1.4854	8.0000e-004	1.4862	0.0000	111.7322	111.7322	2.2600e-003	0.0000	111.7888
Total	**0.0554**	**0.0329**	**0.3609**	**1.2400e-003**	**14.6593**	**8.7000e-004**	**14.6601**	**1.4854**	**8.0000e-004**	**1.4862**	**0.0000**	**111.7322**	**111.7322**	**2.2600e-003**	**0.0000**	**111.7888**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	4.9768					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0336	0.2287	0.3179	5.2000e-004		0.0124	0.0124		0.0124	0.0124	0.0000	44.8096	44.8096	2.6800e-003	0.0000	44.8766
Total	**5.0104**	**0.2287**	**0.3179**	**5.2000e-004**		**0.0124**	**0.0124**		**0.0124**	**0.0124**	**0.0000**	**44.8096**	**44.8096**	**2.6800e-003**	**0.0000**	**44.8766**

3.8 Architectural Coating 2 - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0554	0.0329	0.3609	1.2400e-003	0.1348	8.7000e-004	0.1356	0.0360	8.0000e-004	0.0368	0.0000	111.7322	111.7322	2.2600e-003	0.0000	111.7888
Total	**0.0554**	**0.0329**	**0.3609**	**1.2400e-003**	**0.1348**	**8.7000e-004**	**0.1356**	**0.0360**	**8.0000e-004**	**0.0368**	**0.0000**	**111.7322**	**111.7322**	**2.2600e-003**	**0.0000**	**111.7888**

3.8 Architectural Coating 2 - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.1985					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.2700e-003	8.5300e-003	0.0127	2.0000e-005		4.3000e-004	4.3000e-004		4.3000e-004	4.3000e-004	0.0000	1.7873	1.7873	1.0000e-004	0.0000	1.7898
Total	**0.1998**	**8.5300e-003**	**0.0127**	**2.0000e-005**		**4.3000e-004**	**4.3000e-004**		**4.3000e-004**	**4.3000e-004**	**0.0000**	**1.7873**	**1.7873**	**1.0000e-004**	**0.0000**	**1.7898**

3.8 Architectural Coating 2 - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.0800e-003	1.1900e-003	0.0133	5.0000e-005	0.5847	3.0000e-005	0.5847	0.0592	3.0000e-005	0.0593	0.0000	4.2825	4.2825	8.0000e-005	0.0000	4.2846
Total	**2.0800e-003**	**1.1900e-003**	**0.0133**	**5.0000e-005**	**0.5847**	**3.0000e-005**	**0.5847**	**0.0592**	**3.0000e-005**	**0.0593**	**0.0000**	**4.2825**	**4.2825**	**8.0000e-005**	**0.0000**	**4.2846**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Archit. Coating	0.1985					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	1.2700e-003	8.5300e-003	0.0127	2.0000e-005		4.3000e-004	4.3000e-004		4.3000e-004	4.3000e-004	0.0000	1.7873	1.7873	1.0000e-004	0.0000	1.7898
Total	**0.1998**	**8.5300e-003**	**0.0127**	**2.0000e-005**		**4.3000e-004**	**4.3000e-004**		**4.3000e-004**	**4.3000e-004**	**0.0000**	**1.7873**	**1.7873**	**1.0000e-004**	**0.0000**	**1.7898**

3.8 Architectural Coating 2 - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	2.0800e-003	1.1900e-003	0.0133	5.0000e-005	5.3800e-003	3.0000e-005	5.4100e-003	1.4400e-003	3.0000e-005	1.4700e-003	0.0000	4.2825	4.2825	8.0000e-005	0.0000	4.2846
Total	**2.0800e-003**	**1.1900e-003**	**0.0133**	**5.0000e-005**	**5.3800e-003**	**3.0000e-005**	**5.4100e-003**	**1.4400e-003**	**3.0000e-005**	**1.4700e-003**	**0.0000**	**4.2825**	**4.2825**	**8.0000e-005**	**0.0000**	**4.2846**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.9100	8.0909	9.2300	0.0493	246.8486	0.0293	246.8779	25.2555	0.0273	25.2828	0.0000	4,570.7389	4,570.7389	0.1488	0.0000	4,574.4594
Unmitigated	0.9100	8.0909	9.2300	0.0493	246.8486	0.0293	246.8779	25.2555	0.0273	25.2828	0.0000	4,570.7389	4,570.7389	0.1488	0.0000	4,574.4594

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	1,203.65	1,156.59	1060.66	3,087,440	3,087,440
Condo/Townhouse	162.68	158.76	135.52	415,263	415,263
Other Asphalt Surfaces	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Research & Development	4,379.40	1,026.00	599.40	7,377,182	7,377,182
Unenclosed Parking with Elevator	0.00	0.00	0.00		
Total	5,745.73	2,341.35	1,795.58	10,879,884	10,879,884

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Mid Rise	10.00	5.00	7.00	46.00	13.00	41.00	86	11	3
Condo/Townhouse	10.00	5.00	7.00	46.00	13.00	41.00	86	11	3
Other Asphalt Surfaces	10.00	5.00	7.00	0.00	0.00	0.00	0	0	0
Parking Lot	10.00	5.00	7.00	0.00	0.00	0.00	0	0	0
Research & Development	10.00	5.00	7.00	33.00	48.00	19.00	82	15	3
Unenclosed Parking with	10.00	5.00	7.00	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Mid Rise	0.505773	0.035704	0.212085	0.105468	0.014725	0.004480	0.068989	0.043685	0.001015	0.001418	0.005344	0.000705	0.000608
Condo/Townhouse	0.505773	0.035704	0.212085	0.105468	0.014725	0.004480	0.068989	0.043685	0.001015	0.001418	0.005344	0.000705	0.000608
Other Asphalt Surfaces	0.505773	0.035704	0.212085	0.105468	0.014725	0.004480	0.068989	0.043685	0.001015	0.001418	0.005344	0.000705	0.000608
Parking Lot	0.505773	0.035704	0.212085	0.105468	0.014725	0.004480	0.068989	0.043685	0.001015	0.001418	0.005344	0.000705	0.000608
Research & Development	0.505773	0.035704	0.212085	0.105468	0.014725	0.004480	0.068989	0.043685	0.001015	0.001418	0.005344	0.000705	0.000608
Unenclosed Parking with Elevator	0.505773	0.035704	0.212085	0.105468	0.014725	0.004480	0.068989	0.043685	0.001015	0.001418	0.005344	0.000705	0.000608

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	551.3006	551.3006	0.0805	0.0167	558.2754
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	551.3006	551.3006	0.0805	0.0167	558.2754
NaturalGas Mitigated	0.0669	0.6012	0.4604	3.6500e-003		0.0462	0.0462		0.0462	0.0462	0.0000	662.0016	662.0016	0.0127	0.0121	665.9355
NaturalGas Unmitigated	0.0669	0.6012	0.4604	3.6500e-003		0.0462	0.0462		0.0462	0.0462	0.0000	662.0016	662.0016	0.0127	0.0121	665.9355

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Mid Rise	1.76441e+006	9.5100e-003	0.0813	0.0346	5.2000e-004		6.5700e-003	6.5700e-003		6.5700e-003	6.5700e-003	0.0000	94.1554	94.1554	1.8000e-003	1.7300e-003	94.7150
Condo/Townhouse	575435	3.1000e-003	0.0265	0.0113	1.7000e-004		2.1400e-003	2.1400e-003		2.1400e-003	2.1400e-003	0.0000	30.7074	30.7074	5.9000e-004	5.6000e-004	30.8899
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Research & Development	1.00656e+007	0.0543	0.4934	0.4145	2.9600e-003		0.0375	0.0375		0.0375	0.0375	0.0000	537.1388	537.1388	0.0103	9.8500e-003	540.3307
Unenclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0669**	**0.6012**	**0.4604**	**3.6500e-003**		**0.0462**	**0.0462**		**0.0462**	**0.0462**	**0.0000**	**662.0016**	**662.0016**	**0.0127**	**0.0121**	**665.9355**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Mid Rise	1.76441e+006	9.5100e-003	0.0813	0.0346	5.2000e-004		6.5700e-003	6.5700e-003		6.5700e-003	6.5700e-003	0.0000	94.1554	94.1554	1.8000e-003	1.7300e-003	94.7150
Condo/Townhouse	575435	3.1000e-003	0.0265	0.0113	1.7000e-004		2.1400e-003	2.1400e-003		2.1400e-003	2.1400e-003	0.0000	30.7074	30.7074	5.9000e-004	5.6000e-004	30.8899
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Research & Development	1.00656e+007	0.0543	0.4934	0.4145	2.9600e-003		0.0375	0.0375		0.0375	0.0375	0.0000	537.1388	537.1388	0.0103	9.8500e-003	540.3307
Unenclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0669**	**0.6012**	**0.4604**	**3.6500e-003**		**0.0462**	**0.0462**		**0.0462**	**0.0462**	**0.0000**	**662.0016**	**662.0016**	**0.0127**	**0.0121**	**665.9355**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	770419	69.4125	0.0101	2.1000e-003	70.2907
Condo/Townhouse	144976	13.0619	1.9100e-003	3.9000e-004	13.2272
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	79520	7.1645	1.0500e-003	2.2000e-004	7.2552
Research & Development	4.563e+006	411.1129	0.0600	0.0124	416.3141
Unenclosed Parking with Elevator	561048	50.5488	7.3800e-003	1.5300e-003	51.1883
Total		**551.3006**	**0.0805**	**0.0167**	**558.2754**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	770419	69.4125	0.0101	2.1000e-003	70.2907
Condo/Townhouse	144976	13.0619	1.9100e-003	3.9000e-004	13.2272
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	79520	7.1645	1.0500e-003	2.2000e-004	7.2552
Research & Development	4.563e+006	411.1129	0.0600	0.0124	416.3141
Unenclosed Parking with Elevator	561048	50.5488	7.3800e-003	1.5300e-003	51.1883
Total		**551.3006**	**0.0805**	**0.0167**	**558.2754**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	22.9464	0.3606	25.5777	0.0435		3.3757	3.3757		3.3757	3.3757	320.9072	93.1080	414.0152	0.3024	0.0244	428.8313
Unmitigated	22.9464	0.3606	25.5777	0.0435		3.3757	3.3757		3.3757	3.3757	320.9072	93.1080	414.0152	0.3024	0.0244	428.8313

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.5175					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	2.9603					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	19.4205	0.3426	24.0105	0.0434		3.3670	3.3670		3.3670	3.3670	320.9072	90.5404	411.4475	0.2999	0.0244	426.2008
Landscaping	0.0481	0.0180	1.5672	8.0000e-005		8.6600e-003	8.6600e-003		8.6600e-003	8.6600e-003	0.0000	2.5677	2.5677	2.5100e-003	0.0000	2.6305
Total	**22.9465**	**0.3606**	**25.5777**	**0.0435**		**3.3757**	**3.3757**		**3.3757**	**3.3757**	**320.9072**	**93.1080**	**414.0152**	**0.3024**	**0.0244**	**428.8312**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.5175					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	2.9603					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	19.4205	0.3426	24.0105	0.0434		3.3670	3.3670		3.3670	3.3670	320.9072	90.5404	411.4475	0.2999	0.0244	426.2008
Landscaping	0.0481	0.0180	1.5672	8.0000e-005		8.6600e-003	8.6600e-003		8.6600e-003	8.6600e-003	0.0000	2.5677	2.5677	2.5100e-003	0.0000	2.6305
Total	**22.9465**	**0.3606**	**25.5777**	**0.0435**		**3.3757**	**3.3757**		**3.3757**	**3.3757**	**320.9072**	**93.1080**	**414.0152**	**0.3024**	**0.0244**	**428.8312**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	227.3438	9.1158	0.2190	520.4876
Unmitigated	227.3438	9.1158	0.2190	520.4876

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	11.7929 / 7.43464	11.8350	0.3855	9.3200e-003	24.2481
Condo/Townhouse	1.82431 / 1.15011	1.8308	0.0596	1.4400e-003	3.7511
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Research & Development	265.515 / 0	213.6780	8.6707	0.2082	492.4885
Unenclosed Parking with Elevator	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**227.3438**	**9.1158**	**0.2190**	**520.4876**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	11.7929 / 7.43464	11.8350	0.3855	9.3200e-003	24.2481
Condo/Townhouse	1.82431 / 1.15011	1.8308	0.0596	1.4400e-003	3.7511
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Research & Development	265.515 / 0	213.6780	8.6707	0.2082	492.4885
Unenclosed Parking with Elevator	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**227.3438**	**9.1158**	**0.2190**	**520.4876**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	27.8463	1.6457	0.0000	68.9880
Unmitigated	27.8463	1.6457	0.0000	68.9880

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	83.26	16.9010	0.9988	0.0000	41.8716
Condo/Townhouse	12.88	2.6145	0.1545	0.0000	6.4774
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Research & Development	41.04	8.3308	0.4923	0.0000	20.6391
Unenclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
Total		**27.8463**	**1.6457**	**0.0000**	**68.9880**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	83.26	16.9010	0.9988	0.0000	41.8716
Condo/Townhouse	12.88	2.6145	0.1545	0.0000	6.4774
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Research & Development	41.04	8.3308	0.4923	0.0000	20.6391
Unenclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000
Total		**27.8463**	**1.6457**	**0.0000**	**68.9880**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

ARC - Construction Phase I (Overlap)

Yolo County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Research & Development	540.00	1000sqft	12.40	540,000.00	0
Other Asphalt Surfaces	0.60	Acre	0.60	26,136.00	0
Parking Lot	568.00	Space	5.11	227,200.00	0
Unenclosed Parking with Elevator	723.00	Space	6.51	289,200.00	0
Apartments Mid Rise	181.00	Dwelling Unit	4.76	181,000.00	518
Condo/Townhouse	28.00	Dwelling Unit	1.75	28,000.00	80

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	6.8	**Precipitation Freq (Days)**	54
Climate Zone	2			**Operational Year**	2028
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	198.63	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - CO_2 Intensity Factor adjusted to reflect PG&E's calculated progress towards RPS

Land Use - Based on Phase I of ARC

Construction Phase - Construction schedule adjusted based on applicant provided information and to account for overlap of building construction

Trips and VMT - Haul truck trip lengths adjusted per project-specific route of material movement; number of haul trucks based on 12 CY capacity trucks

Grading - Grading area updated for project construction information and off-site improvement areas

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	35.00	1,782.00
tblConstructionPhase	NumDays	35.00	365.00
tblConstructionPhase	NumDays	500.00	1,782.00
tblConstructionPhase	NumDays	500.00	365.00
tblConstructionPhase	NumDays	45.00	28.00
tblConstructionPhase	NumDays	35.00	10.00
tblConstructionPhase	NumDays	20.00	7.00
tblConstructionPhase	NumDaysWeek	5.00	7.00
tblConstructionPhase	NumDaysWeek	5.00	7.00
tblConstructionPhase	NumDaysWeek	5.00	7.00
tblConstructionPhase	NumDaysWeek	5.00	7.00
tblConstructionPhase	NumDaysWeek	5.00	7.00
tblConstructionPhase	NumDaysWeek	5.00	7.00
tblConstructionPhase	NumDaysWeek	5.00	7.00
tblGrading	AcresOfGrading	70.00	112.50
tblGrading	MaterialExported	0.00	130,000.00
tblProjectCharacteristics	CO2IntensityFactor	641.35	198.63
tblTripsAndVMT	HaulingTripLength	20.00	2.15
tblTripsAndVMT	HaulingTripNumber	16,250.00	10,833.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	10.5394	80.4459	36.9034	0.1371	713.2940	1.6822	714.2548	72.2067	1.5493	73.1155	0.0000	13,862.6509	13,862.6509	2.7734	0.0000	13,931.9864
2023	42.7734	66.2819	70.1063	0.2592	1,426.5877	1.6323	1,428.2200	144.4133	1.5436	145.9569	0.0000	26,085.0405	26,085.0405	1.8031	0.0000	26,130.1175
2024	38.7364	33.2295	37.8386	0.1378	811.2177	0.7845	812.0022	82.1103	0.7447	82.8550	0.0000	13,848.2237	13,848.2237	0.9124	0.0000	13,871.0347
2025	9.6165	30.5688	32.6295	0.1253	713.2936	0.6227	713.9163	72.2066	0.5885	72.7951	0.0000	12,610.0914	12,610.0914	0.8649	0.0000	12,631.7136
2026	9.5061	30.3482	31.7218	0.1234	713.2935	0.6216	713.9152	72.2065	0.5875	72.7940	0.0000	12,417.7491	12,417.7491	0.8540	0.0000	12,439.1000
2027	9.3972	30.1400	30.9027	0.1216	713.2934	0.6200	713.9134	72.2065	0.5859	72.7925	0.0000	12,245.7684	12,245.7684	0.8436	0.0000	12,266.8577
Maximum	**42.7734**	**80.4459**	**70.1063**	**0.2592**	**1,426.5877**	**1.6822**	**1,428.2200**	**144.4133**	**1.5493**	**145.9569**	**0.0000**	**26,085.0405**	**26,085.0405**	**2.7734**	**0.0000**	**26,130.1175**

2.1 Overall Construction (Maximum Daily Emission)

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	10.5394	80.4459	36.9034	0.1371	18.1961	1.6822	19.8094	9.9653	1.5493	11.4496	0.0000	13,862.6509	13,862.6509	2.7734	0.0000	13,931.9864
2023	42.7734	66.2819	70.1063	0.2592	12.0104	1.6323	13.6427	3.2565	1.5436	4.8000	0.0000	26,085.0405	26,085.0405	1.8031	0.0000	26,130.1175
2024	38.7364	33.2295	37.8386	0.1378	6.7982	0.7845	7.5827	1.8394	0.7447	2.5842	0.0000	13,848.2237	13,848.2237	0.9124	0.0000	13,871.0347
2025	9.6165	30.5688	32.6295	0.1253	6.0050	0.6227	6.6277	1.6281	0.5885	2.2166	0.0000	12,610.0914	12,610.0914	0.8649	0.0000	12,631.7136
2026	9.5061	30.3482	31.7218	0.1234	6.0049	0.6216	6.6265	1.6281	0.5875	2.2156	0.0000	12,417.7491	12,417.7491	0.8540	0.0000	12,439.1000
2027	9.3972	30.1400	30.9027	0.1216	6.0048	0.6200	6.6247	1.6281	0.5859	2.2140	0.0000	12,245.7684	12,245.7684	0.8436	0.0000	12,266.8577
Maximum	**42.7734**	**80.4459**	**70.1063**	**0.2592**	**18.1961**	**1.6822**	**19.8094**	**9.9653**	**1.5493**	**11.4496**	**0.0000**	**26,085.0405**	**26,085.0405**	**2.7734**	**0.0000**	**26,130.1175**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**98.92**	**0.00**	**98.80**	**96.13**	**0.00**	**95.10**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	493.2623	8.5551	603.0346	1.0588		82.2180	82.2180		82.2180	82.2180	8,627.794 9	2,465.683 6	11,093.478 4	8.0941	0.6546	11,490.899 2
Energy	0.3665	3.2944	2.5224	0.0200		0.2532	0.2532		0.2532	0.2532		3,998.530 6	3,998.530 6	0.0766	0.0733	4,022.291 8
Mobile	7.6540	53.2449	67.6986	0.3483	1,646.374 0	0.1950	1,646.569 0	168.5624	0.1821	168.7445		35,559.19 19	35,559.19 19	1.0954		35,586.57 75
Total	**501.2828**	**65.0945**	**673.2556**	**1.4270**	**1,646.374 0**	**82.6662**	**1,729.040 2**	**168.5624**	**82.6533**	**251.2157**	**8,627.794 9**	**42,023.40 61**	**50,651.20 10**	**9.2662**	**0.7279**	**51,099.76 86**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	493.2623	8.5551	603.0346	1.0588		82.2180	82.2180		82.2180	82.2180	8,627.794 9	2,465.683 6	11,093.478 4	8.0941	0.6546	11,490.899 2
Energy	0.3665	3.2944	2.5224	0.0200		0.2532	0.2532		0.2532	0.2532		3,998.530 6	3,998.530 6	0.0766	0.0733	4,022.291 8
Mobile	7.6540	53.2449	67.6986	0.3483	1,646.374 0	0.1950	1,646.569 0	168.5624	0.1821	168.7445		35,559.19 19	35,559.19 19	1.0954		35,586.57 75
Total	**501.2828**	**65.0945**	**673.2556**	**1.4270**	**1,646.374 0**	**82.6662**	**1,729.040 2**	**168.5624**	**82.6533**	**251.2157**	**8,627.794 9**	**42,023.40 61**	**50,651.20 10**	**9.2662**	**0.7279**	**51,099.76 86**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	5/1/2022	5/7/2022	7	7	
2	Grading	Grading	5/8/2022	6/4/2022	7	28	
3	Paving	Paving	6/5/2022	6/14/2022	7	10	
4	Building Construction	Building Construction	6/15/2022	5/1/2027	7	1782	
5	Architectural Coating	Architectural Coating	6/29/2022	5/15/2027	7	1782	
6	Building Construction 2	Building Construction	1/1/2023	12/31/2023	7	365	
7	Architectural Coating 2	Architectural Coating	1/15/2023	1/14/2024	7	365	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 112.5

Acres of Paving: 12.22

Residential Indoor: 423,225; Residential Outdoor: 141,075; Non-Residential Indoor: 810,000; Non-Residential Outdoor: 270,000; Striped Parking Area: 32,552 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Architectural Coating	Air Compressors	1	6.00	78	0.48
Building Construction 2	Cranes	1	7.00	231	0.29
Building Construction 2	Forklifts	3	8.00	89	0.20
Building Construction 2	Generator Sets	1	8.00	84	0.74
Building Construction 2	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction 2	Welders	1	8.00	46	0.45
Architectural Coating 2	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	7	18.00	0.00	0.00	10.00	7.00	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	10,833.00	10.00	7.00	2.15	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.00	7.00	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	551.00	200.00	0.00	10.00	7.00	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	110.00	0.00	0.00	10.00	7.00	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction 2	9	551.00	200.00	0.00	10.00	7.00	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating 2	1	110.00	0.00	0.00	10.00	7.00	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Site Preparation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	3.1701	33.0835	19.6978	0.0380		1.6126	1.6126		1.4836	1.4836		3,686.0619	3,686.0619	1.1922		3,715.8655
Total	**3.1701**	**33.0835**	**19.6978**	**0.0380**	**18.0663**	**1.6126**	**19.6788**	**9.9307**	**1.4836**	**11.4143**		**3,686.0619**	**3,686.0619**	**1.1922**		**3,715.8655**

3.2 Site Preparation - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0635	0.0309	0.4274	1.3200e-003	16.0239	8.3000e-004	16.0247	1.6206	7.6000e-004	1.6214		131.4614	131.4614	2.8800e-003		131.5335
Total	**0.0635**	**0.0309**	**0.4274**	**1.3200e-003**	**16.0239**	**8.3000e-004**	**16.0247**	**1.6206**	**7.6000e-004**	**1.6214**		**131.4614**	**131.4614**	**2.8800e-003**		**131.5335**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	3.1701	33.0835	19.6978	0.0380		1.6126	1.6126		1.4836	1.4836	0.0000	3,686.0619	3,686.0619	1.1922		3,715.8655
Total	**3.1701**	**33.0835**	**19.6978**	**0.0380**	**18.0663**	**1.6126**	**19.6788**	**9.9307**	**1.4836**	**11.4143**	**0.0000**	**3,686.0619**	**3,686.0619**	**1.1922**		**3,715.8655**

3.2 Site Preparation - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0635	0.0309	0.4274	1.3200e-003	0.1298	8.3000e-004	0.1306	0.0346	7.6000e-004	0.0353		131.4614	131.4614	2.8800e-003		131.5335
Total	**0.0635**	**0.0309**	**0.4274**	**1.3200e-003**	**0.1298**	**8.3000e-004**	**0.1306**	**0.0346**	**7.6000e-004**	**0.0353**		**131.4614**	**131.4614**	**2.8800e-003**		**131.5335**

3.3 Grading - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					12.5598	0.0000	12.5598	4.1151	0.0000	4.1151			0.0000			0.0000
Off-Road	3.6248	38.8435	29.0415	0.0621		1.6349	1.6349		1.5041	1.5041		6,011.4105	6,011.4105	1.9442		6,060.0158
Total	**3.6248**	**38.8435**	**29.0415**	**0.0621**	**12.5598**	**1.6349**	**14.1947**	**4.1151**	**1.5041**	**5.6192**		**6,011.4105**	**6,011.4105**	**1.9442**		**6,060.0158**

3.3 Grading - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.8460	41.5681	4.5384	0.0735	74.1468	0.0464	74.1932	7.5215	0.0444	7.5658		7,705.172 2	7,705.172 2	0.8260		7,725.822 2
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0706	0.0344	0.4749	1.4700e-003	17.8044	9.2000e-004	17.8053	1.8007	8.5000e-004	1.8015		146.0682	146.0682	3.2100e-003		146.1483
Total	**0.9165**	**41.6024**	**5.0133**	**0.0750**	**91.9512**	**0.0473**	**91.9985**	**9.3222**	**0.0452**	**9.3674**		**7,851.240 4**	**7,851.240 4**	**0.8292**		**7,871.970 6**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					12.5598	0.0000	12.5598	4.1151	0.0000	4.1151			0.0000			0.0000
Off-Road	3.6248	38.8435	29.0415	0.0621		1.6349	1.6349		1.5041	1.5041	0.0000	6,011.4105	6,011.4105	1.9442		6,060.015 8
Total	**3.6248**	**38.8435**	**29.0415**	**0.0621**	**12.5598**	**1.6349**	**14.1947**	**4.1151**	**1.5041**	**5.6192**	**0.0000**	**6,011.410 5**	**6,011.410 5**	**1.9442**		**6,060.015 8**

3.3 Grading - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.8460	41.5681	4.5384	0.0735	0.6966	0.0464	0.7429	0.1921	0.0444	0.2364		7,705.1722	7,705.1722	0.8260		7,725.8222
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0706	0.0344	0.4749	1.4700e-003	0.1442	9.2000e-004	0.1451	0.0384	8.5000e-004	0.0393		146.0682	146.0682	3.2100e-003		146.1483
Total	**0.9165**	**41.6024**	**5.0133**	**0.0750**	**0.8408**	**0.0473**	**0.8881**	**0.2305**	**0.0452**	**0.2757**		**7,851.2404**	**7,851.2404**	**0.8292**		**7,871.9706**

3.4 Paving - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1028	11.1249	14.5805	0.0228		0.5679	0.5679		0.5225	0.5225		2,207.6603	2,207.6603	0.7140		2,225.5104
Paving	1.4960					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**2.5988**	**11.1249**	**14.5805**	**0.0228**		**0.5679**	**0.5679**		**0.5225**	**0.5225**		**2,207.6603**	**2,207.6603**	**0.7140**		**2,225.5104**

3.4 Paving - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0529	0.0258	0.3561	1.1000e-003	13.3533	6.9000e-004	13.3540	1.3505	6.4000e-004	1.3511		109.5512	109.5512	2.4000e-003		109.6113
Total	**0.0529**	**0.0258**	**0.3561**	**1.1000e-003**	**13.3533**	**6.9000e-004**	**13.3540**	**1.3505**	**6.4000e-004**	**1.3511**		**109.5512**	**109.5512**	**2.4000e-003**		**109.6113**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1028	11.1249	14.5805	0.0228		0.5679	0.5679		0.5225	0.5225	0.0000	2,207.6603	2,207.6603	0.7140		2,225.5104
Paving	1.4960					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**2.5988**	**11.1249**	**14.5805**	**0.0228**		**0.5679**	**0.5679**		**0.5225**	**0.5225**	**0.0000**	**2,207.6603**	**2,207.6603**	**0.7140**		**2,225.5104**

3.4 Paving - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0529	0.0258	0.3561	1.1000e-003	0.1082	6.9000e-004	0.1088	0.0288	6.4000e-004	0.0294		109.5512	109.5512	2.4000e-003		109.6113
Total	**0.0529**	**0.0258**	**0.3561**	**1.1000e-003**	**0.1082**	**6.9000e-004**	**0.1088**	**0.0288**	**6.4000e-004**	**0.0294**		**109.5512**	**109.5512**	**2.4000e-003**		**109.6113**

3.5 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612		2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**		**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

3.5 Building Construction - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.4886	19.7673	3.0324	0.0542	124.8603	0.0397	124.9000	12.6947	0.0379	12.7326		5,678.6591	5,678.6591	0.2462		5,684.8134
Worker	1.9436	0.9467	13.0823	0.0404	490.5098	0.0253	490.5351	49.6084	0.0233	49.6317		4,024.1788	4,024.1788	0.0883		4,026.3866
Total	**2.4322**	**20.7140**	**16.1147**	**0.0946**	**615.3701**	**0.0650**	**615.4351**	**62.3031**	**0.0613**	**62.3643**		**9,702.8379**	**9,702.8379**	**0.3345**		**9,711.1999**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612	0.0000	2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**	**0.0000**	**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

3.5 Building Construction - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.4886	19.7673	3.0324	0.0542	1.2393	0.0397	1.2790	0.3589	0.0379	0.3968		5,678.659 1	5,678.659 1	0.2462		5,684.813 4
Worker	1.9436	0.9467	13.0823	0.0404	3.9729	0.0253	3.9982	1.0582	0.0233	1.0815		4,024.178 8	4,024.178 8	0.0883		4,026.386 6
Total	**2.4322**	**20.7140**	**16.1147**	**0.0946**	**5.2122**	**0.0650**	**5.2772**	**1.4170**	**0.0613**	**1.4783**		**9,702.837 9**	**9,702.837 9**	**0.3345**		**9,711.199 9**

3.5 Building Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584		2,555.209 9	2,555.209 9	0.6079		2,570.406 1
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**		**2,555.209 9**	**2,555.209 9**	**0.6079**		**2,570.406 1**

3.5 Building Construction - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.3591	16.4321	2.5654	0.0531	124.8602	0.0159	124.8760	12.6946	0.0152	12.7098		5,560.6960	5,560.6960	0.1819		5,565.2442
Worker	1.8174	0.8511	12.0308	0.0388	490.5098	0.0248	490.5346	49.6084	0.0228	49.6312		3,872.1431	3,872.1431	0.0791		3,874.1214
Total	**2.1764**	**17.2832**	**14.5962**	**0.0919**	**615.3700**	**0.0406**	**615.4106**	**62.3030**	**0.0380**	**62.3410**		**9,432.8392**	**9,432.8392**	**0.2611**		**9,439.3656**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584	0.0000	2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**	**0.0000**	**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

3.5 Building Construction - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.3591	16.4321	2.5654	0.0531	1.2392	0.0159	1.2551	0.3588	0.0152	0.3740		5,560.696 0	5,560.696 0	0.1819		5,565.244 2
Worker	1.8174	0.8511	12.0308	0.0388	3.9729	0.0248	3.9977	1.0582	0.0228	1.0810		3,872.143 1	3,872.143 1	0.0791		3,874.121 4
Total	**2.1764**	**17.2832**	**14.5962**	**0.0919**	**5.2121**	**0.0406**	**5.2527**	**1.4170**	**0.0380**	**1.4550**		**9,432.839 2**	**9,432.839 2**	**0.2611**		**9,439.365 6**

3.5 Building Construction - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4716	13.4438	16.1668	0.0270		0.6133	0.6133		0.5769	0.5769		2,555.698 9	2,555.698 9	0.6044		2,570.807 7
Total	**1.4716**	**13.4438**	**16.1668**	**0.0270**		**0.6133**	**0.6133**		**0.5769**	**0.5769**		**2,555.698 9**	**2,555.698 9**	**0.6044**		**2,570.807 7**

3.5 Building Construction - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.3484	16.2733	2.4490	0.0527	124.8600	0.0155	124.8755	12.6946	0.0148	12.7094		5,523.2803	5,523.2803	0.1767		5,527.6966
Worker	1.7072	0.7682	11.1504	0.0373	490.5098	0.0242	490.5340	49.6084	0.0223	49.6307		3,720.7497	3,720.7497	0.0713		3,722.5317
Total	**2.0556**	**17.0414**	**13.5994**	**0.0901**	**615.3698**	**0.0397**	**615.4095**	**62.3030**	**0.0371**	**62.3401**		**9,244.0299**	**9,244.0299**	**0.2479**		**9,250.2283**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4716	13.4438	16.1668	0.0270		0.6133	0.6133		0.5769	0.5769	0.0000	2,555.6989	2,555.6989	0.6044		2,570.8077
Total	**1.4716**	**13.4438**	**16.1668**	**0.0270**		**0.6133**	**0.6133**		**0.5769**	**0.5769**	**0.0000**	**2,555.6989**	**2,555.6989**	**0.6044**		**2,570.8077**

3.5 Building Construction - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.3484	16.2733	2.4490	0.0527	1.2390	0.0155	1.2546	0.3588	0.0148	0.3736		5,523.2803	5,523.2803	0.1767		5,527.6966
Worker	1.7072	0.7682	11.1504	0.0373	3.9729	0.0242	3.9971	1.0582	0.0223	1.0805		3,720.7497	3,720.7497	0.0713		3,722.5317
Total	**2.0556**	**17.0414**	**13.5994**	**0.0901**	**5.2119**	**0.0397**	**5.2517**	**1.4169**	**0.0371**	**1.4540**		**9,244.0299**	**9,244.0299**	**0.2479**		**9,250.2283**

3.5 Building Construction - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963		2,556.4744	2,556.4744	0.6010		2,571.4981
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**		**2,556.4744**	**2,556.4744**	**0.6010**		**2,571.4981**

3.5 Building Construction - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.3390	16.1181	2.3469	0.0524	124.8599	0.0152	124.8751	12.6945	0.0145	12.7090		5,488.415 4	5,488.415 4	0.1712		5,492.695 9
Worker	1.6095	0.6965	10.3271	0.0358	490.5098	0.0238	490.5336	49.6084	0.0219	49.6303		3,570.874 8	3,570.874 8	0.0645		3,572.487 1
Total	**1.9485**	**16.8146**	**12.6741**	**0.0882**	**615.3697**	**0.0389**	**615.4086**	**62.3029**	**0.0364**	**62.3393**		**9,059.290 2**	**9,059.290 2**	**0.2357**		**9,065.183 0**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963	0.0000	2,556.474 4	2,556.474 4	0.6010		2,571.498 1
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**	**0.0000**	**2,556.474 4**	**2,556.474 4**	**0.6010**		**2,571.498 1**

3.5 Building Construction - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.3390	16.1181	2.3469	0.0524	1.2389	0.0152	1.2541	0.3587	0.0145	0.3732		5,488.415 4	5,488.415 4	0.1712		5,492.695 9
Worker	1.6095	0.6965	10.3271	0.0358	3.9729	0.0238	3.9967	1.0582	0.0219	1.0800		3,570.874 8	3,570.874 8	0.0645		3,572.487 1
Total	**1.9485**	**16.8146**	**12.6741**	**0.0882**	**5.2118**	**0.0389**	**5.2507**	**1.4169**	**0.0364**	**1.4532**		**9,059.290 2**	**9,059.290 2**	**0.2357**		**9,065.183 0**

3.5 Building Construction - 2026

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963		2,556.474 4	2,556.474 4	0.6010		2,571.498 1
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**		**2,556.474 4**	**2,556.474 4**	**0.6010**		**2,571.498 1**

3.5 Building Construction - 2026

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.3316	15.9699	2.2814	0.0521	124.8598	0.0149	124.8747	12.6945	0.0142	12.7087		5,455.620 4	5,455.620 4	0.1673		5,459.802 2
Worker	1.5237	0.6361	9.6251	0.0345	490.5098	0.0231	490.5329	49.6084	0.0213	49.6296		3,437.878 4	3,437.878 4	0.0587		3,439.346 9
Total	**1.8553**	**16.6060**	**11.9065**	**0.0866**	**615.3696**	**0.0380**	**615.4076**	**62.3029**	**0.0355**	**62.3383**		**8,893.498 9**	**8,893.498 9**	**0.2260**		**8,899.149 1**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963	0.0000	2,556.474 4	2,556.474 4	0.6010		2,571.498 1
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**	**0.0000**	**2,556.474 4**	**2,556.474 4**	**0.6010**		**2,571.498 1**

3.5 Building Construction - 2026

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.3316	15.9699	2.2814	0.0521	1.2388	0.0149	1.2537	0.3587	0.0142	0.3729		5,455.620 4	5,455.620 4	0.1673		5,459.802 2
Worker	1.5237	0.6361	9.6251	0.0345	3.9729	0.0231	3.9960	1.0582	0.0213	1.0794		3,437.878 4	3,437.878 4	0.0587		3,439.346 9
Total	**1.8553**	**16.6060**	**11.9065**	**0.0866**	**5.2117**	**0.0380**	**5.2497**	**1.4169**	**0.0355**	**1.4523**		**8,893.498 9**	**8,893.498 9**	**0.2260**		**8,899.149 1**

3.5 Building Construction - 2027

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963		2,556.474 4	2,556.474 4	0.6010		2,571.498 1
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**		**2,556.474 4**	**2,556.474 4**	**0.6010**		**2,571.498 1**

3.5 Building Construction - 2027

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.3252	15.8272	2.2250	0.0518	124.8597	0.0146	124.8743	12.6944	0.0140	12.7084		5,425.913 5	5,425.913 5	0.1631		5,429.990 4
Worker	1.4382	0.5815	8.9893	0.0333	490.5098	0.0219	490.5317	49.6084	0.0202	49.6286		3,319.2811	3,319.2811	0.0535		3,320.618 9
Total	**1.7634**	**16.4087**	**11.2143**	**0.0851**	**615.3695**	**0.0365**	**615.4060**	**62.3028**	**0.0341**	**62.3370**		**8,745.194 6**	**8,745.194 6**	**0.2166**		**8,750.609 3**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963	0.0000	2,556.474 4	2,556.474 4	0.6010		2,571.498 1
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**	**0.0000**	**2,556.474 4**	**2,556.474 4**	**0.6010**		**2,571.498 1**

3.5 Building Construction - 2027

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.3252	15.8272	2.2250	0.0518	1.2387	0.0146	1.2533	0.3586	0.0140	0.3726		5,425.913 5	5,425.913 5	0.1631		5,429.990 4
Worker	1.4382	0.5815	8.9893	0.0333	3.9729	0.0219	3.9948	1.0582	0.0202	1.0784		3,319.281 1	3,319.281 1	0.0535		3,320.618 9
Total	**1.7634**	**16.4087**	**11.2143**	**0.0851**	**5.2116**	**0.0365**	**5.2482**	**1.4168**	**0.0341**	**1.4510**		**8,745.194 6**	**8,745.194 6**	**0.2166**		**8,750.609 3**

3.6 Architectural Coating - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	5.8084					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2045	1.4085	1.8136	2.9700e-003		0.0817	0.0817		0.0817	0.0817		281.4481	281.4481	0.0183		281.9062
Total	**6.0129**	**1.4085**	**1.8136**	**2.9700e-003**		**0.0817**	**0.0817**		**0.0817**	**0.0817**		**281.4481**	**281.4481**	**0.0183**		**281.9062**

3.6 Architectural Coating - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.3880	0.1890	2.6117	8.0600e-003	97.9239	5.0600e-003	97.9290	9.9037	4.6600e-003	9.9083		803.3751	803.3751	0.0176		803.8158
Total	**0.3880**	**0.1890**	**2.6117**	**8.0600e-003**	**97.9239**	**5.0600e-003**	**97.9290**	**9.9037**	**4.6600e-003**	**9.9083**		**803.3751**	**803.3751**	**0.0176**		**803.8158**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	5.8084					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2045	1.4085	1.8136	2.9700e-003		0.0817	0.0817		0.0817	0.0817	0.0000	281.4481	281.4481	0.0183		281.9062
Total	**6.0129**	**1.4085**	**1.8136**	**2.9700e-003**		**0.0817**	**0.0817**		**0.0817**	**0.0817**	**0.0000**	**281.4481**	**281.4481**	**0.0183**		**281.9062**

3.6 Architectural Coating - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.3880	0.1890	2.6117	8.0600e-003	0.7931	5.0600e-003	0.7982	0.2113	4.6600e-003	0.2159		803.3751	803.3751	0.0176		803.8158
Total	**0.3880**	**0.1890**	**2.6117**	**8.0600e-003**	**0.7931**	**5.0600e-003**	**0.7982**	**0.2113**	**4.6600e-003**	**0.2159**		**803.3751**	**803.3751**	**0.0176**		**803.8158**

3.6 Architectural Coating - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	5.8084					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1917	1.3030	1.8111	2.9700e-003		0.0708	0.0708		0.0708	0.0708		281.4481	281.4481	0.0168		281.8690
Total	**6.0001**	**1.3030**	**1.8111**	**2.9700e-003**		**0.0708**	**0.0708**		**0.0708**	**0.0708**		**281.4481**	**281.4481**	**0.0168**		**281.8690**

3.6 Architectural Coating - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.3628	0.1699	2.4018	7.7500e-003	97.9239	4.9400e-003	97.9289	9.9037	4.5500e-003	9.9082		773.0231	773.0231	0.0158		773.4181
Total	**0.3628**	**0.1699**	**2.4018**	**7.7500e-003**	**97.9239**	**4.9400e-003**	**97.9289**	**9.9037**	**4.5500e-003**	**9.9082**		**773.0231**	**773.0231**	**0.0158**		**773.4181**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	5.8084					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1917	1.3030	1.8111	2.9700e-003		0.0708	0.0708		0.0708	0.0708	0.0000	281.4481	281.4481	0.0168		281.8690
Total	**6.0001**	**1.3030**	**1.8111**	**2.9700e-003**		**0.0708**	**0.0708**		**0.0708**	**0.0708**	**0.0000**	**281.4481**	**281.4481**	**0.0168**		**281.8690**

3.6 Architectural Coating - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.3628	0.1699	2.4018	7.7500e-003	0.7931	4.9400e-003	0.7981	0.2113	4.5500e-003	0.2158		773.0231	773.0231	0.0158		773.4181
Total	**0.3628**	**0.1699**	**2.4018**	**7.7500e-003**	**0.7931**	**4.9400e-003**	**0.7981**	**0.2113**	**4.5500e-003**	**0.2158**		**773.0231**	**773.0231**	**0.0158**		**773.4181**

3.6 Architectural Coating - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	5.8084					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1808	1.2188	1.8101	2.9700e-003		0.0609	0.0609		0.0609	0.0609		281.4481	281.4481	0.0159		281.8443
Total	**5.9892**	**1.2188**	**1.8101**	**2.9700e-003**		**0.0609**	**0.0609**		**0.0609**	**0.0609**		**281.4481**	**281.4481**	**0.0159**		**281.8443**

3.6 Architectural Coating - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.3408	0.1534	2.2260	7.4500e-003	97.9239	4.8300e-003	97.9288	9.9037	4.4500e-003	9.9081		742.7994	742.7994	0.0142		743.1552
Total	**0.3408**	**0.1534**	**2.2260**	**7.4500e-003**	**97.9239**	**4.8300e-003**	**97.9288**	**9.9037**	**4.4500e-003**	**9.9081**		**742.7994**	**742.7994**	**0.0142**		**743.1552**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	5.8084					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1808	1.2188	1.8101	2.9700e-003		0.0609	0.0609		0.0609	0.0609	0.0000	281.4481	281.4481	0.0159		281.8443
Total	**5.9892**	**1.2188**	**1.8101**	**2.9700e-003**		**0.0609**	**0.0609**		**0.0609**	**0.0609**	**0.0000**	**281.4481**	**281.4481**	**0.0159**		**281.8443**

3.6 Architectural Coating - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.3408	0.1534	2.2260	7.4500e-003	0.7931	4.8300e-003	0.7980	0.2113	4.4500e-003	0.2157		742.7994	742.7994	0.0142		743.1552
Total	**0.3408**	**0.1534**	**2.2260**	**7.4500e-003**	**0.7931**	**4.8300e-003**	**0.7980**	**0.2113**	**4.4500e-003**	**0.2157**		**742.7994**	**742.7994**	**0.0142**		**743.1552**

3.6 Architectural Coating - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	5.8084					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515		281.4481	281.4481	0.0154		281.8319
Total	**5.9793**	**1.1455**	**1.8091**	**2.9700e-003**		**0.0515**	**0.0515**		**0.0515**	**0.0515**		**281.4481**	**281.4481**	**0.0154**		**281.8319**

3.6 Architectural Coating - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.3213	0.1390	2.0617	7.1500e-003	97.9239	4.7400e-003	97.9287	9.9037	4.3600e-003	9.9080		712.8788	712.8788	0.0129		713.2007
Total	**0.3213**	**0.1390**	**2.0617**	**7.1500e-003**	**97.9239**	**4.7400e-003**	**97.9287**	**9.9037**	**4.3600e-003**	**9.9080**		**712.8788**	**712.8788**	**0.0129**		**713.2007**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	5.8084					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515	0.0000	281.4481	281.4481	0.0154		281.8319
Total	**5.9793**	**1.1455**	**1.8091**	**2.9700e-003**		**0.0515**	**0.0515**		**0.0515**	**0.0515**	**0.0000**	**281.4481**	**281.4481**	**0.0154**		**281.8319**

3.6 Architectural Coating - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.3213	0.1390	2.0617	7.1500e-003	0.7931	4.7400e-003	0.7979	0.2113	4.3600e-003	0.2156		712.8788	712.8788	0.0129		713.2007
Total	**0.3213**	**0.1390**	**2.0617**	**7.1500e-003**	**0.7931**	**4.7400e-003**	**0.7979**	**0.2113**	**4.3600e-003**	**0.2156**		**712.8788**	**712.8788**	**0.0129**		**713.2007**

3.6 Architectural Coating - 2026

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	5.8084					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515		281.4481	281.4481	0.0154		281.8319
Total	**5.9793**	**1.1455**	**1.8091**	**2.9700e-003**		**0.0515**	**0.0515**		**0.0515**	**0.0515**		**281.4481**	**281.4481**	**0.0154**		**281.8319**

3.6 Architectural Coating - 2026

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.3042	0.1270	1.9215	6.8800e-003	97.9239	4.6100e-003	97.9285	9.9037	4.2400e-003	9.9079		686.3278	686.3278	0.0117		686.6210
Total	**0.3042**	**0.1270**	**1.9215**	**6.8800e-003**	**97.9239**	**4.6100e-003**	**97.9285**	**9.9037**	**4.2400e-003**	**9.9079**		**686.3278**	**686.3278**	**0.0117**		**686.6210**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	5.8084					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515	0.0000	281.4481	281.4481	0.0154		281.8319
Total	**5.9793**	**1.1455**	**1.8091**	**2.9700e-003**		**0.0515**	**0.0515**		**0.0515**	**0.0515**	**0.0000**	**281.4481**	**281.4481**	**0.0154**		**281.8319**

3.6 Architectural Coating - 2026

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.3042	0.1270	1.9215	6.8800e-003	0.7931	4.6100e-003	0.7978	0.2113	4.2400e-003	0.2155		686.3278	686.3278	0.0117		686.6210
Total	**0.3042**	**0.1270**	**1.9215**	**6.8800e-003**	**0.7931**	**4.6100e-003**	**0.7978**	**0.2113**	**4.2400e-003**	**0.2155**		**686.3278**	**686.3278**	**0.0117**		**686.6210**

3.6 Architectural Coating - 2027

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	5.8084					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515		281.4481	281.4481	0.0154		281.8319
Total	**5.9793**	**1.1455**	**1.8091**	**2.9700e-003**		**0.0515**	**0.0515**		**0.0515**	**0.0515**		**281.4481**	**281.4481**	**0.0154**		**281.8319**

3.6 Architectural Coating - 2027

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.2871	0.1161	1.7946	6.6400e-003	97.9239	4.3800e-003	97.9283	9.9037	4.0300e-003	9.9077		662.6514	662.6514	0.0107		662.9185
Total	**0.2871**	**0.1161**	**1.7946**	**6.6400e-003**	**97.9239**	**4.3800e-003**	**97.9283**	**9.9037**	**4.0300e-003**	**9.9077**		**662.6514**	**662.6514**	**0.0107**		**662.9185**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	5.8084					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515	0.0000	281.4481	281.4481	0.0154		281.8319
Total	**5.9793**	**1.1455**	**1.8091**	**2.9700e-003**		**0.0515**	**0.0515**		**0.0515**	**0.0515**	**0.0000**	**281.4481**	**281.4481**	**0.0154**		**281.8319**

3.6 Architectural Coating - 2027

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.2871	0.1161	1.7946	6.6400e-003	0.7931	4.3800e-003	0.7975	0.2113	4.0300e-003	0.2153		662.6514	662.6514	0.0107		662.9185
Total	**0.2871**	**0.1161**	**1.7946**	**6.6400e-003**	**0.7931**	**4.3800e-003**	**0.7975**	**0.2113**	**4.0300e-003**	**0.2153**		**662.6514**	**662.6514**	**0.0107**		**662.9185**

3.7 Building Construction 2 - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584		2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**		**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

3.7 Building Construction 2 - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.3591	16.4321	2.5654	0.0531	124.8602	0.0159	124.8760	12.6946	0.0152	12.7098		5,560.6960	5,560.6960	0.1819		5,565.2442
Worker	1.8174	0.8511	12.0308	0.0388	490.5098	0.0248	490.5346	49.6084	0.0228	49.6312		3,872.1431	3,872.1431	0.0791		3,874.1214
Total	**2.1764**	**17.2832**	**14.5962**	**0.0919**	**615.3700**	**0.0406**	**615.4106**	**62.3030**	**0.0380**	**62.3410**		**9,432.8392**	**9,432.8392**	**0.2611**		**9,439.3656**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584	0.0000	2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**	**0.0000**	**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

3.7 Building Construction 2 - 2023

Mitigated Construction Off-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.3591	16.4321	2.5654	0.0531	1.2392	0.0159	1.2551	0.3588	0.0152	0.3740		5,560.6960	5,560.6960	0.1819		5,565.2442
Worker	1.8174	0.8511	12.0308	0.0388	3.9729	0.0248	3.9977	1.0582	0.0228	1.0810		3,872.1431	3,872.1431	0.0791		3,874.1214
Total	**2.1764**	**17.2832**	**14.5962**	**0.0919**	**5.2121**	**0.0406**	**5.2527**	**1.4170**	**0.0380**	**1.4550**		**9,432.8392**	**9,432.8392**	**0.2611**		**9,439.3656**

3.8 Architectural Coating 2 - 2023

Unmitigated Construction On-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Archit. Coating	28.3577					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1917	1.3030	1.8111	2.9700e-003		0.0708	0.0708		0.0708	0.0708		281.4481	281.4481	0.0168		281.8690
Total	**28.5493**	**1.3030**	**1.8111**	**2.9700e-003**		**0.0708**	**0.0708**		**0.0708**	**0.0708**		**281.4481**	**281.4481**	**0.0168**		**281.8690**

3.8 Architectural Coating 2 - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.3628	0.1699	2.4018	7.7500e-003	97.9239	4.9400e-003	97.9289	9.9037	4.5500e-003	9.9082		773.0231	773.0231	0.0158		773.4181
Total	**0.3628**	**0.1699**	**2.4018**	**7.7500e-003**	**97.9239**	**4.9400e-003**	**97.9289**	**9.9037**	**4.5500e-003**	**9.9082**		**773.0231**	**773.0231**	**0.0158**		**773.4181**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	28.3577					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1917	1.3030	1.8111	2.9700e-003		0.0708	0.0708		0.0708	0.0708	0.0000	281.4481	281.4481	0.0168		281.8690
Total	**28.5493**	**1.3030**	**1.8111**	**2.9700e-003**		**0.0708**	**0.0708**		**0.0708**	**0.0708**	**0.0000**	**281.4481**	**281.4481**	**0.0168**		**281.8690**

3.8 Architectural Coating 2 - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.3628	0.1699	2.4018	7.7500e-003	0.7931	4.9400e-003	0.7981	0.2113	4.5500e-003	0.2158		773.0231	773.0231	0.0158		773.4181
Total	**0.3628**	**0.1699**	**2.4018**	**7.7500e-003**	**0.7931**	**4.9400e-003**	**0.7981**	**0.2113**	**4.5500e-003**	**0.2158**		**773.0231**	**773.0231**	**0.0158**		**773.4181**

3.8 Architectural Coating 2 - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	28.3577					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1808	1.2188	1.8101	2.9700e-003		0.0609	0.0609		0.0609	0.0609		281.4481	281.4481	0.0159		281.8443
Total	**28.5384**	**1.2188**	**1.8101**	**2.9700e-003**		**0.0609**	**0.0609**		**0.0609**	**0.0609**		**281.4481**	**281.4481**	**0.0159**		**281.8443**

3.8 Architectural Coating 2 - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.3408	0.1534	2.2260	7.4500e-003	97.9239	4.8300e-003	97.9288	9.9037	4.4500e-003	9.9081		742.7994	742.7994	0.0142		743.1552
Total	**0.3408**	**0.1534**	**2.2260**	**7.4500e-003**	**97.9239**	**4.8300e-003**	**97.9288**	**9.9037**	**4.4500e-003**	**9.9081**		**742.7994**	**742.7994**	**0.0142**		**743.1552**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	28.3577					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1808	1.2188	1.8101	2.9700e-003		0.0609	0.0609		0.0609	0.0609	0.0000	281.4481	281.4481	0.0159		281.8443
Total	**28.5384**	**1.2188**	**1.8101**	**2.9700e-003**		**0.0609**	**0.0609**		**0.0609**	**0.0609**	**0.0000**	**281.4481**	**281.4481**	**0.0159**		**281.8443**

3.8 Architectural Coating 2 - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.3408	0.1534	2.2260	7.4500e-003	0.7931	4.8300e-003	0.7980	0.2113	4.4500e-003	0.2157		742.7994	742.7994	0.0142		743.1552
Total	**0.3408**	**0.1534**	**2.2260**	**7.4500e-003**	**0.7931**	**4.8300e-003**	**0.7980**	**0.2113**	**4.4500e-003**	**0.2157**		**742.7994**	**742.7994**	**0.0142**		**743.1552**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Mitigated	7.6540	53.2449	67.6986	0.3483	1,646.3740	0.1950	1,646.5690	168.5624	0.1821	168.7445		35,559.1919	35,559.1919	1.0954		35,586.5775
Unmitigated	7.6540	53.2449	67.6986	0.3483	1,646.3740	0.1950	1,646.5690	168.5624	0.1821	168.7445		35,559.1919	35,559.1919	1.0954		35,586.5775

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	1,203.65	1,156.59	1060.66	3,087,440	3,087,440
Condo/Townhouse	162.68	158.76	135.52	415,263	415,263
Other Asphalt Surfaces	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Research & Development	4,379.40	1,026.00	599.40	7,377,182	7,377,182
Unenclosed Parking with Elevator	0.00	0.00	0.00		
Total	5,745.73	2,341.35	1,795.58	10,879,884	10,879,884

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Mid Rise	10.00	5.00	7.00	46.00	13.00	41.00	86	11	3
Condo/Townhouse	10.00	5.00	7.00	46.00	13.00	41.00	86	11	3
Other Asphalt Surfaces	10.00	5.00	7.00	0.00	0.00	0.00	0	0	0
Parking Lot	10.00	5.00	7.00	0.00	0.00	0.00	0	0	0
Research & Development	10.00	5.00	7.00	33.00	48.00	19.00	82	15	3
Unenclosed Parking with	10.00	5.00	7.00	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Mid Rise	0.505773	0.035704	0.212085	0.105468	0.014725	0.004480	0.068989	0.043685	0.001015	0.001418	0.005344	0.000705	0.000608
Condo/Townhouse	0.505773	0.035704	0.212085	0.105468	0.014725	0.004480	0.068989	0.043685	0.001015	0.001418	0.005344	0.000705	0.000608
Other Asphalt Surfaces	0.505773	0.035704	0.212085	0.105468	0.014725	0.004480	0.068989	0.043685	0.001015	0.001418	0.005344	0.000705	0.000608
Parking Lot	0.505773	0.035704	0.212085	0.105468	0.014725	0.004480	0.068989	0.043685	0.001015	0.001418	0.005344	0.000705	0.000608
Research & Development	0.505773	0.035704	0.212085	0.105468	0.014725	0.004480	0.068989	0.043685	0.001015	0.001418	0.005344	0.000705	0.000608
Unenclosed Parking with Elevator	0.505773	0.035704	0.212085	0.105468	0.014725	0.004480	0.068989	0.043685	0.001015	0.001418	0.005344	0.000705	0.000608

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.3665	3.2944	2.5224	0.0200		0.2532	0.2532		0.2532	0.2532		3,998.5306	3,998.5306	0.0766	0.0733	4,022.2918
NaturalGas Unmitigated	0.3665	3.2944	2.5224	0.0200		0.2532	0.2532		0.2532	0.2532		3,998.5306	3,998.5306	0.0766	0.0733	4,022.2918

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Apartments Mid Rise	4833.99	0.0521	0.4455	0.1896	2.8400e-003		0.0360	0.0360		0.0360	0.0360		568.7046	568.7046	0.0109	0.0104	572.0842
Condo/Townhouse	1576.53	0.0170	0.1453	0.0618	9.3000e-004		0.0118	0.0118		0.0118	0.0118		185.4746	185.4746	3.5500e-003	3.4000e-003	186.5768
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Research & Development	27577	0.2974	2.7036	2.2711	0.0162		0.2055	0.2055		0.2055	0.2055		3,244.3513	3,244.3513	0.0622	0.0595	3,263.6309
Unenclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.3665**	**3.2944**	**2.5224**	**0.0200**		**0.2533**	**0.2533**		**0.2533**	**0.2533**		**3,998.5306**	**3,998.5306**	**0.0766**	**0.0733**	**4,022.2918**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Apartments Mid Rise	4.83399	0.0521	0.4455	0.1896	2.8400e-003		0.0360	0.0360		0.0360	0.0360		568.7046	568.7046	0.0109	0.0104	572.0842
Condo/Townhouse	1.57653	0.0170	0.1453	0.0618	9.3000e-004		0.0118	0.0118		0.0118	0.0118		185.4746	185.4746	3.5500e-003	3.4000e-003	186.5768
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Research & Development	27.577	0.2974	2.7036	2.2711	0.0162		0.2055	0.2055		0.2055	0.2055		3,244.3513	3,244.3513	0.0622	0.0595	3,263.6309
Unenclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.3665**	**3.2944**	**2.5224**	**0.0200**		**0.2533**	**0.2533**		**0.2533**	**0.2533**		**3,998.5306**	**3,998.5306**	**0.0766**	**0.0733**	**4,022.2918**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	493.2623	8.5551	603.0346	1.0588		82.2180	82.2180		82.2180	82.2180	8,627.794 9	2,465.683 6	11,093.478 4	8.0941	0.6546	11,490.899 2
Unmitigated	493.2623	8.5551	603.0346	1.0588		82.2180	82.2180		82.2180	82.2180	8,627.794 9	2,465.683 6	11,093.478 4	8.0941	0.6546	11,490.899 2

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	2.8358					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	16.2208					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	473.6714	8.3550	585.6216	1.0578		82.1217	82.1217		82.1217	82.1217	8,627.794 9	2,434.235 3	11,062.030 2	8.0633	0.6546	11,458.681 6
Landscaping	0.5344	0.2001	17.4130	9.2000e-004		0.0963	0.0963		0.0963	0.0963		31.4483	31.4483	0.0308		32.2176
Total	**493.2623**	**8.5551**	**603.0346**	**1.0587**		**82.2180**	**82.2180**		**82.2180**	**82.2180**	**8,627.794 9**	**2,465.683 6**	**11,093.47 84**	**8.0941**	**0.6546**	**11,490.89 92**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	2.8358					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	16.2208					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	473.6714	8.3550	585.6216	1.0578		82.1217	82.1217		82.1217	82.1217	8,627.7949	2,434.2353	11,062.0302	8.0633	0.6546	11,458.6816
Landscaping	0.5344	0.2001	17.4130	9.2000e-004		0.0963	0.0963		0.0963	0.0963		31.4483	31.4483	0.0308		32.2176
Total	**493.2623**	**8.5551**	**603.0346**	**1.0587**		**82.2180**	**82.2180**		**82.2180**	**82.2180**	**8,627.7949**	**2,465.6836**	**11,093.4784**	**8.0941**	**0.6546**	**11,490.8992**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

ARC - Construction Phase I (Overlap)

Yolo County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Research & Development	540.00	1000sqft	12.40	540,000.00	0
Other Asphalt Surfaces	0.60	Acre	0.60	26,136.00	0
Parking Lot	568.00	Space	5.11	227,200.00	0
Unenclosed Parking with Elevator	723.00	Space	6.51	289,200.00	0
Apartments Mid Rise	181.00	Dwelling Unit	4.76	181,000.00	518
Condo/Townhouse	28.00	Dwelling Unit	1.75	28,000.00	80

1.2 Other Project Characteristics

Urbanization Urban **Wind Speed (m/s)** 6.8 **Precipitation Freq (Days)** 54

Climate Zone 2 **Operational Year** 2028

Utility Company Pacific Gas & Electric Company

CO2 Intensity (lb/MWhr) 198.63 **CH4 Intensity (lb/MWhr)** 0.029 **N2O Intensity (lb/MWhr)** 0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - CO2 Intensity Factor adjusted to reflect PG&E's calculated progress towards RPS

Land Use - Based on Phase I of ARC

Construction Phase - Construction schedule adjusted based on applicant provided information and to account for overlap of building construction

Trips and VMT - Haul truck trip lengths adjusted per project-specific route of material movement; number of haul trucks based on 12 CY capacity trucks

Grading - Grading area updated for project construction information and off-site improvement areas

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	35.00	1,782.00
tblConstructionPhase	NumDays	35.00	365.00
tblConstructionPhase	NumDays	500.00	1,782.00
tblConstructionPhase	NumDays	500.00	365.00
tblConstructionPhase	NumDays	45.00	28.00
tblConstructionPhase	NumDays	35.00	10.00
tblConstructionPhase	NumDays	20.00	7.00
tblConstructionPhase	NumDaysWeek	5.00	7.00
tblConstructionPhase	NumDaysWeek	5.00	7.00
tblConstructionPhase	NumDaysWeek	5.00	7.00
tblConstructionPhase	NumDaysWeek	5.00	7.00
tblConstructionPhase	NumDaysWeek	5.00	7.00
tblConstructionPhase	NumDaysWeek	5.00	7.00
tblConstructionPhase	NumDaysWeek	5.00	7.00
tblGrading	AcresOfGrading	70.00	112.50
tblGrading	MaterialExported	0.00	130,000.00
tblProjectCharacteristics	CO2IntensityFactor	641.35	198.63
tblTripsAndVMT	HaulingTripLength	20.00	2.15
tblTripsAndVMT	HaulingTripNumber	16,250.00	10,833.00

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	10.4005	79.5431	35.8187	0.1311	713.2940	1.6900	714.2571	72.2067	1.5568	73.1178	0.0000	13,241.4644	13,241.4644	2.8912	0.0000	13,313.7447
2023	42.5103	67.0169	67.2247	0.2453	1,426.5877	1.6338	1,428.2215	144.4133	1.5450	145.9584	0.0000	24,678.9474	24,678.9474	1.8302	0.0000	24,724.7026
2024	38.5948	33.6065	36.1700	0.1302	811.2177	0.7852	812.0028	82.1103	0.7454	82.8557	0.0000	13,082.1319	13,082.1319	0.9246	0.0000	13,105.2474
2025	9.5091	30.8845	31.3391	0.1188	713.2936	0.6233	713.9169	72.2066	0.5890	72.7956	0.0000	11,954.5805	11,954.5805	0.8787	0.0000	11,976.5485
2026	9.4101	30.6437	30.5016	0.1171	713.2935	0.6221	713.9157	72.2065	0.5880	72.7945	0.0000	11,783.2394	11,783.2394	0.8681	0.0000	11,804.9411
2027	9.3120	30.4165	29.7451	0.1155	713.2934	0.6204	713.9139	72.2065	0.5864	72.7929	0.0000	11,629.7137	11,629.7137	0.8577	0.0000	11,651.1558
Maximum	**42.5103**	**79.5431**	**67.2247**	**0.2453**	**1,426.5877**	**1.6900**	**1,428.2215**	**144.4133**	**1.5568**	**145.9584**	**0.0000**	**24,678.9474**	**24,678.9474**	**2.8912**	**0.0000**	**24,724.7026**

2.1 Overall Construction (Maximum Daily Emission)

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	10.4005	79.5431	35.8187	0.1311	18.1961	1.6900	19.8094	9.9653	1.5568	11.4496	0.0000	13,241.4644	13,241.4644	2.8912	0.0000	13,313.7447
2023	42.5103	67.0169	67.2247	0.2453	12.0104	1.6338	13.6442	3.2565	1.5450	4.8015	0.0000	24,678.9474	24,678.9474	1.8302	0.0000	24,724.7026
2024	38.5948	33.6065	36.1700	0.1302	6.7982	0.7852	7.5834	1.8394	0.7454	2.5848	0.0000	13,082.1319	13,082.1319	0.9246	0.0000	13,105.2474
2025	9.5091	30.8845	31.3391	0.1188	6.0050	0.6233	6.6283	1.6281	0.5890	2.2172	0.0000	11,954.5805	11,954.5805	0.8787	0.0000	11,976.5485
2026	9.4101	30.6437	30.5016	0.1171	6.0049	0.6221	6.6270	1.6281	0.5880	2.2161	0.0000	11,783.2394	11,783.2394	0.8681	0.0000	11,804.9411
2027	9.3120	30.4165	29.7451	0.1155	6.0048	0.6204	6.6252	1.6281	0.5864	2.2145	0.0000	11,629.7137	11,629.7137	0.8577	0.0000	11,651.1558
Maximum	**42.5103**	**79.5431**	**67.2247**	**0.2453**	**18.1961**	**1.6900**	**19.8094**	**9.9653**	**1.5568**	**11.4496**	**0.0000**	**24,678.9474**	**24,678.9474**	**2.8912**	**0.0000**	**24,724.7026**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**98.92**	**0.00**	**98.80**	**96.13**	**0.00**	**95.10**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	493.2623	8.5551	603.0346	1.0588		82.2180	82.2180		82.2180	82.2180	8,627.7949	2,465.6836	11,093.4784	8.0941	0.6546	11,490.8992
Energy	0.3665	3.2944	2.5224	0.0200		0.2532	0.2532		0.2532	0.2532		3,998.5306	3,998.5306	0.0766	0.0733	4,022.2918
Mobile	5.7325	54.7854	64.6460	0.3225	1,646.3740	0.1961	1,646.5701	168.5624	0.1831	168.7455		32,960.4231	32,960.4231	1.1411		32,988.9502
Total	**499.3613**	**66.6350**	**670.2030**	**1.4012**	**1,646.3740**	**82.6673**	**1,729.0413**	**168.5624**	**82.6543**	**251.2167**	**8,627.7949**	**39,424.6373**	**48,052.4321**	**9.3118**	**0.7279**	**48,502.1413**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	493.2623	8.5551	603.0346	1.0588		82.2180	82.2180		82.2180	82.2180	8,627.7949	2,465.6836	11,093.4784	8.0941	0.6546	11,490.8992
Energy	0.3665	3.2944	2.5224	0.0200		0.2532	0.2532		0.2532	0.2532		3,998.5306	3,998.5306	0.0766	0.0733	4,022.2918
Mobile	5.7325	54.7854	64.6460	0.3225	1,646.3740	0.1961	1,646.5701	168.5624	0.1831	168.7455		32,960.4231	32,960.4231	1.1411		32,988.9502
Total	**499.3613**	**66.6350**	**670.2030**	**1.4012**	**1,646.3740**	**82.6673**	**1,729.0413**	**168.5624**	**82.6543**	**251.2167**	**8,627.7949**	**39,424.6373**	**48,052.4321**	**9.3118**	**0.7279**	**48,502.1413**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	5/1/2022	5/7/2022	7	7	
2	Grading	Grading	5/8/2022	6/4/2022	7	28	
3	Paving	Paving	6/5/2022	6/14/2022	7	10	
4	Building Construction	Building Construction	6/15/2022	5/1/2027	7	1782	
5	Architectural Coating	Architectural Coating	6/29/2022	5/15/2027	7	1782	
6	Building Construction 2	Building Construction	1/1/2023	12/31/2023	7	365	
7	Architectural Coating 2	Architectural Coating	1/15/2023	1/14/2024	7	365	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 112.5

Acres of Paving: 12.22

Residential Indoor: 423,225; Residential Outdoor: 141,075; Non-Residential Indoor: 810,000; Non-Residential Outdoor: 270,000; Striped Parking Area: 32,552 (Architectural Coating – sqft)

OffRoad Equipment

ARC - Construction Phase I (Overlap) - Yolo County, Winter

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	2	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Scrapers	2	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Paving	Pavers	2	8.00	130	0.42
Paving	Paving Equipment	2	8.00	132	0.36
Paving	Rollers	2	8.00	80	0.38
Building Construction	Cranes	1	7.00	231	0.29
Building Construction	Forklifts	3	8.00	89	0.20
Building Construction	Generator Sets	1	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction	Welders	1	8.00	46	0.45
Architectural Coating	Air Compressors	1	6.00	78	0.48
Building Construction 2	Cranes	1	7.00	231	0.29
Building Construction 2	Forklifts	3	8.00	89	0.20
Building Construction 2	Generator Sets	1	8.00	84	0.74
Building Construction 2	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Building Construction 2	Welders	1	8.00	46	0.45
Architectural Coating 2	Air Compressors	1	6.00	78	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	7	18.00	0.00	0.00	10.00	7.00	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	10,833.00	10.00	7.00	2.15	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	10.00	7.00	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	551.00	200.00	0.00	10.00	7.00	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	110.00	0.00	0.00	10.00	7.00	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction 2	9	551.00	200.00	0.00	10.00	7.00	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating 2	1	110.00	0.00	0.00	10.00	7.00	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Site Preparation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	3.1701	33.0835	19.6978	0.0380		1.6126	1.6126		1.4836	1.4836		3,686.0619	3,686.0619	1.1922		3,715.8655
Total	**3.1701**	**33.0835**	**19.6978**	**0.0380**	**18.0663**	**1.6126**	**19.6788**	**9.9307**	**1.4836**	**11.4143**		**3,686.0619**	**3,686.0619**	**1.1922**		**3,715.8655**

3.2 Site Preparation - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0589	0.0385	0.3731	1.1600e-003	16.0239	8.3000e-004	16.0247	1.6206	7.6000e-004	1.6214		116.0494	116.0494	2.5700e-003		116.1137
Total	**0.0589**	**0.0385**	**0.3731**	**1.1600e-003**	**16.0239**	**8.3000e-004**	**16.0247**	**1.6206**	**7.6000e-004**	**1.6214**		**116.0494**	**116.0494**	**2.5700e-003**		**116.1137**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	3.1701	33.0835	19.6978	0.0380		1.6126	1.6126		1.4836	1.4836	0.0000	3,686.0619	3,686.0619	1.1922		3,715.8655
Total	**3.1701**	**33.0835**	**19.6978**	**0.0380**	**18.0663**	**1.6126**	**19.6788**	**9.9307**	**1.4836**	**11.4143**	**0.0000**	**3,686.0619**	**3,686.0619**	**1.1922**		**3,715.8655**

3.2 Site Preparation - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0589	0.0385	0.3731	1.1600e-003	0.1298	8.3000e-004	0.1306	0.0346	7.6000e-004	0.0353		116.0494	116.0494	2.5700e-003		116.1137
Total	**0.0589**	**0.0385**	**0.3731**	**1.1600e-003**	**0.1298**	**8.3000e-004**	**0.1306**	**0.0346**	**7.6000e-004**	**0.0353**		**116.0494**	**116.0494**	**2.5700e-003**		**116.1137**

3.3 Grading - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					12.5598	0.0000	12.5598	4.1151	0.0000	4.1151			0.0000			0.0000
Off-Road	3.6248	38.8435	29.0415	0.0621		1.6349	1.6349		1.5041	1.5041		6,011.4105	6,011.4105	1.9442		6,060.0158
Total	**3.6248**	**38.8435**	**29.0415**	**0.0621**	**12.5598**	**1.6349**	**14.1947**	**4.1151**	**1.5041**	**5.6192**		**6,011.4105**	**6,011.4105**	**1.9442**		**6,060.0158**

3.3 Grading - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.9361	40.6569	6.3627	0.0678	74.1468	0.0542	74.2010	7.5215	0.0519	7.5733		7,101.1102	7,101.1102	0.9441		7,124.7137
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0655	0.0428	0.4145	1.2900e-003	17.8044	9.2000e-004	17.8053	1.8007	8.5000e-004	1.8015		128.9438	128.9438	2.8600e-003		129.0152
Total	**1.0016**	**40.6996**	**6.7772**	**0.0691**	**91.9512**	**0.0551**	**92.0063**	**9.3222**	**0.0527**	**9.3749**		**7,230.0539**	**7,230.0539**	**0.9470**		**7,253.7288**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					12.5598	0.0000	12.5598	4.1151	0.0000	4.1151			0.0000			0.0000
Off-Road	3.6248	38.8435	29.0415	0.0621		1.6349	1.6349		1.5041	1.5041	0.0000	6,011.4105	6,011.4105	1.9442		6,060.0158
Total	**3.6248**	**38.8435**	**29.0415**	**0.0621**	**12.5598**	**1.6349**	**14.1947**	**4.1151**	**1.5041**	**5.6192**	**0.0000**	**6,011.4105**	**6,011.4105**	**1.9442**		**6,060.0158**

3.3 Grading - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.9361	40.6569	6.3627	0.0678	0.6966	0.0542	0.7508	0.1921	0.0519	0.2439		7,101.1102	7,101.1102	0.9441		7,124.7137
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0655	0.0428	0.4145	1.2900e-003	0.1442	9.2000e-004	0.1451	0.0384	8.5000e-004	0.0393		128.9438	128.9438	2.8600e-003		129.0152
Total	**1.0016**	**40.6996**	**6.7772**	**0.0691**	**0.8408**	**0.0551**	**0.8959**	**0.2305**	**0.0527**	**0.2832**		**7,230.0539**	**7,230.0539**	**0.9470**		**7,253.7288**

3.4 Paving - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1028	11.1249	14.5805	0.0228		0.5679	0.5679		0.5225	0.5225		2,207.6603	2,207.6603	0.7140		2,225.5104
Paving	1.4960					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**2.5988**	**11.1249**	**14.5805**	**0.0228**		**0.5679**	**0.5679**		**0.5225**	**0.5225**		**2,207.6603**	**2,207.6603**	**0.7140**		**2,225.5104**

3.4 Paving - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0491	0.0321	0.3109	9.7000e-004	13.3533	6.9000e-004	13.3540	1.3505	6.4000e-004	1.3511		96.7078	96.7078	2.1400e-003		96.7614
Total	**0.0491**	**0.0321**	**0.3109**	**9.7000e-004**	**13.3533**	**6.9000e-004**	**13.3540**	**1.3505**	**6.4000e-004**	**1.3511**		**96.7078**	**96.7078**	**2.1400e-003**		**96.7614**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.1028	11.1249	14.5805	0.0228		0.5679	0.5679		0.5225	0.5225	0.0000	2,207.6603	2,207.6603	0.7140		2,225.5104
Paving	1.4960					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	**2.5988**	**11.1249**	**14.5805**	**0.0228**		**0.5679**	**0.5679**		**0.5225**	**0.5225**	**0.0000**	**2,207.6603**	**2,207.6603**	**0.7140**		**2,225.5104**

3.4 Paving - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0491	0.0321	0.3109	9.7000e-004	0.1082	6.9000e-004	0.1088	0.0288	6.4000e-004	0.0294		96.7078	96.7078	2.1400e-003		96.7614
Total	**0.0491**	**0.0321**	**0.3109**	**9.7000e-004**	**0.1082**	**6.9000e-004**	**0.1088**	**0.0288**	**6.4000e-004**	**0.0294**		**96.7078**	**96.7078**	**2.1400e-003**		**96.7614**

3.5 Building Construction - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612		2,554.3336	2,554.3336	0.6120		2,569.6322
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**		**2,554.3336**	**2,554.3336**	**0.6120**		**2,569.6322**

3.5 Building Construction - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.5171	19.9745	3.6491	0.0527	124.8603	0.0420	124.9023	12.6947	0.0402	12.7348		5,515.786 4	5,515.786 4	0.2790		5,522.761 9
Worker	1.8041	1.1778	11.4194	0.0356	490.5098	0.0253	490.5351	49.6084	0.0233	49.6317		3,552.400 4	3,552.400 4	0.0787		3,554.368 1
Total	**2.3212**	**21.1523**	**15.0685**	**0.0883**	**615.3701**	**0.0673**	**615.4374**	**62.3031**	**0.0635**	**62.3666**		**9,068.186 8**	**9,068.186 8**	**0.3577**		**9,077.129 9**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.7062	15.6156	16.3634	0.0269		0.8090	0.8090		0.7612	0.7612	0.0000	2,554.333 6	2,554.333 6	0.6120		2,569.632 2
Total	**1.7062**	**15.6156**	**16.3634**	**0.0269**		**0.8090**	**0.8090**		**0.7612**	**0.7612**	**0.0000**	**2,554.333 6**	**2,554.333 6**	**0.6120**		**2,569.632 2**

3.5 Building Construction - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.5171	19.9745	3.6491	0.0527	1.2393	0.0420	1.2813	0.3589	0.0402	0.3990		5,515.786 4	5,515.786 4	0.2790		5,522.761 9
Worker	1.8041	1.1778	11.4194	0.0356	3.9729	0.0253	3.9982	1.0582	0.0233	1.0815		3,552.400 4	3,552.400 4	0.0787		3,554.368 1
Total	**2.3212**	**21.1523**	**15.0685**	**0.0883**	**5.2122**	**0.0673**	**5.2795**	**1.4170**	**0.0635**	**1.4805**		**9,068.186 8**	**9,068.186 8**	**0.3577**		**9,077.129 9**

3.5 Building Construction - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584		2,555.209 9	2,555.209 9	0.6079		2,570.406 1
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**		**2,555.209 9**	**2,555.209 9**	**0.6079**		**2,570.406 1**

3.5 Building Construction - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.3796	16.5512	3.0220	0.0516	124.8602	0.0167	124.8768	12.6946	0.0159	12.7105		5,401.9711	5,401.9711	0.2061		5,407.1222
Worker	1.6906	1.0581	10.4492	0.0343	490.5098	0.0248	490.5346	49.6084	0.0228	49.6312		3,418.4046	3,418.4046	0.0703		3,420.1629
Total	**2.0702**	**17.6093**	**13.4712**	**0.0859**	**615.3700**	**0.0414**	**615.4114**	**62.3030**	**0.0387**	**62.3417**		**8,820.3756**	**8,820.3756**	**0.2764**		**8,827.2851**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584	0.0000	2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**	**0.0000**	**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

3.5 Building Construction - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.3796	16.5512	3.0220	0.0516	1.2392	0.0167	1.2558	0.3588	0.0159	0.3747		5,401.9711	5,401.9711	0.2061		5,407.1222
Worker	1.6906	1.0581	10.4492	0.0343	3.9729	0.0248	3.9977	1.0582	0.0228	1.0810		3,418.4046	3,418.4046	0.0703		3,420.1629
Total	**2.0702**	**17.6093**	**13.4712**	**0.0859**	**5.2121**	**0.0414**	**5.2535**	**1.4170**	**0.0387**	**1.4557**		**8,820.3756**	**8,820.3756**	**0.2764**		**8,827.2851**

3.5 Building Construction - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4716	13.4438	16.1668	0.0270		0.6133	0.6133		0.5769	0.5769		2,555.6989	2,555.6989	0.6044		2,570.8077
Total	**1.4716**	**13.4438**	**16.1668**	**0.0270**		**0.6133**	**0.6133**		**0.5769**	**0.5769**		**2,555.6989**	**2,555.6989**	**0.6044**		**2,570.8077**

3.5 Building Construction - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.3679	16.3894	2.8800	0.0512	124.8600	0.0162	124.8762	12.6946	0.0155	12.7100		5,366.946 3	5,366.946 3	0.2001		5,371.949 3
Worker	1.5921	0.9546	9.6500	0.0329	490.5098	0.0242	490.5340	49.6084	0.0223	49.6307		3,284.982 3	3,284.982 3	0.0632		3,286.562 7
Total	**1.9600**	**17.3440**	**12.5299**	**0.0842**	**615.3698**	**0.0404**	**615.4102**	**62.3030**	**0.0378**	**62.3407**		**8,651.928 7**	**8,651.928 7**	**0.2633**		**8,658.512 1**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.4716	13.4438	16.1668	0.0270		0.6133	0.6133		0.5769	0.5769	0.0000	2,555.698 9	2,555.698 9	0.6044		2,570.807 7
Total	**1.4716**	**13.4438**	**16.1668**	**0.0270**		**0.6133**	**0.6133**		**0.5769**	**0.5769**	**0.0000**	**2,555.698 9**	**2,555.698 9**	**0.6044**		**2,570.807 7**

3.5 Building Construction - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.3679	16.3894	2.8800	0.0512	1.2390	0.0162	1.2552	0.3588	0.0155	0.3742		5,366.946 3	5,366.946 3	0.2001		5,371.949 3
Worker	1.5921	0.9546	9.6500	0.0329	3.9729	0.0242	3.9971	1.0582	0.0223	1.0805		3,284.982 3	3,284.982 3	0.0632		3,286.562 7
Total	**1.9600**	**17.3440**	**12.5299**	**0.0842**	**5.2119**	**0.0404**	**5.2523**	**1.4169**	**0.0378**	**1.4547**		**8,651.928 7**	**8,651.928 7**	**0.2633**		**8,658.512 1**

3.5 Building Construction - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963		2,556.474 4	2,556.474 4	0.6010		2,571.498 1
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**		**2,556.474 4**	**2,556.474 4**	**0.6010**		**2,571.498 1**

3.5 Building Construction - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.3576	16.2314	2.7550	0.0509	124.8599	0.0157	124.8756	12.6945	0.0151	12.7096		5,334.349 8	5,334.349 8	0.1940		5,339.198 6
Worker	1.5045	0.8651	8.9112	0.0316	490.5098	0.0238	490.5336	49.6084	0.0219	49.6303		3,152.877 2	3,152.877 2	0.0571		3,154.304 1
Total	**1.8621**	**17.0966**	**11.6663**	**0.0825**	**615.3697**	**0.0395**	**615.4092**	**62.3029**	**0.0369**	**62.3398**		**8,487.227 0**	**8,487.227 0**	**0.2510**		**8,493.502 7**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963	0.0000	2,556.474 4	2,556.474 4	0.6010		2,571.498 1
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**	**0.0000**	**2,556.474 4**	**2,556.474 4**	**0.6010**		**2,571.498 1**

3.5 Building Construction - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.3576	16.2314	2.7550	0.0509	1.2389	0.0157	1.2547	0.3587	0.0151	0.3738		5,334.349 8	5,334.349 8	0.1940		5,339.198 6
Worker	1.5045	0.8651	8.9112	0.0316	3.9729	0.0238	3.9967	1.0582	0.0219	1.0800		3,152.877 2	3,152.877 2	0.0571		3,154.304 1
Total	**1.8621**	**17.0966**	**11.6663**	**0.0825**	**5.2118**	**0.0395**	**5.2513**	**1.4169**	**0.0369**	**1.4538**		**8,487.227 0**	**8,487.227 0**	**0.2510**		**8,493.502 7**

3.5 Building Construction - 2026

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963		2,556.474 4	2,556.474 4	0.6010		2,571.498 1
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**		**2,556.474 4**	**2,556.474 4**	**0.6010**		**2,571.498 1**

3.5 Building Construction - 2026

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.3496	16.0809	2.6738	0.0506	124.8598	0.0154	124.8752	12.6945	0.0147	12.7092		5,303.7806	5,303.7806	0.1895		5,308.5189
Worker	1.4286	0.7899	8.2809	0.0304	490.5098	0.0231	490.5329	49.6084	0.0213	49.6296		3,035.5318	3,035.5318	0.0519		3,036.8288
Total	**1.7782**	**16.8708**	**10.9547**	**0.0811**	**615.3696**	**0.0385**	**615.4081**	**62.3029**	**0.0360**	**62.3388**		**8,339.3125**	**8,339.3125**	**0.2414**		**8,345.3477**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963	0.0000	2,556.4744	2,556.4744	0.6010		2,571.4981
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**	**0.0000**	**2,556.4744**	**2,556.4744**	**0.6010**		**2,571.4981**

3.5 Building Construction - 2026

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.3496	16.0809	2.6738	0.0506	1.2388	0.0154	1.2542	0.3587	0.0147	0.3734		5,303.7806	5,303.7806	0.1895		5,308.5189
Worker	1.4286	0.7899	8.2809	0.0304	3.9729	0.0231	3.9960	1.0582	0.0213	1.0794		3,035.5318	3,035.5318	0.0519		3,036.8288
Total	**1.7782**	**16.8708**	**10.9547**	**0.0811**	**5.2117**	**0.0385**	**5.2502**	**1.4169**	**0.0360**	**1.4528**		**8,339.3125**	**8,339.3125**	**0.2414**		**8,345.3477**

3.5 Building Construction - 2027

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963		2,556.4744	2,556.4744	0.6010		2,571.4981
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**		**2,556.4744**	**2,556.4744**	**0.6010**		**2,571.4981**

3.5 Building Construction - 2027

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.3426	15.9353	2.6043	0.0504	124.8597	0.0151	124.8748	12.6944	0.0144	12.7089		5,276.010 8	5,276.010 8	0.1848		5,280.631 3
Worker	1.3527	0.7219	7.7082	0.0294	490.5098	0.0219	490.5317	49.6084	0.0202	49.6286		2,930.703 5	2,930.703 5	0.0472		2,931.882 3
Total	**1.6953**	**16.6572**	**10.3125**	**0.0797**	**615.3695**	**0.0370**	**615.4065**	**62.3028**	**0.0346**	**62.3374**		**8,206.714 3**	**8,206.714 3**	**0.2320**		**8,212.513 6**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.3674	12.4697	16.0847	0.0270		0.5276	0.5276		0.4963	0.4963	0.0000	2,556.474 4	2,556.474 4	0.6010		2,571.498 1
Total	**1.3674**	**12.4697**	**16.0847**	**0.0270**		**0.5276**	**0.5276**		**0.4963**	**0.4963**	**0.0000**	**2,556.474 4**	**2,556.474 4**	**0.6010**		**2,571.498 1**

3.5 Building Construction - 2027

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.3426	15.9353	2.6043	0.0504	1.2387	0.0151	1.2538	0.3586	0.0144	0.3730		5,276.0108	5,276.0108	0.1848		5,280.6313
Worker	1.3527	0.7219	7.7082	0.0294	3.9729	0.0219	3.9948	1.0582	0.0202	1.0784		2,930.7035	2,930.7035	0.0472		2,931.8823
Total	**1.6953**	**16.6572**	**10.3125**	**0.0797**	**5.2116**	**0.0370**	**5.2486**	**1.4168**	**0.0346**	**1.4514**		**8,206.7143**	**8,206.7143**	**0.2320**		**8,212.5136**

3.6 Architectural Coating - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	5.8084					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2045	1.4085	1.8136	2.9700e-003		0.0817	0.0817		0.0817	0.0817		281.4481	281.4481	0.0183		281.9062
Total	**6.0129**	**1.4085**	**1.8136**	**2.9700e-003**		**0.0817**	**0.0817**		**0.0817**	**0.0817**		**281.4481**	**281.4481**	**0.0183**		**281.9062**

3.6 Architectural Coating - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.3602	0.2351	2.2797	7.1200e-003	97.9239	5.0600e-003	97.9290	9.9037	4.6600e-003	9.9083		709.1906	709.1906	0.0157		709.5835
Total	**0.3602**	**0.2351**	**2.2797**	**7.1200e-003**	**97.9239**	**5.0600e-003**	**97.9290**	**9.9037**	**4.6600e-003**	**9.9083**		**709.1906**	**709.1906**	**0.0157**		**709.5835**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	5.8084					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2045	1.4085	1.8136	2.9700e-003		0.0817	0.0817		0.0817	0.0817	0.0000	281.4481	281.4481	0.0183		281.9062
Total	**6.0129**	**1.4085**	**1.8136**	**2.9700e-003**		**0.0817**	**0.0817**		**0.0817**	**0.0817**	**0.0000**	**281.4481**	**281.4481**	**0.0183**		**281.9062**

3.6 Architectural Coating - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.3602	0.2351	2.2797	7.1200e-003	0.7931	5.0600e-003	0.7982	0.2113	4.6600e-003	0.2159		709.1906	709.1906	0.0157		709.5835
Total	**0.3602**	**0.2351**	**2.2797**	**7.1200e-003**	**0.7931**	**5.0600e-003**	**0.7982**	**0.2113**	**4.6600e-003**	**0.2159**		**709.1906**	**709.1906**	**0.0157**		**709.5835**

3.6 Architectural Coating - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	5.8084					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1917	1.3030	1.8111	2.9700e-003		0.0708	0.0708		0.0708	0.0708		281.4481	281.4481	0.0168		281.8690
Total	**6.0001**	**1.3030**	**1.8111**	**2.9700e-003**		**0.0708**	**0.0708**		**0.0708**	**0.0708**		**281.4481**	**281.4481**	**0.0168**		**281.8690**

3.6 Architectural Coating - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.3375	0.2112	2.0861	6.8500e-003	97.9239	4.9400e-003	97.9289	9.9037	4.5500e-003	9.9082		682.4401	682.4401	0.0140		682.7911
Total	**0.3375**	**0.2112**	**2.0861**	**6.8500e-003**	**97.9239**	**4.9400e-003**	**97.9289**	**9.9037**	**4.5500e-003**	**9.9082**		**682.4401**	**682.4401**	**0.0140**		**682.7911**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	5.8084					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1917	1.3030	1.8111	2.9700e-003		0.0708	0.0708		0.0708	0.0708	0.0000	281.4481	281.4481	0.0168		281.8690
Total	**6.0001**	**1.3030**	**1.8111**	**2.9700e-003**		**0.0708**	**0.0708**		**0.0708**	**0.0708**	**0.0000**	**281.4481**	**281.4481**	**0.0168**		**281.8690**

3.6 Architectural Coating - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.3375	0.2112	2.0861	6.8500e-003	0.7931	4.9400e-003	0.7981	0.2113	4.5500e-003	0.2158		682.4401	682.4401	0.0140		682.7911
Total	**0.3375**	**0.2112**	**2.0861**	**6.8500e-003**	**0.7931**	**4.9400e-003**	**0.7981**	**0.2113**	**4.5500e-003**	**0.2158**		**682.4401**	**682.4401**	**0.0140**		**682.7911**

3.6 Architectural Coating - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	5.8084					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1808	1.2188	1.8101	2.9700e-003		0.0609	0.0609		0.0609	0.0609		281.4481	281.4481	0.0159		281.8443
Total	**5.9892**	**1.2188**	**1.8101**	**2.9700e-003**		**0.0609**	**0.0609**		**0.0609**	**0.0609**		**281.4481**	**281.4481**	**0.0159**		**281.8443**

3.6 Architectural Coating - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.3178	0.1906	1.9265	6.5800e-003	97.9239	4.8300e-003	97.9288	9.9037	4.4500e-003	9.9081		655.8041	655.8041	0.0126		656.1196
Total	**0.3178**	**0.1906**	**1.9265**	**6.5800e-003**	**97.9239**	**4.8300e-003**	**97.9288**	**9.9037**	**4.4500e-003**	**9.9081**		**655.8041**	**655.8041**	**0.0126**		**656.1196**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	5.8084					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1808	1.2188	1.8101	2.9700e-003		0.0609	0.0609		0.0609	0.0609	0.0000	281.4481	281.4481	0.0159		281.8443
Total	**5.9892**	**1.2188**	**1.8101**	**2.9700e-003**		**0.0609**	**0.0609**		**0.0609**	**0.0609**	**0.0000**	**281.4481**	**281.4481**	**0.0159**		**281.8443**

3.6 Architectural Coating - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.3178	0.1906	1.9265	6.5800e-003	0.7931	4.8300e-003	0.7980	0.2113	4.4500e-003	0.2157		655.8041	655.8041	0.0126		656.1196
Total	**0.3178**	**0.1906**	**1.9265**	**6.5800e-003**	**0.7931**	**4.8300e-003**	**0.7980**	**0.2113**	**4.4500e-003**	**0.2157**		**655.8041**	**655.8041**	**0.0126**		**656.1196**

3.6 Architectural Coating - 2025

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	5.8084					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515		281.4481	281.4481	0.0154		281.8319
Total	**5.9793**	**1.1455**	**1.8091**	**2.9700e-003**		**0.0515**	**0.0515**		**0.0515**	**0.0515**		**281.4481**	**281.4481**	**0.0154**		**281.8319**

3.6 Architectural Coating - 2025

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.3004	0.1727	1.7790	6.3100e-003	97.9239	4.7400e-003	97.9287	9.9037	4.3600e-003	9.9080		629.4310	629.4310	0.0114		629.7159
Total	**0.3004**	**0.1727**	**1.7790**	**6.3100e-003**	**97.9239**	**4.7400e-003**	**97.9287**	**9.9037**	**4.3600e-003**	**9.9080**		**629.4310**	**629.4310**	**0.0114**		**629.7159**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	5.8084					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515	0.0000	281.4481	281.4481	0.0154		281.8319
Total	**5.9793**	**1.1455**	**1.8091**	**2.9700e-003**		**0.0515**	**0.0515**		**0.0515**	**0.0515**	**0.0000**	**281.4481**	**281.4481**	**0.0154**		**281.8319**

3.6 Architectural Coating - 2025

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.3004	0.1727	1.7790	6.3100e-003	0.7931	4.7400e-003	0.7979	0.2113	4.3600e-003	0.2156		629.4310	629.4310	0.0114		629.7159
Total	**0.3004**	**0.1727**	**1.7790**	**6.3100e-003**	**0.7931**	**4.7400e-003**	**0.7979**	**0.2113**	**4.3600e-003**	**0.2156**		**629.4310**	**629.4310**	**0.0114**		**629.7159**

3.6 Architectural Coating - 2026

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	5.8084					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515		281.4481	281.4481	0.0154		281.8319
Total	**5.9793**	**1.1455**	**1.8091**	**2.9700e-003**		**0.0515**	**0.0515**		**0.0515**	**0.0515**		**281.4481**	**281.4481**	**0.0154**		**281.8319**

3.6 Architectural Coating - 2026

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.2852	0.1577	1.6532	6.0700e-003	97.9239	4.6100e-003	97.9285	9.9037	4.2400e-003	9.9079		606.0045	606.0045	0.0104		606.2635
Total	**0.2852**	**0.1577**	**1.6532**	**6.0700e-003**	**97.9239**	**4.6100e-003**	**97.9285**	**9.9037**	**4.2400e-003**	**9.9079**		**606.0045**	**606.0045**	**0.0104**		**606.2635**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	5.8084					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515	0.0000	281.4481	281.4481	0.0154		281.8319
Total	**5.9793**	**1.1455**	**1.8091**	**2.9700e-003**		**0.0515**	**0.0515**		**0.0515**	**0.0515**	**0.0000**	**281.4481**	**281.4481**	**0.0154**		**281.8319**

3.6 Architectural Coating - 2026

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.2852	0.1577	1.6532	6.0700e-003	0.7931	4.6100e-003	0.7978	0.2113	4.2400e-003	0.2155		606.0045	606.0045	0.0104		606.2635
Total	**0.2852**	**0.1577**	**1.6532**	**6.0700e-003**	**0.7931**	**4.6100e-003**	**0.7978**	**0.2113**	**4.2400e-003**	**0.2155**		**606.0045**	**606.0045**	**0.0104**		**606.2635**

3.6 Architectural Coating - 2027

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	5.8084					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515		281.4481	281.4481	0.0154		281.8319
Total	**5.9793**	**1.1455**	**1.8091**	**2.9700e-003**		**0.0515**	**0.0515**		**0.0515**	**0.0515**		**281.4481**	**281.4481**	**0.0154**		**281.8319**

3.6 Architectural Coating - 2027

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.2701	0.1441	1.5389	5.8600e-003	97.9239	4.3800e-003	97.9283	9.9037	4.0300e-003	9.9077		585.0769	585.0769	9.4100e-003		585.3123
Total	**0.2701**	**0.1441**	**1.5389**	**5.8600e-003**	**97.9239**	**4.3800e-003**	**97.9283**	**9.9037**	**4.0300e-003**	**9.9077**		**585.0769**	**585.0769**	**9.4100e-003**		**585.3123**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	5.8084					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1709	1.1455	1.8091	2.9700e-003		0.0515	0.0515		0.0515	0.0515	0.0000	281.4481	281.4481	0.0154		281.8319
Total	**5.9793**	**1.1455**	**1.8091**	**2.9700e-003**		**0.0515**	**0.0515**		**0.0515**	**0.0515**	**0.0000**	**281.4481**	**281.4481**	**0.0154**		**281.8319**

3.6 Architectural Coating - 2027

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.2701	0.1441	1.5389	5.8600e-003	0.7931	4.3800e-003	0.7975	0.2113	4.0300e-003	0.2153		585.0769	585.0769	9.4100e-003		585.3123
Total	**0.2701**	**0.1441**	**1.5389**	**5.8600e-003**	**0.7931**	**4.3800e-003**	**0.7975**	**0.2113**	**4.0300e-003**	**0.2153**		**585.0769**	**585.0769**	**9.4100e-003**		**585.3123**

3.7 Building Construction 2 - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584		2,555.2099	2,555.2099	0.6079		2,570.4061
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**		**2,555.2099**	**2,555.2099**	**0.6079**		**2,570.4061**

3.7 Building Construction 2 - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.3796	16.5512	3.0220	0.0516	124.8602	0.0167	124.8768	12.6946	0.0159	12.7105		5,401.971 1	5,401.971 1	0.2061		5,407.122 2
Worker	1.6906	1.0581	10.4492	0.0343	490.5098	0.0248	490.5346	49.6084	0.0228	49.6312		3,418.404 6	3,418.404 6	0.0703		3,420.162 9
Total	**2.0702**	**17.6093**	**13.4712**	**0.0859**	**615.3700**	**0.0414**	**615.4114**	**62.3030**	**0.0387**	**62.3417**		**8,820.375 6**	**8,820.375 6**	**0.2764**		**8,827.285 1**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Off-Road	1.5728	14.3849	16.2440	0.0269		0.6997	0.6997		0.6584	0.6584	0.0000	2,555.209 9	2,555.209 9	0.6079		2,570.406 1
Total	**1.5728**	**14.3849**	**16.2440**	**0.0269**		**0.6997**	**0.6997**		**0.6584**	**0.6584**	**0.0000**	**2,555.209 9**	**2,555.209 9**	**0.6079**		**2,570.406 1**

3.7 Building Construction 2 - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.3796	16.5512	3.0220	0.0516	1.2392	0.0167	1.2558	0.3588	0.0159	0.3747		5,401.9711	5,401.971 1	0.2061		5,407.122 2
Worker	1.6906	1.0581	10.4492	0.0343	3.9729	0.0248	3.9977	1.0582	0.0228	1.0810		3,418.404 6	3,418.404 6	0.0703		3,420.162 9
Total	**2.0702**	**17.6093**	**13.4712**	**0.0859**	**5.2121**	**0.0414**	**5.2535**	**1.4170**	**0.0387**	**1.4557**		**8,820.375 6**	**8,820.375 6**	**0.2764**		**8,827.285 1**

3.8 Architectural Coating 2 - 2023

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	28.3577					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1917	1.3030	1.8111	2.9700e-003		0.0708	0.0708		0.0708	0.0708		281.4481	281.4481	0.0168		281.8690
Total	**28.5493**	**1.3030**	**1.8111**	**2.9700e-003**		**0.0708**	**0.0708**		**0.0708**	**0.0708**		**281.4481**	**281.4481**	**0.0168**		**281.8690**

3.8 Architectural Coating 2 - 2023

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.3375	0.2112	2.0861	6.8500e-003	97.9239	4.9400e-003	97.9289	9.9037	4.5500e-003	9.9082		682.4401	682.4401	0.0140		682.7911
Total	**0.3375**	**0.2112**	**2.0861**	**6.8500e-003**	**97.9239**	**4.9400e-003**	**97.9289**	**9.9037**	**4.5500e-003**	**9.9082**		**682.4401**	**682.4401**	**0.0140**		**682.7911**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	28.3577					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1917	1.3030	1.8111	2.9700e-003		0.0708	0.0708		0.0708	0.0708	0.0000	281.4481	281.4481	0.0168		281.8690
Total	**28.5493**	**1.3030**	**1.8111**	**2.9700e-003**		**0.0708**	**0.0708**		**0.0708**	**0.0708**	**0.0000**	**281.4481**	**281.4481**	**0.0168**		**281.8690**

3.8 Architectural Coating 2 - 2023

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.3375	0.2112	2.0861	6.8500e-003	0.7931	4.9400e-003	0.7981	0.2113	4.5500e-003	0.2158		682.4401	682.4401	0.0140		682.7911
Total	**0.3375**	**0.2112**	**2.0861**	**6.8500e-003**	**0.7931**	**4.9400e-003**	**0.7981**	**0.2113**	**4.5500e-003**	**0.2158**		**682.4401**	**682.4401**	**0.0140**		**682.7911**

3.8 Architectural Coating 2 - 2024

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	28.3577					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1808	1.2188	1.8101	2.9700e-003		0.0609	0.0609		0.0609	0.0609		281.4481	281.4481	0.0159		281.8443
Total	**28.5384**	**1.2188**	**1.8101**	**2.9700e-003**		**0.0609**	**0.0609**		**0.0609**	**0.0609**		**281.4481**	**281.4481**	**0.0159**		**281.8443**

3.8 Architectural Coating 2 - 2024

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.3178	0.1906	1.9265	6.5800e-003	97.9239	4.8300e-003	97.9288	9.9037	4.4500e-003	9.9081		655.8041	655.8041	0.0126		656.1196
Total	**0.3178**	**0.1906**	**1.9265**	**6.5800e-003**	**97.9239**	**4.8300e-003**	**97.9288**	**9.9037**	**4.4500e-003**	**9.9081**		**655.8041**	**655.8041**	**0.0126**		**656.1196**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Archit. Coating	28.3577					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.1808	1.2188	1.8101	2.9700e-003		0.0609	0.0609		0.0609	0.0609	0.0000	281.4481	281.4481	0.0159		281.8443
Total	**28.5384**	**1.2188**	**1.8101**	**2.9700e-003**		**0.0609**	**0.0609**		**0.0609**	**0.0609**	**0.0000**	**281.4481**	**281.4481**	**0.0159**		**281.8443**

3.8 Architectural Coating 2 - 2024

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.3178	0.1906	1.9265	6.5800e-003	0.7931	4.8300e-003	0.7980	0.2113	4.4500e-003	0.2157		655.8041	655.8041	0.0126		656.1196
Total	**0.3178**	**0.1906**	**1.9265**	**6.5800e-003**	**0.7931**	**4.8300e-003**	**0.7980**	**0.2113**	**4.4500e-003**	**0.2157**		**655.8041**	**655.8041**	**0.0126**		**656.1196**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Mitigated	5.7325	54.7854	64.6460	0.3225	1,646.3740	0.1961	1,646.5701	168.5624	0.1831	168.7455		32,960.4231	32,960.4231	1.1411		32,988.9502
Unmitigated	5.7325	54.7854	64.6460	0.3225	1,646.3740	0.1961	1,646.5701	168.5624	0.1831	168.7455		32,960.4231	32,960.4231	1.1411		32,988.9502

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	1,203.65	1,156.59	1060.66	3,087,440	3,087,440
Condo/Townhouse	162.68	158.76	135.52	415,263	415,263
Other Asphalt Surfaces	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Research & Development	4,379.40	1,026.00	599.40	7,377,182	7,377,182
Unenclosed Parking with Elevator	0.00	0.00	0.00		
Total	5,745.73	2,341.35	1,795.58	10,879,884	10,879,884

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Mid Rise	10.00	5.00	7.00	46.00	13.00	41.00	86	11	3
Condo/Townhouse	10.00	5.00	7.00	46.00	13.00	41.00	86	11	3
Other Asphalt Surfaces	10.00	5.00	7.00	0.00	0.00	0.00	0	0	0
Parking Lot	10.00	5.00	7.00	0.00	0.00	0.00	0	0	0
Research & Development	10.00	5.00	7.00	33.00	48.00	19.00	82	15	3
Unenclosed Parking with	10.00	5.00	7.00	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Mid Rise	0.505773	0.035704	0.212085	0.105468	0.014725	0.004480	0.068989	0.043685	0.001015	0.001418	0.005344	0.000705	0.000608
Condo/Townhouse	0.505773	0.035704	0.212085	0.105468	0.014725	0.004480	0.068989	0.043685	0.001015	0.001418	0.005344	0.000705	0.000608
Other Asphalt Surfaces	0.505773	0.035704	0.212085	0.105468	0.014725	0.004480	0.068989	0.043685	0.001015	0.001418	0.005344	0.000705	0.000608
Parking Lot	0.505773	0.035704	0.212085	0.105468	0.014725	0.004480	0.068989	0.043685	0.001015	0.001418	0.005344	0.000705	0.000608
Research & Development	0.505773	0.035704	0.212085	0.105468	0.014725	0.004480	0.068989	0.043685	0.001015	0.001418	0.005344	0.000705	0.000608
Unenclosed Parking with Elevator	0.505773	0.035704	0.212085	0.105468	0.014725	0.004480	0.068989	0.043685	0.001015	0.001418	0.005344	0.000705	0.000608

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.3665	3.2944	2.5224	0.0200		0.2532	0.2532		0.2532	0.2532		3,998.530 6	3,998.530 6	0.0766	0.0733	4,022.291 8
NaturalGas Unmitigated	0.3665	3.2944	2.5224	0.0200		0.2532	0.2532		0.2532	0.2532		3,998.530 6	3,998.530 6	0.0766	0.0733	4,022.291 8

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Apartments Mid Rise	4833.99	0.0521	0.4455	0.1896	2.8400e-003		0.0360	0.0360		0.0360	0.0360		568.7046	568.7046	0.0109	0.0104	572.0842
Condo/Townhouse	1576.53	0.0170	0.1453	0.0618	9.3000e-004		0.0118	0.0118		0.0118	0.0118		185.4746	185.4746	3.5500e-003	3.4000e-003	186.5768
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Research & Development	27577	0.2974	2.7036	2.2711	0.0162		0.2055	0.2055		0.2055	0.2055		3,244.3513	3,244.3513	0.0622	0.0595	3,263.6309
Unenclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.3665**	**3.2944**	**2.5224**	**0.0200**		**0.2533**	**0.2533**		**0.2533**	**0.2533**		**3,998.5306**	**3,998.5306**	**0.0766**	**0.0733**	**4,022.2918**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Apartments Mid Rise	4.83399	0.0521	0.4455	0.1896	2.8400e-003		0.0360	0.0360		0.0360	0.0360		568.7046	568.7046	0.0109	0.0104	572.0842
Condo/Townhouse	1.57653	0.0170	0.1453	0.0618	9.3000e-004		0.0118	0.0118		0.0118	0.0118		185.4746	185.4746	3.5500e-003	3.4000e-003	186.5768
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Research & Development	27.577	0.2974	2.7036	2.2711	0.0162		0.2055	0.2055		0.2055	0.2055		3,244.3513	3,244.3513	0.0622	0.0595	3,263.6309
Unenclosed Parking with Elevator	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.3665**	**3.2944**	**2.5224**	**0.0200**		**0.2533**	**0.2533**		**0.2533**	**0.2533**		**3,998.5306**	**3,998.5306**	**0.0766**	**0.0733**	**4,022.2918**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	493.2623	8.5551	603.0346	1.0588		82.2180	82.2180		82.2180	82.2180	8,627.7949	2,465.6836	11,093.4784	8.0941	0.6546	11,490.8992
Unmitigated	493.2623	8.5551	603.0346	1.0588		82.2180	82.2180		82.2180	82.2180	8,627.7949	2,465.6836	11,093.4784	8.0941	0.6546	11,490.8992

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	2.8358					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	16.2208					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	473.6714	8.3550	585.6216	1.0578		82.1217	82.1217		82.1217	82.1217	8,627.7949	2,434.2353	11,062.0302	8.0633	0.6546	11,458.6816
Landscaping	0.5344	0.2001	17.4130	9.2000e-004		0.0963	0.0963		0.0963	0.0963		31.4483	31.4483	0.0308		32.2176
Total	**493.2623**	**8.5551**	**603.0346**	**1.0587**		**82.2180**	**82.2180**		**82.2180**	**82.2180**	**8,627.7949**	**2,465.6836**	**11,093.4784**	**8.0941**	**0.6546**	**11,490.8992**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	2.8358					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	16.2208					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	473.6714	8.3550	585.6216	1.0578		82.1217	82.1217		82.1217	82.1217	8,627.7949	2,434.2353	11,062.0302	8.0633	0.6546	11,458.6816
Landscaping	0.5344	0.2001	17.4130	9.2000e-004		0.0963	0.0963		0.0963	0.0963		31.4483	31.4483	0.0308		32.2176
Total	**493.2623**	**8.5551**	**603.0346**	**1.0587**		**82.2180**	**82.2180**		**82.2180**	**82.2180**	**8,627.7949**	**2,465.6836**	**11,093.4784**	**8.0941**	**0.6546**	**11,490.8992**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

ARC - Construction Phase I (Overlap)

Yolo County, Mitigation Report

Construction Mitigation Summary

Phase	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction												
Architectural Coating	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Architectural Coating 2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Building Construction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Building Construction 2	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Grading	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Paving	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Site Preparation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

OFFROAD Equipment Mitigation

Equipment Type	Fuel Type	Tier	Number Mitigated	Total Number of Equipment	DPF	Oxidation Catalyst
Air Compressors	Diesel	No Change	0	2	No Change	0.00
Cranes	Diesel	No Change	0	2	No Change	0.00
Excavators	Diesel	No Change	0	2	No Change	0.00
Forklifts	Diesel	No Change	0	6	No Change	0.00
Generator Sets	Diesel	No Change	0	2	No Change	0.00
Graders	Diesel	No Change	0	1	No Change	0.00
Pavers	Diesel	No Change	0	2	No Change	0.00
Paving Equipment	Diesel	No Change	0	2	No Change	0.00
Rollers	Diesel	No Change	0	2	No Change	0.00
Rubber Tired Dozers	Diesel	No Change	0	4	No Change	0.00
Scrapers	Diesel	No Change	0	2	No Change	0.00
Tractors/Loaders/Backhoes	Diesel	No Change	0	12	No Change	0.00
Welders	Diesel	No Change	0	2	No Change	0.00

Equipment Type	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	Unmitigated tons/yr						Unmitigated mt/yr					
Air Compressors	1.95880E-001	1.32446E+000	1.94342E+000	3.19000E-003	6.68000E-002	6.68000E-002	0.00000E+000	2.74092E+002	2.74092E+002	1.57700E-002	0.00000E+000	2.74486E+002
Cranes	3.14450E-001	3.32529E+000	1.68213E+000	5.42000E-003	1.39570E-001	1.28410E-001	0.00000E+000	4.76188E+002	4.76188E+002	1.54010E-001	0.00000E+000	4.80038E+002
Excavators	5.67000E-003	4.97600E-002	9.11400E-002	1.40000E-004	2.41000E-003	2.21000E-003	0.00000E+000	1.27010E+001	1.27010E+001	4.11000E-003	0.00000E+000	1.28037E+001
Forklifts	3.08990E-001	2.89723E+000	3.67238E+000	4.92000E-003	1.69850E-001	1.56260E-001	0.00000E+000	4.32485E+002	4.32485E+002	1.39870E-001	0.00000E+000	4.35982E+002
Generator Sets	3.10160E-001	2.76892E+000	3.93452E+000	7.06000E-003	1.22360E-001	1.22360E-001	0.00000E+000	6.06750E+002	6.06750E+002	2.48300E-002	0.00000E+000	6.07371E+002
Graders	5.81000E-003	7.36100E-002	2.41000E-002	9.00000E-005	2.34000E-003	2.15000E-003	0.00000E+000	8.14462E+000	8.14462E+000	2.63000E-003	0.00000E+000	8.21047E+000
Pavers	2.07000E-003	2.09900E-002	2.88400E-002	5.00000E-005	1.00000E-003	9.20000E-004	0.00000E+000	4.13003E+000	4.13003E+000	1.34000E-003	0.00000E+000	4.16342E+000
Paving Equipment	1.78000E-003	1.73800E-002	2.54600E-002	4.00000E-005	8.50000E-004	7.80000E-004	0.00000E+000	3.57856E+000	3.57856E+000	1.16000E-003	0.00000E+000	3.60749E+000
Rollers	1.66000E-003	1.72600E-002	1.86000E-002	3.00000E-005	9.90000E-004	9.20000E-004	0.00000E+000	2.30519E+000	2.30519E+000	7.50000E-004	0.00000E+000	2.32383E+000
Rubber Tired Dozers	2.05100E-002	2.15440E-001	8.77600E-002	2.10000E-004	1.02300E-002	9.41000E-003	0.00000E+000	1.83817E+001	1.83817E+001	5.95000E-003	0.00000E+000	1.85303E+001
Scrapers	2.29400E-002	2.50420E-001	1.78520E-001	4.30000E-004	9.78000E-003	8.99000E-003	0.00000E+000	3.73472E+001	3.73472E+001	1.20800E-002	0.00000E+000	3.76492E+001
Tractors/Loaders/ Backhoes	4.11890E-001	4.16852E+000	6.38366E+000	8.91000E-003	1.92430E-001	1.77040E-001	0.00000E+000	7.82913E+002	7.82913E+002	2.53210E-001	0.00000E+000	7.89243E+002
Welders	2.57230E-001	1.48851E+000	1.78926E+000	2.74000E-003	5.25900E-002	5.25900E-002	0.00000E+000	2.02055E+002	2.02055E+002	2.08700E-002	0.00000E+000	2.02577E+002

Equipment Type	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	Mitigated tons/yr						Mitigated mt/yr					
Air Compressors	1.95880E-001	1.32446E+000	1.94342E+000	3.19000E-003	6.68000E-002	6.68000E-002	0.00000E+000	2.74091E+002	2.74091E+002	1.57700E-002	0.00000E+000	2.74486E+002
Cranes	3.14450E-001	3.32529E+000	1.68213E+000	5.42000E-003	1.39570E-001	1.28410E-001	0.00000E+000	4.76188E+002	4.76188E+002	1.54010E-001	0.00000E+000	4.80038E+002
Excavators	5.67000E-003	4.97600E-002	9.11400E-002	1.40000E-004	2.41000E-003	2.21000E-003	0.00000E+000	1.27010E+001	1.27010E+001	4.11000E-003	0.00000E+000	1.28037E+001
Forklifts	3.08990E-001	2.89723E+000	3.67238E+000	4.92000E-003	1.69850E-001	1.56260E-001	0.00000E+000	4.32485E+002	4.32485E+002	1.39870E-001	0.00000E+000	4.35982E+002
Generator Sets	3.10160E-001	2.76892E+000	3.93452E+000	7.06000E-003	1.22360E-001	1.22360E-001	0.00000E+000	6.06749E+002	6.06749E+002	2.48300E-002	0.00000E+000	6.07370E+002
Graders	5.81000E-003	7.36100E-002	2.41000E-002	9.00000E-005	2.34000E-003	2.15000E-003	0.00000E+000	8.14461E+000	8.14461E+000	2.63000E-003	0.00000E+000	8.21046E+000
Pavers	2.07000E-003	2.09900E-002	2.88400E-002	5.00000E-005	1.00000E-003	9.20000E-004	0.00000E+000	4.13003E+000	4.13003E+000	1.34000E-003	0.00000E+000	4.16342E+000
Paving Equipment	1.78000E-003	1.73800E-002	2.54600E-002	4.00000E-005	8.50000E-004	7.80000E-004	0.00000E+000	3.57855E+000	3.57855E+000	1.16000E-003	0.00000E+000	3.60749E+000
Rollers	1.66000E-003	1.72600E-002	1.86000E-002	3.00000E-005	9.90000E-004	9.20000E-004	0.00000E+000	2.30519E+000	2.30519E+000	7.50000E-004	0.00000E+000	2.32383E+000
Rubber Tired Dozers	2.05100E-002	2.15440E-001	8.77600E-002	2.10000E-004	1.02300E-002	9.41000E-003	0.00000E+000	1.83817E+001	1.83817E+001	5.95000E-003	0.00000E+000	1.85303E+001
Scrapers	2.29400E-002	2.50420E-001	1.78520E-001	4.30000E-004	9.78000E-003	8.99000E-003	0.00000E+000	3.73472E+001	3.73472E+001	1.20800E-002	0.00000E+000	3.76491E+001
Tractors/Loaders/Backhoes	4.11890E-001	4.16852E+000	6.38365E+000	8.91000E-003	1.92430E-001	1.77040E-001	0.00000E+000	7.82912E+002	7.82912E+002	2.53210E-001	0.00000E+000	7.89242E+002
Welders	2.57230E-001	1.48851E+000	1.78926E+000	2.74000E-003	5.25900E-002	5.25900E-002	0.00000E+000	2.02055E+002	2.02055E+002	2.08700E-002	0.00000E+000	2.02576E+002

Equipment Type	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction												
Air Compressors	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.20398E-006	1.20398E-006	0.00000E+000	0.00000E+000	1.20225E-006
Cranes	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.19701E-006	1.19701E-006	0.00000E+000	0.00000E+000	1.18741E-006
Excavators	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	7.87341E-007	7.87341E-007	0.00000E+000	0.00000E+000	1.56205E-006
Forklifts	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.20235E-006	1.20235E-006	0.00000E+000	0.00000E+000	1.19271E-006
Generator Sets	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.18665E-006	1.18665E-006	0.00000E+000	0.00000E+000	1.18544E-006
Graders	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.22780E-006	1.22780E-006	0.00000E+000	0.00000E+000	1.21796E-006
Pavers	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000
Paving Equipment	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	2.79442E-006	2.79442E-006	0.00000E+000	0.00000E+000	0.00000E+000
Rollers	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000
Rubber Tired Dozers	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.08804E-006	1.08804E-006	0.00000E+000	0.00000E+000	1.07931E-006
Scrapers	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.07103E-006	1.07103E-006	0.00000E+000	0.00000E+000	1.06244E-006
Tractors/Loaders/Backhoes	0.00000E+000	0.00000E+000	1.56650E-006	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.18787E-006	1.18787E-006	0.00000E+000	0.00000E+000	1.19101E-006
Welders	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.23729E-006	1.23729E-006	0.00000E+000	0.00000E+000	1.18474E-006

Fugitive Dust Mitigation

Yes/No	Mitigation Measure	Mitigation Input		Mitigation Input		Mitigation Input	
No	Soil Stabilizer for unpaved Roads	PM10 Reduction		PM2.5 Reduction			
No	Replace Ground Cover of Area Disturbed	PM10 Reduction		PM2.5 Reduction			
No	Water Exposed Area	PM10 Reduction		PM2.5 Reduction		Frequency (per day)	

No	Unpaved Road Mitigation	Moisture Content %		Vehicle Speed (mph)	0.00			
No	Clean Paved Road	% PM Reduction	0.00					

		Unmitigated		Mitigated		Percent Reduction	
Phase	Source	PM10	PM2.5	PM10	PM2.5	PM10	PM2.5
Architectural Coating	Fugitive Dust	0.00	0.00	0.00	0.00	0.00	0.00
Architectural Coating	Roads	74.42	7.54	0.68	0.18	0.99	0.98
Architectural Coating 2	Fugitive Dust	0.00	0.00	0.00	0.00	0.00	0.00
Architectural Coating 2	Roads	15.24	1.54	0.14	0.04	0.99	0.98
Building Construction	Fugitive Dust	0.00	0.00	0.00	0.00	0.00	0.00
Building Construction	Roads	467.72	47.45	4.50	1.23	0.99	0.97
Building Construction 2	Fugitive Dust	0.00	0.00	0.00	0.00	0.00	0.00
Building Construction 2	Roads	95.80	9.72	0.92	0.25	0.99	0.97
Grading	Fugitive Dust	0.18	0.06	0.18	0.06	0.00	0.00
Grading	Roads	1.10	0.11	0.01	0.00	0.99	0.97
Paving	Fugitive Dust	0.00	0.00	0.00	0.00	0.00	0.00
Paving	Roads	0.06	0.01	0.00	0.00	0.99	0.98
Site Preparation	Fugitive Dust	0.06	0.03	0.06	0.03	0.00	0.00
Site Preparation	Roads	0.05	0.00	0.00	0.00	0.99	0.98

Operational Percent Reduction Summary

Category	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction												
Architectural Coating	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Electricity	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hearth	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Landscaping	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mobile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Natural Gas	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Water Indoor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Water Outdoor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Operational Mobile Mitigation

Project Setting:

Mitigation	Category	Measure	% Reduction	Input Value 1	Input Value 2	Input Value
No	Land Use	Increase Density	0.00			
No	Land Use	Increase Diversity	0.19	0.47		
No	Land Use	Improve Walkability Design	0.00			
No	Land Use	Improve Destination Accessibility	0.00			
No	Land Use	Increase Transit Accessibility	0.25			
No	Land Use	Integrate Below Market Rate Housing	0.00			
	Land Use	Land Use SubTotal	0.00			

No	Neighborhood Enhancements	Improve Pedestrian Network				
No	Neighborhood Enhancements	Provide Traffic Calming Measures				
No	Neighborhood Enhancements	Implement NEV Network	0.00			
	Neighborhood Enhancements	Neighborhood Enhancements Subtotal	0.00			
No	Parking Policy Pricing	Limit Parking Supply	0.00			
No	Parking Policy Pricing	Unbundle Parking Costs	0.00			
No	Parking Policy Pricing	On-street Market Pricing	0.00			
	Parking Policy Pricing	Parking Policy Pricing Subtotal	0.00			
No	Transit Improvements	Provide BRT System	0.00			
No	Transit Improvements	Expand Transit Network	0.00			
No	Transit Improvements	Increase Transit Frequency	0.00			
	Transit Improvements	Transit Improvements Subtotal	0.00			
		Land Use and Site Enhancement Subtotal	0.00			
No	Commute	Implement Trip Reduction Program				
No	Commute	Transit Subsidy				
No	Commute	Implement Employee Parking "Cash Out"				
No	Commute	Workplace Parking Charge				
No	Commute	Encourage Telecommuting and Alternative Work Schedules	0.00			
No	Commute	Market Commute Trip Reduction Option	0.00			
No	Commute	Employee Vanpool/Shuttle	0.00		2.00	
No	Commute	Provide Ride Sharing Program				
	Commute	Commute Subtotal	0.00			

No	School Trip	Implement School Bus Program	0.00			
		Total VMT Reduction	0.00			

Area Mitigation

Measure Implemented	Mitigation Measure	Input Value
No	Only Natural Gas Hearth	
No	No Hearth	
No	Use Low VOC Cleaning Supplies	
No	Use Low VOC Paint (Residential Interior)	100.00
No	Use Low VOC Paint (Residential Exterior)	100.00
No	Use Low VOC Paint (Non-residential Interior)	150.00
No	Use Low VOC Paint (Non-residential Exterior)	150.00
No	Use Low VOC Paint (Parking)	150.00
No	% Electric Lawnmower	
No	% Electric Leafblower	
No	% Electric Chainsaw	

Energy Mitigation Measures

Measure Implemented	Mitigation Measure	Input Value 1	Input Value 2
No	Exceed Title 24		
No	Install High Efficiency Lighting		
No	On-site Renewable		

Appliance Type	Land Use Subtype	% Improvement
ClothWasher		30.00
DishWasher		15.00
Fan		50.00
Refrigerator		15.00

Water Mitigation Measures

Measure Implemented	Mitigation Measure	Input Value 1	Input Value 2
No	Apply Water Conservation on Strategy		
No	Use Reclaimed Water		
No	Use Grey Water		
No	Install low-flow bathroom faucet	32.00	
No	Install low-flow Kitchen faucet	18.00	
No	Install low-flow Toilet	20.00	
No	Install low-flow Shower	20.00	
No	Turf Reduction		
No	Use Water Efficient Irrigation Systems	6.10	
No	Water Efficient Landscape		

Solid Waste Mitigation

Mitigation Measures	Input Value

Institute Recycling and Composting Services Percent Reduction in Waste Disposed	

ARC CalEEMod
Off-Site Construction

ARC - Off-site Drainage Basin

Yuba County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Non-Asphalt Surfaces	100.00	Acre	100.00	4,356,000.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	3.4	**Precipitation Freq (Days)**	72
Climate Zone	2			**Operational Year**	2022
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	269.5	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - CO2 Intensity Factory adjusted for PG&E's calculated progress towards RPS

Land Use -

Construction Phase - Based on applicant provided construction information

Grading - Based on project information

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	155.00	91.00
tblConstructionPhase	NumDaysWeek	5.00	7.00
tblConstructionPhase	PhaseEndDate	6/15/2023	6/30/2022
tblConstructionPhase	PhaseStartDate	11/11/2022	4/1/2022
tblGrading	AcresOfGrading	227.50	100.00
tblProjectCharacteristics	CO2IntensityFactor	641.35	269.5
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022	0.1697	1.7714	1.3587	2.9200e-003	0.3382	0.0745	0.4126	0.1593	0.0685	0.2278	0.0000	257.0009	257.0009	0.0805	0.0000	259.0141
Maximum	**0.1697**	**1.7714**	**1.3587**	**2.9200e-003**	**0.3382**	**0.0745**	**0.4126**	**0.1593**	**0.0685**	**0.2278**	**0.0000**	**257.0009**	**257.0009**	**0.0805**	**0.0000**	**259.0141**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022	0.1697	1.7714	1.3587	2.9200e-003	0.3382	0.0745	0.4126	0.1593	0.0685	0.2278	0.0000	257.0006	257.0006	0.0805	0.0000	259.0138
Maximum	**0.1697**	**1.7714**	**1.3587**	**2.9200e-003**	**0.3382**	**0.0745**	**0.4126**	**0.1593**	**0.0685**	**0.2278**	**0.0000**	**257.0006**	**257.0006**	**0.0805**	**0.0000**	**259.0138**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**4-1-2022**	**6-30-2022**	1.9411	1.9411
		Highest	1.9411	1.9411

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.4331	1.0000e-005	9.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.7900e-003	1.7900e-003	0.0000	0.0000	1.9000e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.4331**	**1.0000e-005**	**9.2000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**1.7900e-003**	**1.7900e-003**	**0.0000**	**0.0000**	**1.9000e-003**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.4331	1.0000e-005	9.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.7900e-003	1.7900e-003	0.0000	0.0000	1.9000e-003
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Waste						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Water						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.4331**	**1.0000e-005**	**9.2000e-004**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**1.7900e-003**	**1.7900e-003**	**0.0000**	**0.0000**	**1.9000e-003**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Grading	Grading	4/1/2022	6/30/2022	7	91	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 100

Acres of Paving: 100

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

<u>OffRoad Equipment</u>

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Grading	Excavators	2	8.00	158	0.38
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Graders	1	8.00	187	0.41
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Grading	Scrapers	2	8.00	367	0.48

<u>Trips and VMT</u>

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Grading	8	20.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Grading - 2022

Unmitigated Construction On-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	tons/yr										MT/yr					
Fugitive Dust					0.3270	0.0000	0.3270	0.1563	0.0000	0.1563	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1649	1.7674	1.3214	2.8200e-003		0.0744	0.0744		0.0684	0.0684	0.0000	248.1324	248.1324	0.0803	0.0000	250.1387
Total	**0.1649**	**1.7674**	**1.3214**	**2.8200e-003**	**0.3270**	**0.0744**	**0.4014**	**0.1563**	**0.0684**	**0.2248**	**0.0000**	**248.1324**	**248.1324**	**0.0803**	**0.0000**	**250.1387**

Unmitigated Construction Off-Site

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.7600e-003	3.9700e-003	0.0373	1.0000e-004	0.0111	7.0000e-005	0.0112	2.9600e-003	6.0000e-005	3.0200e-003	0.0000	8.8684	8.8684	2.8000e-004	0.0000	8.8754
Total	**4.7600e-003**	**3.9700e-003**	**0.0373**	**1.0000e-004**	**0.0111**	**7.0000e-005**	**0.0112**	**2.9600e-003**	**6.0000e-005**	**3.0200e-003**	**0.0000**	**8.8684**	**8.8684**	**2.8000e-004**	**0.0000**	**8.8754**

3.2 Grading - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.3270	0.0000	0.3270	0.1563	0.0000	0.1563	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.1649	1.7674	1.3214	2.8200e-003		0.0744	0.0744		0.0684	0.0684	0.0000	248.1321	248.1321	0.0803	0.0000	250.1384
Total	**0.1649**	**1.7674**	**1.3214**	**2.8200e-003**	**0.3270**	**0.0744**	**0.4014**	**0.1563**	**0.0684**	**0.2248**	**0.0000**	**248.1321**	**248.1321**	**0.0803**	**0.0000**	**250.1384**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	4.7600e-003	3.9700e-003	0.0373	1.0000e-004	0.0111	7.0000e-005	0.0112	2.9600e-003	6.0000e-005	3.0200e-003	0.0000	8.8684	8.8684	2.8000e-004	0.0000	8.8754
Total	**4.7600e-003**	**3.9700e-003**	**0.0373**	**1.0000e-004**	**0.0111**	**7.0000e-005**	**0.0112**	**2.9600e-003**	**6.0000e-005**	**3.0200e-003**	**0.0000**	**8.8684**	**8.8684**	**2.8000e-004**	**0.0000**	**8.8754**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Other Non-Asphalt Surfaces	14.70	6.60	6.60	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Non-Asphalt Surfaces	0.623397	0.028959	0.171958	0.109598	0.026189	0.005295	0.008094	0.015285	0.001696	0.001924	0.005627	0.001125	0.000852

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.4331	1.0000e-005	9.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.7900e-003	1.7900e-003	0.0000	0.0000	1.9000e-003
Unmitigated	0.4331	1.0000e-005	9.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.7900e-003	1.7900e-003	0.0000	0.0000	1.9000e-003

6.2 Area by SubCategory

<u>Unmitigated</u>

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.1514					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.2816					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	9.0000e-005	1.0000e-005	9.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.7900e-003	1.7900e-003	0.0000	0.0000	1.9000e-003
Total	**0.4331**	**1.0000e-005**	**9.2000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**1.7900e-003**	**1.7900e-003**	**0.0000**	**0.0000**	**1.9000e-003**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.1514					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.2816					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	9.0000e-005	1.0000e-005	9.2000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.7900e-003	1.7900e-003	0.0000	0.0000	1.9000e-003
Total	**0.4331**	**1.0000e-005**	**9.2000e-004**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**1.7900e-003**	**1.7900e-003**	**0.0000**	**0.0000**	**1.9000e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

7.2 Water by Land Use

Unmitigated

	Indoor/Out door Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Other Non-Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	0.0000	0.0000	0.0000	0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

ARC - Off-site Drainage Basin

Yuba County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Non-Asphalt Surfaces	100.00	Acre	100.00	4,356,000.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	3.4	**Precipitation Freq (Days)**	72
Climate Zone	2			**Operational Year**	2022
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	269.5	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - CO2 Intensity Factory adjusted for PG&E's calculated progress towards RPS

Land Use -

Construction Phase - Based on applicant provided construction information

Grading - Based on project information

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	155.00	91.00
tblConstructionPhase	NumDaysWeek	5.00	7.00
tblConstructionPhase	PhaseEndDate	6/15/2023	6/30/2022
tblConstructionPhase	PhaseStartDate	11/11/2022	4/1/2022
tblGrading	AcresOfGrading	227.50	100.00
tblProjectCharacteristics	CO2IntensityFactor	641.35	269.5
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	3.7412	38.9212	30.0175	0.0645	7.4429	1.6364	9.0794	3.5038	1.5055	5.0093	0.0000	6,249.4409	6,249.4409	1.9519	0.0000	6,298.2374
Maximum	**3.7412**	**38.9212**	**30.0175**	**0.0645**	**7.4429**	**1.6364**	**9.0794**	**3.5038**	**1.5055**	**5.0093**	**0.0000**	**6,249.4409**	**6,249.4409**	**1.9519**	**0.0000**	**6,298.2374**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	3.7412	38.9212	30.0175	0.0645	7.4429	1.6364	9.0794	3.5038	1.5055	5.0093	0.0000	6,249.4409	6,249.4409	1.9519	0.0000	6,298.2374
Maximum	**3.7412**	**38.9212**	**30.0175**	**0.0645**	**7.4429**	**1.6364**	**9.0794**	**3.5038**	**1.5055**	**5.0093**	**0.0000**	**6,249.4409**	**6,249.4409**	**1.9519**	**0.0000**	**6,298.2374**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	2.3736	9.0000e-005	0.0102	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005		0.0219	0.0219	6.0000e-005		0.0233
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**2.3736**	**9.0000e-005**	**0.0102**	**0.0000**	**0.0000**	**4.0000e-005**	**4.0000e-005**	**0.0000**	**4.0000e-005**	**4.0000e-005**		**0.0219**	**0.0219**	**6.0000e-005**	**0.0000**	**0.0233**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	2.3736	9.0000e-005	0.0102	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005		0.0219	0.0219	6.0000e-005		0.0233
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**2.3736**	**9.0000e-005**	**0.0102**	**0.0000**	**0.0000**	**4.0000e-005**	**4.0000e-005**	**0.0000**	**4.0000e-005**	**4.0000e-005**		**0.0219**	**0.0219**	**6.0000e-005**	**0.0000**	**0.0233**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Grading	Grading	4/1/2022	6/30/2022	7	91	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 100

Acres of Paving: 100

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Grading	Excavators	2	8.00	158	0.38
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Graders	1	8.00	187	0.41
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Grading	Scrapers	2	8.00	367	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Grading	8	20.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Grading - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					7.1875	0.0000	7.1875	3.4361	0.0000	3.4361			0.0000			0.0000
Off-Road	3.6248	38.8435	29.0415	0.0621		1.6349	1.6349		1.5041	1.5041		6,011.4105	6,011.4105	1.9442		6,060.0158
Total	**3.6248**	**38.8435**	**29.0415**	**0.0621**	**7.1875**	**1.6349**	**8.8224**	**3.4361**	**1.5041**	**4.9402**		**6,011.4105**	**6,011.4105**	**1.9442**		**6,060.0158**

3.2 Grading - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1164	0.0777	0.9760	2.3900e-003	0.2555	1.5500e-003	0.2570	0.0678	1.4200e-003	0.0692		238.0303	238.0303	7.6500e-003		238.2216
Total	**0.1164**	**0.0777**	**0.9760**	**2.3900e-003**	**0.2555**	**1.5500e-003**	**0.2570**	**0.0678**	**1.4200e-003**	**0.0692**		**238.0303**	**238.0303**	**7.6500e-003**		**238.2216**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					7.1875	0.0000	7.1875	3.4361	0.0000	3.4361			0.0000			0.0000
Off-Road	3.6248	38.8435	29.0415	0.0621		1.6349	1.6349		1.5041	1.5041	0.0000	6,011.4105	6,011.4105	1.9442		6,060.0158
Total	**3.6248**	**38.8435**	**29.0415**	**0.0621**	**7.1875**	**1.6349**	**8.8224**	**3.4361**	**1.5041**	**4.9402**	**0.0000**	**6,011.4105**	**6,011.4105**	**1.9442**		**6,060.0158**

3.2 Grading - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1164	0.0777	0.9760	2.3900e-003	0.2555	1.5500e-003	0.2570	0.0678	1.4200e-003	0.0692		238.0303	238.0303	7.6500e-003		238.2216
Total	**0.1164**	**0.0777**	**0.9760**	**2.3900e-003**	**0.2555**	**1.5500e-003**	**0.2570**	**0.0678**	**1.4200e-003**	**0.0692**		**238.0303**	**238.0303**	**7.6500e-003**		**238.2216**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Other Non-Asphalt Surfaces	14.70	6.60	6.60	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Non-Asphalt Surfaces	0.623397	0.028959	0.171958	0.109598	0.026189	0.005295	0.008094	0.015285	0.001696	0.001924	0.005627	0.001125	0.000852

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	2.3736	9.0000e-005	0.0102	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005		0.0219	0.0219	6.0000e-005		0.0233
Unmitigated	2.3736	9.0000e-005	0.0102	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005		0.0219	0.0219	6.0000e-005		0.0233

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.8297					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.5429					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	9.5000e-004	9.0000e-005	0.0102	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005		0.0219	0.0219	6.0000e-005		0.0233
Total	**2.3736**	**9.0000e-005**	**0.0102**	**0.0000**		**4.0000e-005**	**4.0000e-005**		**4.0000e-005**	**4.0000e-005**		**0.0219**	**0.0219**	**6.0000e-005**		**0.0233**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.8297					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.5429					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	9.5000e-004	9.0000e-005	0.0102	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005		0.0219	0.0219	6.0000e-005		0.0233
Total	**2.3736**	**9.0000e-005**	**0.0102**	**0.0000**		**4.0000e-005**	**4.0000e-005**		**4.0000e-005**	**4.0000e-005**		**0.0219**	**0.0219**	**6.0000e-005**		**0.0233**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

ARC - Off-site Drainage Basin

Yuba County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Non-Asphalt Surfaces	100.00	Acre	100.00	4,356,000.00	0

1.2 Other Project Characteristics

Urbanization	Rural	**Wind Speed (m/s)**	3.4	**Precipitation Freq (Days)**	72
Climate Zone	2			**Operational Year**	2022
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	269.5	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - CO2 Intensity Factory adjusted for PG&E's calculated progress towards RPS

Land Use -

Construction Phase - Based on applicant provided construction information

Grading - Based on project information

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	155.00	91.00
tblConstructionPhase	NumDaysWeek	5.00	7.00
tblConstructionPhase	PhaseEndDate	6/15/2023	6/30/2022
tblConstructionPhase	PhaseStartDate	11/11/2022	4/1/2022
tblGrading	AcresOfGrading	227.50	100.00
tblProjectCharacteristics	CO2IntensityFactor	641.35	269.5
tblProjectCharacteristics	UrbanizationLevel	Urban	Rural

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	3.7390	38.9412	29.8561	0.0642	7.4429	1.6364	9.0794	3.5038	1.5055	5.0093	0.0000	6,220.1178	6,220.1178	1.9508	0.0000	6,268.8883
Maximum	**3.7390**	**38.9412**	**29.8561**	**0.0642**	**7.4429**	**1.6364**	**9.0794**	**3.5038**	**1.5055**	**5.0093**	**0.0000**	**6,220.1178**	**6,220.1178**	**1.9508**	**0.0000**	**6,268.8883**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	3.7390	38.9412	29.8561	0.0642	7.4429	1.6364	9.0794	3.5038	1.5055	5.0093	0.0000	6,220.1178	6,220.1178	1.9508	0.0000	6,268.8883
Maximum	**3.7390**	**38.9412**	**29.8561**	**0.0642**	**7.4429**	**1.6364**	**9.0794**	**3.5038**	**1.5055**	**5.0093**	**0.0000**	**6,220.1178**	**6,220.1178**	**1.9508**	**0.0000**	**6,268.8883**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	2.3736	9.0000e-005	0.0102	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005		0.0219	0.0219	6.0000e-005		0.0233
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**2.3736**	**9.0000e-005**	**0.0102**	**0.0000**	**0.0000**	**4.0000e-005**	**4.0000e-005**	**0.0000**	**4.0000e-005**	**4.0000e-005**		**0.0219**	**0.0219**	**6.0000e-005**	**0.0000**	**0.0233**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	2.3736	9.0000e-005	0.0102	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005		0.0219	0.0219	6.0000e-005		0.0233
Energy	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Mobile	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**2.3736**	**9.0000e-005**	**0.0102**	**0.0000**	**0.0000**	**4.0000e-005**	**4.0000e-005**	**0.0000**	**4.0000e-005**	**4.0000e-005**		**0.0219**	**0.0219**	**6.0000e-005**	**0.0000**	**0.0233**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Grading	Grading	4/1/2022	6/30/2022	7	91	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 100

Acres of Paving: 100

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Grading	Excavators	2	8.00	158	0.38
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Graders	1	8.00	187	0.41
Grading	Tractors/Loaders/Backhoes	2	8.00	97	0.37
Grading	Scrapers	2	8.00	367	0.48

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Grading	8	20.00	0.00	0.00	16.80	6.60	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Grading - 2022

<u>Unmitigated Construction On-Site</u>

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					7.1875	0.0000	7.1875	3.4361	0.0000	3.4361			0.0000			0.0000
Off-Road	3.6248	38.8435	29.0415	0.0621		1.6349	1.6349		1.5041	1.5041		6,011.4105	6,011.4105	1.9442		6,060.0158
Total	**3.6248**	**38.8435**	**29.0415**	**0.0621**	**7.1875**	**1.6349**	**8.8224**	**3.4361**	**1.5041**	**4.9402**		**6,011.4105**	**6,011.4105**	**1.9442**		**6,060.0158**

3.2 Grading - 2022

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1142	0.0978	0.8146	2.1000e-003	0.2555	1.5500e-003	0.2570	0.0678	1.4200e-003	0.0692		208.7073	208.7073	6.6100e-003		208.8725
Total	**0.1142**	**0.0978**	**0.8146**	**2.1000e-003**	**0.2555**	**1.5500e-003**	**0.2570**	**0.0678**	**1.4200e-003**	**0.0692**		**208.7073**	**208.7073**	**6.6100e-003**		**208.8725**

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					7.1875	0.0000	7.1875	3.4361	0.0000	3.4361			0.0000			0.0000
Off-Road	3.6248	38.8435	29.0415	0.0621		1.6349	1.6349		1.5041	1.5041	0.0000	6,011.4105	6,011.4105	1.9442		6,060.0158
Total	**3.6248**	**38.8435**	**29.0415**	**0.0621**	**7.1875**	**1.6349**	**8.8224**	**3.4361**	**1.5041**	**4.9402**	**0.0000**	**6,011.4105**	**6,011.4105**	**1.9442**		**6,060.0158**

3.2 Grading - 2022

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.1142	0.0978	0.8146	2.1000e-003	0.2555	1.5500e-003	0.2570	0.0678	1.4200e-003	0.0692		208.7073	208.7073	6.6100e-003		208.8725
Total	**0.1142**	**0.0978**	**0.8146**	**2.1000e-003**	**0.2555**	**1.5500e-003**	**0.2570**	**0.0678**	**1.4200e-003**	**0.0692**		**208.7073**	**208.7073**	**6.6100e-003**		**208.8725**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Mitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Unmitigated	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Other Non-Asphalt Surfaces	0.00	0.00	0.00		
Total	0.00	0.00	0.00		

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Other Non-Asphalt Surfaces	14.70	6.60	6.60	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Other Non-Asphalt Surfaces	0.623397	0.028959	0.171958	0.109598	0.026189	0.005295	0.008094	0.015285	0.001696	0.001924	0.005627	0.001125	0.000852

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
NaturalGas Unmitigated	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Other Non-Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

6.0 Area Detail

6.1 Mitigation Measures Area

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	2.3736	9.0000e-005	0.0102	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005		0.0219	0.0219	6.0000e-005		0.0233
Unmitigated	2.3736	9.0000e-005	0.0102	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005		0.0219	0.0219	6.0000e-005		0.0233

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.8297					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.5429					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	9.5000e-004	9.0000e-005	0.0102	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005		0.0219	0.0219	6.0000e-005		0.0233
Total	**2.3736**	**9.0000e-005**	**0.0102**	**0.0000**		**4.0000e-005**	**4.0000e-005**		**4.0000e-005**	**4.0000e-005**		**0.0219**	**0.0219**	**6.0000e-005**		**0.0233**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.8297					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.5429					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	9.5000e-004	9.0000e-005	0.0102	0.0000		4.0000e-005	4.0000e-005		4.0000e-005	4.0000e-005		0.0219	0.0219	6.0000e-005		0.0233
Total	**2.3736**	**9.0000e-005**	**0.0102**	**0.0000**		**4.0000e-005**	**4.0000e-005**		**4.0000e-005**	**4.0000e-005**		**0.0219**	**0.0219**	**6.0000e-005**		**0.0233**

7.0 Water Detail

7.1 Mitigation Measures Water

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

ARC - Off-site Drainage Basin

Yuba County, Mitigation Report

Construction Mitigation Summary

Phase	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction												
Grading	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

OFFROAD Equipment Mitigation

Equipment Type	Fuel Type	Tier	Number Mitigated	Total Number of Equipment	DPF	Oxidation Catalyst
Excavators	Diesel	No Change	0	2	No Change	0.00
Graders	Diesel	No Change	0	1	No Change	0.00
Rubber Tired Dozers	Diesel	No Change	0	1	No Change	0.00
Tractors/Loaders/Backhoes	Diesel	No Change	0	2	No Change	0.00
Scrapers	Diesel	No Change	0	2	No Change	0.00

Equipment Type	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	Unmitigated tons/yr						Unmitigated mt/yr					
Excavators	1.84200E-002	1.61700E-001	2.96220E-001	4.70000E-004	7.82000E-003	7.19000E-003	0.00000E+000	4.12782E+001	4.12782E+001	1.33500E-002	0.00000E+000	4.16119E+001
Graders	1.88800E-002	2.39220E-001	7.83400E-002	3.00000E-004	7.61000E-003	7.00000E-003	0.00000E+000	2.64700E+001	2.64700E+001	8.56000E-003	0.00000E+000	2.66840E+001
Rubber Tired Dozers	3.80900E-002	4.00110E-001	1.62980E-001	3.90000E-004	1.89900E-002	1.74700E-002	0.00000E+000	3.41375E+001	3.41375E+001	1.10400E-002	0.00000E+000	3.44135E+001
Scrapers	7.45500E-002	8.13860E-001	5.80200E-001	1.38000E-003	3.17700E-002	2.92300E-002	0.00000E+000	1.21378E+002	1.21378E+002	3.92600E-002	0.00000E+000	1.22360E+002
Tractors/Loaders/ Backhoes	1.49900E-002	1.52480E-001	2.03650E-001	2.80000E-004	8.20000E-003	7.54000E-003	0.00000E+000	2.48684E+001	2.48684E+001	8.04000E-003	0.00000E+000	2.50695E+001

Equipment Type	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	Mitigated tons/yr						Mitigated mt/yr					
Excavators	1.84200E-002	1.61700E-001	2.96220E-001	4.70000E-004	7.82000E-003	7.19000E-003	0.00000E+000	4.12781E+001	4.12781E+001	1.33500E-002	0.00000E+000	4.16119E+001
Graders	1.88800E-002	2.39220E-001	7.83400E-002	3.00000E-004	7.61000E-003	7.00000E-003	0.00000E+000	2.64700E+001	2.64700E+001	8.56000E-003	0.00000E+000	2.66840E+001
Rubber Tired Dozers	3.80900E-002	4.00110E-001	1.62980E-001	3.90000E-004	1.89900E-002	1.74700E-002	0.00000E+000	3.41374E+001	3.41374E+001	1.10400E-002	0.00000E+000	3.44134E+001
Scrapers	7.45500E-002	8.13860E-001	5.80200E-001	1.38000E-003	3.17700E-002	2.92300E-002	0.00000E+000	1.21378E+002	1.21378E+002	3.92600E-002	0.00000E+000	1.22360E+002
Tractors/Loaders/Ba ckhoes	1.49900E-002	1.52480E-001	2.03650E-001	2.80000E-004	8.20000E-003	7.54000E-003	0.00000E+000	2.48684E+001	2.48684E+001	8.04000E-003	0.00000E+000	2.50695E+001

Equipment Type	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	Percent Reduction											
Excavators	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.21129E-006	1.21129E-006	0.00000E+000	0.00000E+000	1.20158E-006
Graders	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.13336E-006	1.13336E-006	0.00000E+000	0.00000E+000	1.12427E-006
Rubber Tired Dozers	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.17173E-006	1.17173E-006	0.00000E+000	0.00000E+000	1.16234E-006
Scrapers	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.23581E-006	1.23581E-006	0.00000E+000	0.00000E+000	1.14417E-006
Tractors/Loaders/Ba ckhoes	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	1.20635E-006	1.20635E-006	0.00000E+000	0.00000E+000	1.19667E-006

Fugitive Dust Mitigation

Yes/No	Mitigation Measure	Mitigation Input		Mitigation Input		Mitigation Input	
No	Soil Stabilizer for unpaved Roads	PM10 Reduction		PM2.5 Reduction			
No	Replace Ground Cover of Area Disturbed	PM10 Reduction		PM2.5 Reduction			
No	Water Exposed Area	PM10 Reduction		PM2.5 Reduction		Frequency (per day)	
No	Unpaved Road Mitigation	Moisture Content %		Vehicle Speed (mph)			
No	Clean Paved Road	% PM Reduction	0.00				

		Unmitigated		Mitigated		Percent Reduction	
Phase	Source	PM10	PM2.5	PM10	PM2.5	PM10	PM2.5
Grading	Fugitive Dust	0.33	0.16	0.33	0.16	0.00	0.00
Grading	Roads	0.01	0.00	0.01	0.00	0.00	0.00

Operational Percent Reduction Summary

Category	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction												
Architectural Coating	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Electricity	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Hearth	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Landscaping	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mobile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Natural Gas	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Water Indoor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Water Outdoor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Operational Mobile Mitigation

Project Setting:

Mitigation Selected	Category	Measure	% Reduction	Input Value 1	Input Value 2	Input Value 3
No	Land Use	Increase Density	0.00			
No	Land Use	Increase Diversity	0.00	0.15		
No	Land Use	Improve Walkability Design	0.00			
No	Land Use	Improve Destination Accessibility	0.00			
No	Land Use	Increase Transit Accessibility	0.25			
No	Land Use	Integrate Below Market Rate Housing	0.00			
	Land Use	Land Use SubTotal	0.00			

No	Neighborhood Enhancements	Improve Pedestrian Network				
No	Neighborhood Enhancements	Provide Traffic Calming Measures				
No	Neighborhood Enhancements	Implement NEV Network	0.00			
	Neighborhood Enhancements	Neighborhood Enhancements Subtotal	0.00			
No	Parking Policy Pricing	Limit Parking Supply	0.00			
No	Parking Policy Pricing	Unbundle Parking Costs	0.00			
No	Parking Policy Pricing	On-street Market Pricing	0.00			
	Parking Policy Pricing	Parking Policy Pricing Subtotal	0.00			
No	Transit Improvements	Provide BRT System	0.00			
No	Transit Improvements	Expand Transit Network	0.00			
No	Transit Improvements	Increase Transit Frequency	0.00			
	Transit Improvements	Transit Improvements Subtotal	0.00			
		Land Use and Site Enhancement Subtotal	0.00			
No	Commute	Implement Trip Reduction Program				
No	Commute	Transit Subsidy				
No	Commute	Implement Employee Parking "Cash Out"				
No	Commute	Workplace Parking Charge				
No	Commute	Encourage Telecommuting and Alternative Work Schedules	0.00			
No	Commute	Market Commute Trip Reduction Option	0.00			
No	Commute	Employee Vanpool/Shuttle	0.00		2.00	
No	Commute	Provide Ride Sharing Program				
	Commute	Commute Subtotal	0.00			

No	School Trip	Implement School Bus Program	0.00			
		Total VMT Reduction	0.00			

Area Mitigation

Measure Implemented	Mitigation Measure	Input Value
No	Only Natural Gas Hearth	
No	No Hearth	
No	Use Low VOC Cleaning Supplies	
No	Use Low VOC Paint (Residential Interior)	250.00
No	Use Low VOC Paint (Residential Exterior)	250.00
No	Use Low VOC Paint (Non-residential Interior)	250.00
No	Use Low VOC Paint (Non-residential Exterior)	250.00
No	Use Low VOC Paint (Parking)	250.00
No	% Electric Lawnmower	
No	% Electric Leafblower	
No	% Electric Chainsaw	

Energy Mitigation Measures

Measure Implemented	Mitigation Measure	Input Value 1	Input Value 2
No	Exceed Title 24		
No	Install High Efficiency Lighting		
No	On-site Renewable		

Appliance Type	Land Use Subtype	% Improvement
ClothWasher		30.00
DishWasher		15.00
Fan		50.00
Refrigerator		15.00

Water Mitigation Measures

Measure Implemented	Mitigation Measure	Input Value 1	Input Value 2
No	Apply Water Conservation on Strategy		
No	Use Reclaimed Water		
No	Use Grey Water		
No	Install low-flow bathroom faucet	32.00	
No	Install low-flow Kitchen faucet	18.00	
No	Install low-flow Toilet	20.00	
No	Install low-flow Shower	20.00	
No	Turf Reduction		
No	Use Water Efficient Irrigation Systems	6.10	
No	Water Efficient Landscape		

Solid Waste Mitigation

Mitigation Measures	Input Value

Institute Recycling and Composting Services Percent Reduction in Waste Disposed	

ARC CalEEMod
Existing Plus Project Operations

ARC Operations (E+P)

Yolo County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Research & Development	1,510.00	1000sqft	44.70	1,510,000.00	0
Manufacturing	884.00	1000sqft	57.20	884,000.00	0
Other Asphalt Surfaces	0.60	Acre	0.60	26,136.00	0
Parking Lot	2,573.00	Space	11.20	1,029,200.00	0
Unenclosed Parking Structure	3,285.00	Space	5.28	1,314,000.00	0
Hotel	150.00	Room	5.00	160,000.00	0
Apartments Mid Rise	570.00	Dwelling Unit	15.00	570,000.00	1630
Condo/Townhouse High Rise	280.00	Dwelling Unit	4.38	280,000.00	801
Regional Shopping Center	100.00	1000sqft	2.30	100,000.00	0

1.2 Other Project Characteristics

Urbanization Urban **Wind Speed (m/s)** 6.8 **Precipitation Freq (Days)** 54

Climate Zone 2 **Operational Year** 2035

Utility Company Pacific Gas & Electric Company

CO2 Intensity (lb/MWhr) 116.67 **CH4 Intensity (lb/MWhr)** 0.029 **N2O Intensity (lb/MWhr)** 0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - CO2 Intensity Factor adjusted to reflect PG&E's calculated progress towards RPS

Land Use - Information based on project application

Construction Phase - Construction modeled separately

Off-road Equipment - Construction modeled separately

Trips and VMT - Construction modeled separately

Grading -

Vehicle Trips - Adjusted based on project-specific traffic information from Fehr and Peers

Road Dust - Adjusted based on location in County and urban nature of the project

Energy Use - Energy intensity upgraded in compliance with 2019 CBSC

Area Mitigation - Per applicant provided information

Energy Mitigation - Per applicant provided information

Water Mitigation - Per applicant provided information

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	120.00	1.00
tblEnergyUse	T24E	460.92	428.66
tblEnergyUse	T24E	460.92	428.66
tblEnergyUse	T24E	1.87	4.31
tblEnergyUse	T24E	1.65	1.16
tblEnergyUse	T24E	3.90	2.73
tblEnergyUse	T24E	1.65	1.16
tblEnergyUse	T24NG	7,061.10	6,566.82
tblEnergyUse	T24NG	7,061.10	6,566.82
tblEnergyUse	T24NG	26.46	18.52
tblEnergyUse	T24NG	18.58	13.01
tblEnergyUse	T24NG	11.34	7.94
tblEnergyUse	T24NG	18.58	13.01

tblLandUse	LandUseSquareFeet	217,800.00	160,000.00
tblLandUse	LotAcreage	34.66	44.70
tblLandUse	LotAcreage	20.29	57.20
tblLandUse	LotAcreage	23.16	11.20
tblLandUse	LotAcreage	29.56	5.28
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00
tblProjectCharacteristics	CO2IntensityFactor	641.35	116.67
tblRoadDust	RoadPercentPave	94	100
tblVehicleTrips	CC_TL	5.00	8.50
tblVehicleTrips	CC_TL	5.00	8.42
tblVehicleTrips	CC_TL	5.00	8.42
tblVehicleTrips	CC_TL	5.00	8.42
tblVehicleTrips	CNW_TL	7.00	11.79
tblVehicleTrips	CNW_TL	7.00	11.79
tblVehicleTrips	CNW_TL	7.00	11.79
tblVehicleTrips	CNW_TL	7.00	11.79
tblVehicleTrips	CW_TL	10.00	16.84
tblVehicleTrips	CW_TL	10.00	16.84
tblVehicleTrips	CW_TL	10.00	16.84
tblVehicleTrips	CW_TL	10.00	16.84
tblVehicleTrips	HO_TL	7.00	11.79
tblVehicleTrips	HO_TL	7.00	11.79
tblVehicleTrips	HS_TL	5.00	8.50
tblVehicleTrips	HS_TL	5.00	8.50
tblVehicleTrips	HW_TL	10.00	16.84
tblVehicleTrips	HW_TL	10.00	16.84

tblVehicleTrips	WD_TR	6.65	4.94
tblVehicleTrips	WD_TR	4.18	6.73
tblVehicleTrips	WD_TR	8.17	7.67
tblVehicleTrips	WD_TR	3.82	3.57
tblVehicleTrips	WD_TR	42.70	9.24
tblVehicleTrips	WD_TR	8.11	9.24

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
		Highest		

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	95.4427	1.4664	104.0172	0.1767		13.7288	13.7288		13.7288	13.7288	1,305.1248	378.6877	1,683.8125	1.2299	0.0990	1,744.0690
Energy	0.2318	2.0842	1.6005	0.0126		0.1602	0.1602		0.1602	0.1602	0.0000	3,770.1172	3,770.1172	0.4109	0.1180	3,815.5421
Mobile	3.7709	40.3915	45.5289	0.3172	29.9318	0.1341	30.0658	8.0870	0.1254	8.2124	0.0000	29,465.8923	29,465.8923	0.6988	0.0000	29,483.3628
Waste						0.0000	0.0000		0.0000	0.0000	363.1590	0.0000	363.1590	21.4621	0.0000	899.7109
Water						0.0000	0.0000		0.0000	0.0000	321.5292	297.5985	619.1277	33.0981	0.7951	1,683.5129
Total	**99.4454**	**43.9422**	**151.1465**	**0.5065**	**29.9318**	**14.0230**	**43.9547**	**8.0870**	**14.0143**	**22.1013**	**1,989.8129**	**33,912.2956**	**35,902.1086**	**56.8998**	**1.0121**	**37,626.1977**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	15.4365	0.0733	6.3669	3.4000e-004		0.0353	0.0353		0.0353	0.0353	0.0000	10.4614	10.4614	0.0102	0.0000	10.7165
Energy	0.1991	1.7890	1.3685	0.0109		0.1375	0.1375		0.1375	0.1375	0.0000	2,691.7635	2,691.7635	0.2172	0.0732	2,719.0158
Mobile	3.7709	40.3915	45.5289	0.3172	29.9318	0.1341	30.0658	8.0870	0.1254	8.2124	0.0000	29,465.8923	29,465.8923	0.6988	0.0000	29,483.3628
Waste						0.0000	0.0000		0.0000	0.0000	363.1590	0.0000	363.1590	21.4621	0.0000	899.7109
Water						0.0000	0.0000		0.0000	0.0000	257.2234	236.6016	493.8249	26.4781	0.6360	1,345.3013
Total	**19.4065**	**42.2538**	**53.2642**	**0.3284**	**29.9318**	**0.3069**	**30.2386**	**8.0870**	**0.2982**	**8.3852**	**620.3823**	**32,404.7187**	**33,025.1010**	**48.8664**	**0.7092**	**34,458.1073**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**80.49**	**3.84**	**64.76**	**35.17**	**0.00**	**97.81**	**31.21**	**0.00**	**97.87**	**62.06**	**68.82**	**4.45**	**8.01**	**14.12**	**29.92**	**8.42**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	1/6/2021	1/6/2021	5	1	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 17.08

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	0	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	0	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	0	0.00	0.00	0.00	10.00	7.00	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Site Preparation - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.2 Site Preparation - 2021

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	3.7709	40.3915	45.5289	0.3172	29.9318	0.1341	30.0658	8.0870	0.1254	8.2124	0.0000	29,465.8923	29,465.8923	0.6988	0.0000	29,483.3628
Unmitigated	3.7709	40.3915	45.5289	0.3172	29.9318	0.1341	30.0658	8.0870	0.1254	8.2124	0.0000	29,465.8923	29,465.8923	0.6988	0.0000	29,483.3628

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	2,815.80	3,642.30	3340.20	13,305,236	13,305,236
Condo/Townhouse High Rise	1,884.40	1,206.80	960.40	7,321,275	7,321,275
Hotel	1,150.50	1,228.50	892.50	2,970,588	2,970,588
Manufacturing	3,155.88	1,317.16	548.08	11,832,035	11,832,035
Other Asphalt Surfaces	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Regional Shopping Center	924.00	4,997.00	2524.00	4,139,996	4,139,996
Research & Development	13,952.40	2,869.00	1676.10	39,238,054	39,238,054
Unenclosed Parking Structure	0.00	0.00	0.00		
Total	23,882.98	15,260.76	9,941.28	78,807,184	78,807,184

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Mid Rise	16.84	8.50	11.79	46.00	13.00	41.00	86	11	3
Condo/Townhouse High Rise	16.84	8.50	11.79	46.00	13.00	41.00	86	11	3
Hotel	16.84	8.50	11.79	19.40	61.60	19.00	58	38	4
Manufacturing	16.84	8.42	11.79	59.00	28.00	13.00	92	5	3
Other Asphalt Surfaces	10.00	5.00	7.00	0.00	0.00	0.00	0	0	0
Parking Lot	10.00	5.00	7.00	0.00	0.00	0.00	0	0	0
Regional Shopping Center	16.84	8.42	11.79	16.30	64.70	19.00	54	35	11
Research & Development	16.84	8.42	11.79	33.00	48.00	19.00	82	15	3
Unenclosed Parking Structure	10.00	5.00	7.00	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Mid Rise	0.510775	0.034299	0.212670	0.100609	0.010702	0.004092	0.073108	0.045201	0.001012	0.001235	0.005125	0.000644	0.000526
Condo/Townhouse High Rise	0.510775	0.034299	0.212670	0.100609	0.010702	0.004092	0.073108	0.045201	0.001012	0.001235	0.005125	0.000644	0.000526
Hotel	0.510775	0.034299	0.212670	0.100609	0.010702	0.004092	0.073108	0.045201	0.001012	0.001235	0.005125	0.000644	0.000526
Manufacturing	0.510775	0.034299	0.212670	0.100609	0.010702	0.004092	0.073108	0.045201	0.001012	0.001235	0.005125	0.000644	0.000526
Other Asphalt Surfaces	0.510775	0.034299	0.212670	0.100609	0.010702	0.004092	0.073108	0.045201	0.001012	0.001235	0.005125	0.000644	0.000526
Parking Lot	0.510775	0.034299	0.212670	0.100609	0.010702	0.004092	0.073108	0.045201	0.001012	0.001235	0.005125	0.000644	0.000526
Regional Shopping Center	0.510775	0.034299	0.212670	0.100609	0.010702	0.004092	0.073108	0.045201	0.001012	0.001235	0.005125	0.000644	0.000526
Research & Development	0.510775	0.034299	0.212670	0.100609	0.010702	0.004092	0.073108	0.045201	0.001012	0.001235	0.005125	0.000644	0.000526
Unenclosed Parking Structure	0.510775	0.034299	0.212670	0.100609	0.010702	0.004092	0.073108	0.045201	0.001012	0.001235	0.005125	0.000644	0.000526

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Exceed Title 24

Percent of Electricity Use Generated with Renewable Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	721.7112	721.7112	0.1794	0.0371	737.2564
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	1,476.000 3	1,476.000 3	0.3669	0.0759	1,507.792 5
NaturalGas Mitigated	0.1991	1.7890	1.3685	0.0109		0.1375	0.1375		0.1375	0.1375	0.0000	1,970.052 3	1,970.052 3	0.0378	0.0361	1,981.759 4
NaturalGas Unmitigated	0.2318	2.0842	1.6005	0.0126		0.1602	0.1602		0.1602	0.1602	0.0000	2,294.1169	2,294.1169	0.0440	0.0421	2,307.749 7

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Mid Rise	5.27468e+006	0.0284	0.2431	0.1034	1.5500e-003		0.0197	0.0197		0.0197	0.0197	0.0000	281.4769	281.4769	5.3900e-003	5.1600e-003	283.1496
Condo/Townhouse High Rise	2.59107e+006	0.0140	0.1194	0.0508	7.6000e-004		9.6500e-003	9.6500e-003		9.6500e-003	9.6500e-003	0.0000	138.2693	138.2693	2.6500e-003	2.5300e-003	139.0910
Hotel	3.0048e+006	0.0162	0.1473	0.1237	8.8000e-004		0.0112	0.0112		0.0112	0.0112	0.0000	160.3476	160.3476	3.0700e-003	2.9400e-003	161.3004
Manufacturing	1.15539e+007	0.0623	0.5664	0.4758	3.4000e-003		0.0430	0.0430		0.0430	0.0430	0.0000	616.5590	616.5590	0.0118	0.0113	620.2229
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	830000	4.4800e-003	0.0407	0.0342	2.4000e-004		3.0900e-003	3.0900e-003		3.0900e-003	3.0900e-003	0.0000	44.2920	44.2920	8.5000e-004	8.1000e-004	44.5552
Research & Development	1.97357e+007	0.1064	0.9674	0.8127	5.8000e-003		0.0735	0.0735		0.0735	0.0735	0.0000	1,053.1721	1,053.1721	0.0202	0.0193	1,059.4306
Unenclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.2318**	**2.0842**	**1.6006**	**0.0126**		**0.1602**	**0.1602**		**0.1602**	**0.1602**	**0.0000**	**2,294.1169**	**2,294.1169**	**0.0440**	**0.0421**	**2,307.7497**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Mid Rise	4.71321e+006	0.0254	0.2172	0.0924	1.3900e-003		0.0176	0.0176		0.0176	0.0176	0.0000	251.5151	251.5151	4.8200e-003	4.6100e-003	253.0097
Condo/Townhouse High Rise	2.31526e+006	0.0125	0.1067	0.0454	6.8000e-004		8.6300e-003	8.6300e-003		8.6300e-003	8.6300e-003	0.0000	123.5513	123.5513	2.3700e-003	2.2700e-003	124.2855
Hotel	2.56032e+006	0.0138	0.1255	0.1054	7.5000e-004		9.5400e-003	9.5400e-003		9.5400e-003	9.5400e-003	0.0000	136.6284	136.6284	2.6200e-003	2.5000e-003	137.4403
Manufacturing	9.82875e+006	0.0530	0.4818	0.4047	2.8900e-003		0.0366	0.0366		0.0366	0.0366	0.0000	524.4997	524.4997	0.0101	9.6200e-003	527.6166
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	710900	3.8300e-003	0.0349	0.0293	2.1000e-004		2.6500e-003	2.6500e-003		2.6500e-003	2.6500e-003	0.0000	37.9363	37.9363	7.3000e-004	7.0000e-004	38.1618
Research & Development	1.67889e+007	0.0905	0.8230	0.6913	4.9400e-003		0.0626	0.0626		0.0626	0.0626	0.0000	895.9215	895.9215	0.0172	0.0164	901.2455
Unenclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.1991**	**1.7890**	**1.3685**	**0.0109**		**0.1376**	**0.1376**		**0.1376**	**0.1376**	**0.0000**	**1,970.0523**	**1,970.0523**	**0.0378**	**0.0361**	**1,981.7594**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	2.40779e +006	127.4220	0.0317	6.5500e-003	130.1666
Condo/Townhouse High Rise	1.25548e +006	66.4408	0.0165	3.4200e-003	67.8719
Hotel	1.4496e +006	76.7137	0.0191	3.9500e-003	78.3661
Manufacturing	7.03664e +006	372.3834	0.0926	0.0192	380.4043
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	360220	19.0631	4.7400e-003	9.8000e-004	19.4737
Regional Shopping Center	1.062e +006	56.2017	0.0140	2.8900e-003	57.4123
Research & Development	1.20196e +007	636.0847	0.1581	0.0327	649.7856
Unenclosed Parking Structure	2.2995e +006	121.6910	0.0303	6.2600e-003	124.3121
Total		**1,476.0003**	**0.3669**	**0.0759**	**1,507.7925**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	1.18557e +006	62.7412	0.0156	3.2300e-003	64.0926
Condo/Townhouse High Rise	618739	32.7440	8.1400e-003	1.6800e-003	33.4493
Hotel	673080	35.6198	8.8500e-003	1.8300e-003	36.3870
Manufacturing	3.44141e +006	182.1217	0.0453	9.3700e-003	186.0445
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	180110	9.5315	2.3700e-003	4.9000e-004	9.7368
Regional Shopping Center	510525	27.0173	6.7200e-003	1.3900e-003	27.5992
Research & Development	5.87843e +006	311.0902	0.0773	0.0160	317.7909
Unenclosed Parking Structure	1.14975e +006	60.8455	0.0151	3.1300e-003	62.1561
Total		**721.7112**	**0.1794**	**0.0371**	**737.2564**

6.0 Area Detail

6.1 Mitigation Measures Area

No Hearths Installed

Use Low VOC Cleaning Supplies

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	15.4365	0.0733	6.3669	3.4000e-004		0.0353	0.0353		0.0353	0.0353	0.0000	10.4614	10.4614	0.0102	0.0000	10.7165
Unmitigated	95.4427	1.4664	104.0172	0.1767		13.7288	13.7288		13.7288	13.7288	1,305.1248	378.6877	1,683.8125	1.2299	0.0990	1,744.0690

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	2.4265					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	13.8380					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	78.9830	1.3932	97.6503	0.1764		13.6935	13.6935		13.6935	13.6935	1,305.1248	368.2263	1,673.3511	1.2197	0.0990	1,733.3525
Landscaping	0.1952	0.0733	6.3669	3.4000e-004		0.0353	0.0353		0.0353	0.0353	0.0000	10.4614	10.4614	0.0102	0.0000	10.7165
Total	**95.4427**	**1.4664**	**104.0172**	**0.1767**		**13.7288**	**13.7288**		**13.7288**	**13.7288**	**1,305.1248**	**378.6877**	**1,683.8125**	**1.2300**	**0.0990**	**1,744.0690**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	2.4265					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	12.8149					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.1952	0.0733	6.3669	3.4000e-004		0.0353	0.0353		0.0353	0.0353	0.0000	10.4614	10.4614	0.0102	0.0000	10.7165
Total	**15.4365**	**0.0733**	**6.3669**	**3.4000e-004**		**0.0353**	**0.0353**		**0.0353**	**0.0353**	**0.0000**	**10.4614**	**10.4614**	**0.0102**	**0.0000**	**10.7165**

7.0 Water Detail

7.1 Mitigation Measures Water

Apply Water Conservation Strategy

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	493.8249	26.4781	0.6360	1,345.3013
Unmitigated	619.1277	33.0981	0.7951	1,683.5129

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	37.1378 / 23.413	26.7532	1.2139	0.0293	65.8441
Condo/Townhouse High Rise	18.2431 / 11.5011	13.1419	0.5963	0.0144	32.3445
Hotel	3.80502 / 0.422779	2.3750	0.1243	2.9900e-003	6.3723
Manufacturing	204.425 / 0	123.3924	6.6757	0.1603	338.0541
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	7.40725 / 4.53993	5.3120	0.2421	5.8500e-003	13.1083
Research & Development	742.458 / 0	448.1530	24.2459	0.5822	1,227.7897
Unenclosed Parking Structure	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**619.1276**	**33.0981**	**0.7951**	**1,683.5129**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	29.7102 / 14.0478	20.5353	0.9709	0.0234	51.7893
Condo/Townhouse High Rise	14.5945 / 6.90066	10.0875	0.4769	0.0115	25.4404
Hotel	3.04401 / 0.253668	1.8844	0.0994	2.3900e-003	5.0818
Manufacturing	163.54 / 0	98.7140	5.3406	0.1282	270.4433
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	5.9258 / 2.72396	4.0814	0.1936	4.6700e-003	10.3148
Research & Development	593.966 / 0	358.5224	19.3967	0.4658	982.2317
Unenclosed Parking Structure	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**493.8249**	**26.4781**	**0.6360**	**1,345.3013**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	363.1590	21.4621	0.0000	899.7109
Unmitigated	363.1590	21.4621	0.0000	899.7109

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	262.2	53.2242	3.1455	0.0000	131.8608
Condo/Townhouse High Rise	128.8	26.1452	1.5451	0.0000	64.7737
Hotel	82.13	16.6717	0.9853	0.0000	41.3033
Manufacturing	1096.16	222.5106	13.1500	0.0000	551.2605
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	105	21.3141	1.2596	0.0000	52.8047
Research & Development	114.75	23.2932	1.3766	0.0000	57.7080
Unenclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000
Total		**363.1590**	**21.4621**	**0.0000**	**899.7109**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	262.2	53.2242	3.1455	0.0000	131.8608
Condo/Townhouse High Rise	128.8	26.1452	1.5451	0.0000	64.7737
Hotel	82.13	16.6717	0.9853	0.0000	41.3033
Manufacturing	1096.16	222.5106	13.1500	0.0000	551.2605
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	105	21.3141	1.2596	0.0000	52.8047
Research & Development	114.75	23.2932	1.3766	0.0000	57.7080
Unenclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000
Total		**363.1590**	**21.4621**	**0.0000**	**899.7109**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

ARC Operations (E+P)

Yolo County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Research & Development	1,510.00	1000sqft	44.70	1,510,000.00	0
Manufacturing	884.00	1000sqft	57.20	884,000.00	0
Other Asphalt Surfaces	0.60	Acre	0.60	26,136.00	0
Parking Lot	2,573.00	Space	11.20	1,029,200.00	0
Unenclosed Parking Structure	3,285.00	Space	5.28	1,314,000.00	0
Hotel	150.00	Room	5.00	160,000.00	0
Apartments Mid Rise	570.00	Dwelling Unit	15.00	570,000.00	1630
Condo/Townhouse High Rise	280.00	Dwelling Unit	4.38	280,000.00	801
Regional Shopping Center	100.00	1000sqft	2.30	100,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	6.8	**Precipitation Freq (Days)**	54
Climate Zone	2			**Operational Year**	2035
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	116.67	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - CO2 Intensity Factor adjusted to reflect PG&E's calculated progress towards RPS

Land Use - Information based on project application

Construction Phase - Construction modeled separately

Off-road Equipment - Construction modeled separately

Trips and VMT - Construction modeled separately

Grading -

Vehicle Trips - Adjusted based on project-specific traffic information from Fehr and Peers

Road Dust - Adjusted based on location in County and urban nature of the project

Energy Use - Energy intensity upgraded in compliance with 2019 CBSC

Area Mitigation - Per applicant provided information

Energy Mitigation - Per applicant provided information

Water Mitigation - Per applicant provided information

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	120.00	1.00
tblEnergyUse	T24E	460.92	428.66
tblEnergyUse	T24E	460.92	428.66
tblEnergyUse	T24E	1.87	4.31
tblEnergyUse	T24E	1.65	1.16
tblEnergyUse	T24E	3.90	2.73
tblEnergyUse	T24E	1.65	1.16
tblEnergyUse	T24NG	7,061.10	6,566.82
tblEnergyUse	T24NG	7,061.10	6,566.82
tblEnergyUse	T24NG	26.46	18.52
tblEnergyUse	T24NG	18.58	13.01
tblEnergyUse	T24NG	11.34	7.94
tblEnergyUse	T24NG	18.58	13.01

tblLandUse	LandUseSquareFeet	217,800.00	160,000.00
tblLandUse	LotAcreage	34.66	44.70
tblLandUse	LotAcreage	20.29	57.20
tblLandUse	LotAcreage	23.16	11.20
tblLandUse	LotAcreage	29.56	5.28
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00
tblProjectCharacteristics	CO2IntensityFactor	641.35	116.67
tblRoadDust	RoadPercentPave	94	100
tblVehicleTrips	CC_TL	5.00	8.50
tblVehicleTrips	CC_TL	5.00	8.42
tblVehicleTrips	CC_TL	5.00	8.42
tblVehicleTrips	CC_TL	5.00	8.42
tblVehicleTrips	CNW_TL	7.00	11.79
tblVehicleTrips	CNW_TL	7.00	11.79
tblVehicleTrips	CNW_TL	7.00	11.79
tblVehicleTrips	CNW_TL	7.00	11.79
tblVehicleTrips	CW_TL	10.00	16.84
tblVehicleTrips	CW_TL	10.00	16.84
tblVehicleTrips	CW_TL	10.00	16.84
tblVehicleTrips	CW_TL	10.00	16.84
tblVehicleTrips	HO_TL	7.00	11.79
tblVehicleTrips	HO_TL	7.00	11.79
tblVehicleTrips	HS_TL	5.00	8.50
tblVehicleTrips	HS_TL	5.00	8.50
tblVehicleTrips	HW_TL	10.00	16.84
tblVehicleTrips	HW_TL	10.00	16.84

tblVehicleTrips	WD_TR	6.65	4.94
tblVehicleTrips	WD_TR	4.18	6.73
tblVehicleTrips	WD_TR	8.17	7.67
tblVehicleTrips	WD_TR	3.82	3.57
tblVehicleTrips	WD_TR	42.70	9.24
tblVehicleTrips	WD_TR	8.11	9.24

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	2,017.7035	34.7937	2,452.4575	4.3059		334.3797	334.3797		334.3797	334.3797	35,089.1179	10,028.1303	45,117.2481	32.9184	2.6622	46,733.5487
Energy	1.2702	11.4204	8.7700	0.0693		0.8776	0.8776		0.8776	0.8776		13,856.6082	13,856.6082	0.2656	0.2540	13,938.9511
Mobile	34.1348	298.5975	380.7461	2.4811	228.3256	0.9941	229.3197	61.5131	0.9296	62.4428		253,770.1859	253,770.1859	5.7836		253,914.7752
Total	**2,053.1084**	**344.8116**	**2,841.9736**	**6.8563**	**228.3256**	**336.2514**	**564.5770**	**61.5131**	**336.1870**	**397.7001**	**35,089.1179**	**277,654.9244**	**312,744.0422**	**38.9676**	**2.9163**	**314,587.2750**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	85.6825	0.8140	70.7428	3.7700e-003		0.3920	0.3920		0.3920	0.3920	0.0000	128.1303	128.1303	0.1250	0.0000	131.2552
Energy	1.0908	9.8028	7.4988	0.0595		0.7536	0.7536		0.7536	0.7536		11,899.2382	11,899.2382	0.2281	0.2182	11,969.9494
Mobile	34.1348	298.5975	380.7461	2.4811	228.3256	0.9941	229.3197	61.5131	0.9296	62.4428		253,770.1859	253,770.1859	5.7836		253,914.7752
Total	**120.9080**	**309.2142**	**458.9877**	**2.5444**	**228.3256**	**2.1397**	**230.4652**	**61.5131**	**2.0752**	**63.5883**	**0.0000**	**265,797.5544**	**265,797.5544**	**6.1366**	**0.2182**	**266,015.9798**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	94.11	10.32	83.85	62.89	0.00	99.36	59.18	0.00	99.38	84.01	100.00	4.27	15.01	84.25	92.52	15.44

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	1/6/2021	1/6/2021	5	1	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 17.08

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	0	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	0	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	0	0.00	0.00	0.00	10.00	7.00	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Site Preparation - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

3.2 Site Preparation - 2021

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	34.1348	298.5975	380.7461	2.4811	228.3256	0.9941	229.3197	61.5131	0.9296	62.4428		253,770.1859	253,770.1859	5.7836		253,914.7752
Unmitigated	34.1348	298.5975	380.7461	2.4811	228.3256	0.9941	229.3197	61.5131	0.9296	62.4428		253,770.1859	253,770.1859	5.7836		253,914.7752

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	2,815.80	3,642.30	3340.20	13,305,236	13,305,236
Condo/Townhouse High Rise	1,884.40	1,206.80	960.40	7,321,275	7,321,275
Hotel	1,150.50	1,228.50	892.50	2,970,588	2,970,588
Manufacturing	3,155.88	1,317.16	548.08	11,832,035	11,832,035
Other Asphalt Surfaces	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Regional Shopping Center	924.00	4,997.00	2524.00	4,139,996	4,139,996
Research & Development	13,952.40	2,869.00	1676.10	39,238,054	39,238,054
Unenclosed Parking Structure	0.00	0.00	0.00		
Total	23,882.98	15,260.76	9,941.28	78,807,184	78,807,184

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Mid Rise	16.84	8.50	11.79	46.00	13.00	41.00	86	11	3
Condo/Townhouse High Rise	16.84	8.50	11.79	46.00	13.00	41.00	86	11	3
Hotel	16.84	8.50	11.79	19.40	61.60	19.00	58	38	4
Manufacturing	16.84	8.42	11.79	59.00	28.00	13.00	92	5	3
Other Asphalt Surfaces	10.00	5.00	7.00	0.00	0.00	0.00	0	0	0
Parking Lot	10.00	5.00	7.00	0.00	0.00	0.00	0	0	0
Regional Shopping Center	16.84	8.42	11.79	16.30	64.70	19.00	54	35	11
Research & Development	16.84	8.42	11.79	33.00	48.00	19.00	82	15	3
Unenclosed Parking Structure	10.00	5.00	7.00	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Mid Rise	0.510775	0.034299	0.212670	0.100609	0.010702	0.004092	0.073108	0.045201	0.001012	0.001235	0.005125	0.000644	0.000526
Condo/Townhouse High Rise	0.510775	0.034299	0.212670	0.100609	0.010702	0.004092	0.073108	0.045201	0.001012	0.001235	0.005125	0.000644	0.000526
Hotel	0.510775	0.034299	0.212670	0.100609	0.010702	0.004092	0.073108	0.045201	0.001012	0.001235	0.005125	0.000644	0.000526
Manufacturing	0.510775	0.034299	0.212670	0.100609	0.010702	0.004092	0.073108	0.045201	0.001012	0.001235	0.005125	0.000644	0.000526
Other Asphalt Surfaces	0.510775	0.034299	0.212670	0.100609	0.010702	0.004092	0.073108	0.045201	0.001012	0.001235	0.005125	0.000644	0.000526
Parking Lot	0.510775	0.034299	0.212670	0.100609	0.010702	0.004092	0.073108	0.045201	0.001012	0.001235	0.005125	0.000644	0.000526
Regional Shopping Center	0.510775	0.034299	0.212670	0.100609	0.010702	0.004092	0.073108	0.045201	0.001012	0.001235	0.005125	0.000644	0.000526
Research & Development	0.510775	0.034299	0.212670	0.100609	0.010702	0.004092	0.073108	0.045201	0.001012	0.001235	0.005125	0.000644	0.000526
Unenclosed Parking Structure	0.510775	0.034299	0.212670	0.100609	0.010702	0.004092	0.073108	0.045201	0.001012	0.001235	0.005125	0.000644	0.000526

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Exceed Title 24

Percent of Electricity Use Generated with Renewable Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	1.0908	9.8028	7.4988	0.0595		0.7536	0.7536		0.7536	0.7536		11,899.2382	11,899.2382	0.2281	0.2182	11,969.9494
NaturalGas Unmitigated	1.2702	11.4204	8.7700	0.0693		0.8776	0.8776		0.8776	0.8776		13,856.6082	13,856.6082	0.2656	0.2540	13,938.9511

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Apartments Mid Rise	14451.2	0.1559	1.3318	0.5667	8.5000e-003		0.1077	0.1077		0.1077	0.1077		1,700.1378	1,700.1378	0.0326	0.0312	1,710.2408
Condo/Townhouse High Rise	7098.82	0.0766	0.6542	0.2784	4.1800e-003		0.0529	0.0529		0.0529	0.0529		835.1554	835.1554	0.0160	0.0153	840.1183
Hotel	8232.33	0.0888	0.8071	0.6780	4.8400e-003		0.0613	0.0613		0.0613	0.0613		968.5093	968.5093	0.0186	0.0178	974.2646
Manufacturing	31654.5	0.3414	3.1034	2.6068	0.0186		0.2359	0.2359		0.2359	0.2359		3,724.0548	3,724.0548	0.0714	0.0683	3,746.1850
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	2273.97	0.0245	0.2229	0.1873	1.3400e-003		0.0169	0.0169		0.0169	0.0169		267.5262	267.5262	5.1300e-003	4.9000e-003	269.1160
Research & Development	54070.4	0.5831	5.3010	4.4529	0.0318		0.4029	0.4029		0.4029	0.4029		6,361.2248	6,361.2248	0.1219	0.1166	6,399.0264
Unenclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**1.2702**	**11.4204**	**8.7700**	**0.0693**		**0.8776**	**0.8776**		**0.8776**	**0.8776**		**13,856.6082**	**13,856.6082**	**0.2656**	**0.2540**	**13,938.9511**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Apartments Mid Rise	12.9129	0.1393	1.1900	0.5064	7.6000e-003		0.0962	0.0962		0.0962	0.0962		1,519.1666	1,519.1666	0.0291	0.0279	1,528.1942
Condo/Townhouse High Rise	6.34319	0.0684	0.5846	0.2488	3.7300e-003		0.0473	0.0473		0.0473	0.0473		746.2573	746.2573	0.0143	0.0137	750.6919
Hotel	7.01458	0.0757	0.6877	0.5777	4.1300e-003		0.0523	0.0523		0.0523	0.0523		825.2442	825.2442	0.0158	0.0151	830.1482
Manufacturing	26.9281	0.2904	2.6400	2.2176	0.0158		0.2006	0.2006		0.2006	0.2006		3,168.0110	3,168.0110	0.0607	0.0581	3,186.8369
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	1.94767	0.0210	0.1910	0.1604	1.1500e-003		0.0145	0.0145		0.0145	0.0145		229.1378	229.1378	4.3900e-003	4.2000e-003	230.4994
Research & Development	45.9971	0.4961	4.5095	3.7880	0.0271		0.3427	0.3427		0.3427	0.3427		5,411.4214	5,411.4214	0.1037	0.0992	5,443.5788
Unenclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**1.0908**	**9.8028**	**7.4988**	**0.0595**		**0.7536**	**0.7536**		**0.7536**	**0.7536**		**11,899.2382**	**11,899.2382**	**0.2281**	**0.2182**	**11,969.9494**

6.0 Area Detail

6.1 Mitigation Measures Area

No Hearths Installed

Use Low VOC Cleaning Supplies

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	85.6825	0.8140	70.7428	3.7700e-003		0.3920	0.3920		0.3920	0.3920	0.0000	128.1303	128.1303	0.1250	0.0000	131.2552
Unmitigated	2,017.7035	34.7937	2,452.4575	4.3059		334.3797	334.3797		334.3797	334.3797	35,089.1179	10,028.1303	45,117.2481	32.9184	2.6622	46,733.5487

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	13.2958					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	75.8248					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	1,926.4146	33.9797	2,381.7147	4.3022		333.9878	333.9878		333.9878	333.9878	35,089.1179	9,900.0000	44,989.1179	32.7934	2.6622	46,602.2935
Landscaping	2.1683	0.8140	70.7428	3.7700e-003		0.3920	0.3920		0.3920	0.3920		128.1303	128.1303	0.1250		131.2552
Total	**2,017.7035**	**34.7937**	**2,452.4575**	**4.3059**		**334.3798**	**334.3798**		**334.3798**	**334.3798**	**35,089.1179**	**10,028.1303**	**45,117.2481**	**32.9184**	**2.6622**	**46,733.5487**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	13.2958					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	70.2184					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	2.1683	0.8140	70.7428	3.7700e-003		0.3920	0.3920		0.3920	0.3920		128.1303	128.1303	0.1250		131.2552
Total	**85.6825**	**0.8140**	**70.7428**	**3.7700e-003**		**0.3920**	**0.3920**		**0.3920**	**0.3920**	**0.0000**	**128.1303**	**128.1303**	**0.1250**	**0.0000**	**131.2552**

7.0 Water Detail

7.1 Mitigation Measures Water

Apply Water Conservation Strategy

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

ARC Operations (E+P)

Yolo County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Research & Development	1,510.00	1000sqft	44.70	1,510,000.00	0
Manufacturing	884.00	1000sqft	57.20	884,000.00	0
Other Asphalt Surfaces	0.60	Acre	0.60	26,136.00	0
Parking Lot	2,573.00	Space	11.20	1,029,200.00	0
Unenclosed Parking Structure	3,285.00	Space	5.28	1,314,000.00	0
Hotel	150.00	Room	5.00	160,000.00	0
Apartments Mid Rise	570.00	Dwelling Unit	15.00	570,000.00	1630
Condo/Townhouse High Rise	280.00	Dwelling Unit	4.38	280,000.00	801
Regional Shopping Center	100.00	1000sqft	2.30	100,000.00	0

1.2 Other Project Characteristics

Urbanization Urban **Wind Speed (m/s)** 6.8 **Precipitation Freq (Days)** 54

Climate Zone 2 **Operational Year** 2035

Utility Company Pacific Gas & Electric Company

CO2 Intensity (lb/MWhr) 116.67 **CH4 Intensity (lb/MWhr)** 0.029 **N2O Intensity (lb/MWhr)** 0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - CO2 Intensity Factor adjusted to reflect PG&E's calculated progress towards RPS

Land Use - Information based on project application

Construction Phase - Construction modeled separately

Off-road Equipment - Construction modeled separately

Trips and VMT - Construction modeled separately

Grading -

Vehicle Trips - Adjusted based on project-specific traffic information from Fehr and Peers

Road Dust - Adjusted based on location in County and urban nature of the project

Energy Use - Energy intensity upgraded in compliance with 2019 CBSC

Area Mitigation - Per applicant provided information

Energy Mitigation - Per applicant provided information

Water Mitigation - Per applicant provided information

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	120.00	1.00
tblEnergyUse	T24E	460.92	428.66
tblEnergyUse	T24E	460.92	428.66
tblEnergyUse	T24E	1.87	4.31
tblEnergyUse	T24E	1.65	1.16
tblEnergyUse	T24E	3.90	2.73
tblEnergyUse	T24E	1.65	1.16
tblEnergyUse	T24NG	7,061.10	6,566.82
tblEnergyUse	T24NG	7,061.10	6,566.82
tblEnergyUse	T24NG	26.46	18.52
tblEnergyUse	T24NG	18.58	13.01
tblEnergyUse	T24NG	11.34	7.94
tblEnergyUse	T24NG	18.58	13.01

tblLandUse	LandUseSquareFeet	217,800.00	160,000.00
tblLandUse	LotAcreage	34.66	44.70
tblLandUse	LotAcreage	20.29	57.20
tblLandUse	LotAcreage	23.16	11.20
tblLandUse	LotAcreage	29.56	5.28
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00
tblProjectCharacteristics	CO2IntensityFactor	641.35	116.67
tblRoadDust	RoadPercentPave	94	100
tblVehicleTrips	CC_TL	5.00	8.50
tblVehicleTrips	CC_TL	5.00	8.42
tblVehicleTrips	CC_TL	5.00	8.42
tblVehicleTrips	CC_TL	5.00	8.42
tblVehicleTrips	CNW_TL	7.00	11.79
tblVehicleTrips	CNW_TL	7.00	11.79
tblVehicleTrips	CNW_TL	7.00	11.79
tblVehicleTrips	CNW_TL	7.00	11.79
tblVehicleTrips	CW_TL	10.00	16.84
tblVehicleTrips	CW_TL	10.00	16.84
tblVehicleTrips	CW_TL	10.00	16.84
tblVehicleTrips	CW_TL	10.00	16.84
tblVehicleTrips	HO_TL	7.00	11.79
tblVehicleTrips	HO_TL	7.00	11.79
tblVehicleTrips	HS_TL	5.00	8.50
tblVehicleTrips	HS_TL	5.00	8.50
tblVehicleTrips	HW_TL	10.00	16.84
tblVehicleTrips	HW_TL	10.00	16.84

tblVehicleTrips	WD_TR	6.65	4.94
tblVehicleTrips	WD_TR	4.18	6.73
tblVehicleTrips	WD_TR	8.17	7.67
tblVehicleTrips	WD_TR	3.82	3.57
tblVehicleTrips	WD_TR	42.70	9.24
tblVehicleTrips	WD_TR	8.11	9.24

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	2,017.7035	34.7937	2,452.4575	4.3059		334.3797	334.3797		334.3797	334.3797	35,089.1179	10,028.1303	45,117.2481	32.9184	2.6622	46,733.5487
Energy	1.2702	11.4204	8.7700	0.0693		0.8776	0.8776		0.8776	0.8776		13,856.6082	13,856.6082	0.2656	0.2540	13,938.9511
Mobile	27.0387	308.6731	347.2951	2.3096	228.3256	0.9967	229.3223	61.5131	0.9322	62.4453		236,552.7096	236,552.7096	5.9705		236,701.9724
Total	**2,046.0124**	**354.8872**	**2,808.5226**	**6.6848**	**228.3256**	**336.2541**	**564.5796**	**61.5131**	**336.1895**	**397.7026**	**35,089.1179**	**260,437.4481**	**295,526.5660**	**39.1545**	**2.9163**	**297,374.4722**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	85.6825	0.8140	70.7428	3.7700e-003		0.3920	0.3920		0.3920	0.3920	0.0000	128.1303	128.1303	0.1250	0.0000	131.2552
Energy	1.0908	9.8028	7.4988	0.0595		0.7536	0.7536		0.7536	0.7536		11,899.2382	11,899.2382	0.2281	0.2182	11,969.9494
Mobile	27.0387	308.6731	347.2951	2.3096	228.3256	0.9967	229.3223	61.5131	0.9322	62.4453		236,552.7096	236,552.7096	5.9705		236,701.9724
Total	**113.8120**	**319.2898**	**425.5367**	**2.3728**	**228.3256**	**2.1423**	**230.4679**	**61.5131**	**2.0777**	**63.5909**	**0.0000**	**248,580.0781**	**248,580.0781**	**6.3236**	**0.2182**	**248,803.1770**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**94.44**	**10.03**	**84.85**	**64.50**	**0.00**	**99.36**	**59.18**	**0.00**	**99.38**	**84.01**	**100.00**	**4.55**	**15.89**	**83.85**	**92.52**	**16.33**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	1/6/2021	1/6/2021	5	1	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 17.08

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	0	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	0	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	0	0.00	0.00	0.00	10.00	7.00	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Site Preparation - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

3.2 Site Preparation - 2021

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	27.0387	308.6731	347.2951	2.3096	228.3256	0.9967	229.3223	61.5131	0.9322	62.4453		236,552.7096	236,552.7096	5.9705		236,701.9724
Unmitigated	27.0387	308.6731	347.2951	2.3096	228.3256	0.9967	229.3223	61.5131	0.9322	62.4453		236,552.7096	236,552.7096	5.9705		236,701.9724

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	2,815.80	3,642.30	3340.20	13,305,236	13,305,236
Condo/Townhouse High Rise	1,884.40	1,206.80	960.40	7,321,275	7,321,275
Hotel	1,150.50	1,228.50	892.50	2,970,588	2,970,588
Manufacturing	3,155.88	1,317.16	548.08	11,832,035	11,832,035
Other Asphalt Surfaces	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Regional Shopping Center	924.00	4,997.00	2524.00	4,139,996	4,139,996
Research & Development	13,952.40	2,869.00	1676.10	39,238,054	39,238,054
Unenclosed Parking Structure	0.00	0.00	0.00		
Total	23,882.98	15,260.76	9,941.28	78,807,184	78,807,184

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Mid Rise	16.84	8.50	11.79	46.00	13.00	41.00	86	11	3
Condo/Townhouse High Rise	16.84	8.50	11.79	46.00	13.00	41.00	86	11	3
Hotel	16.84	8.50	11.79	19.40	61.60	19.00	58	38	4
Manufacturing	16.84	8.42	11.79	59.00	28.00	13.00	92	5	3
Other Asphalt Surfaces	10.00	5.00	7.00	0.00	0.00	0.00	0	0	0
Parking Lot	10.00	5.00	7.00	0.00	0.00	0.00	0	0	0
Regional Shopping Center	16.84	8.42	11.79	16.30	64.70	19.00	54	35	11
Research & Development	16.84	8.42	11.79	33.00	48.00	19.00	82	15	3
Unenclosed Parking Structure	10.00	5.00	7.00	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Mid Rise	0.510775	0.034299	0.212670	0.100609	0.010702	0.004092	0.073108	0.045201	0.001012	0.001235	0.005125	0.000644	0.000526
Condo/Townhouse High Rise	0.510775	0.034299	0.212670	0.100609	0.010702	0.004092	0.073108	0.045201	0.001012	0.001235	0.005125	0.000644	0.000526
Hotel	0.510775	0.034299	0.212670	0.100609	0.010702	0.004092	0.073108	0.045201	0.001012	0.001235	0.005125	0.000644	0.000526
Manufacturing	0.510775	0.034299	0.212670	0.100609	0.010702	0.004092	0.073108	0.045201	0.001012	0.001235	0.005125	0.000644	0.000526
Other Asphalt Surfaces	0.510775	0.034299	0.212670	0.100609	0.010702	0.004092	0.073108	0.045201	0.001012	0.001235	0.005125	0.000644	0.000526
Parking Lot	0.510775	0.034299	0.212670	0.100609	0.010702	0.004092	0.073108	0.045201	0.001012	0.001235	0.005125	0.000644	0.000526
Regional Shopping Center	0.510775	0.034299	0.212670	0.100609	0.010702	0.004092	0.073108	0.045201	0.001012	0.001235	0.005125	0.000644	0.000526
Research & Development	0.510775	0.034299	0.212670	0.100609	0.010702	0.004092	0.073108	0.045201	0.001012	0.001235	0.005125	0.000644	0.000526
Unenclosed Parking Structure	0.510775	0.034299	0.212670	0.100609	0.010702	0.004092	0.073108	0.045201	0.001012	0.001235	0.005125	0.000644	0.000526

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Exceed Title 24

Percent of Electricity Use Generated with Renewable Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	1.0908	9.8028	7.4988	0.0595		0.7536	0.7536		0.7536	0.7536		11,899.238 2	11,899.238 2	0.2281	0.2182	11,969.949 4
NaturalGas Unmitigated	1.2702	11.4204	8.7700	0.0693		0.8776	0.8776		0.8776	0.8776		13,856.60 82	13,856.60 82	0.2656	0.2540	13,938.951 1

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Apartments Mid Rise	14451.2	0.1559	1.3318	0.5667	8.5000e-003		0.1077	0.1077		0.1077	0.1077		1,700.1378	1,700.1378	0.0326	0.0312	1,710.2408
Condo/Townhouse High Rise	7098.82	0.0766	0.6542	0.2784	4.1800e-003		0.0529	0.0529		0.0529	0.0529		835.1554	835.1554	0.0160	0.0153	840.1183
Hotel	8232.33	0.0888	0.8071	0.6780	4.8400e-003		0.0613	0.0613		0.0613	0.0613		968.5093	968.5093	0.0186	0.0178	974.2646
Manufacturing	31654.5	0.3414	3.1034	2.6068	0.0186		0.2359	0.2359		0.2359	0.2359		3,724.0548	3,724.0548	0.0714	0.0683	3,746.1850
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	2273.97	0.0245	0.2229	0.1873	1.3400e-003		0.0169	0.0169		0.0169	0.0169		267.5262	267.5262	5.1300e-003	4.9000e-003	269.1160
Research & Development	54070.4	0.5831	5.3010	4.4529	0.0318		0.4029	0.4029		0.4029	0.4029		6,361.2248	6,361.2248	0.1219	0.1166	6,399.0264
Unenclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**1.2702**	**11.4204**	**8.7700**	**0.0693**		**0.8776**	**0.8776**		**0.8776**	**0.8776**		**13,856.6082**	**13,856.6082**	**0.2656**	**0.2540**	**13,938.9511**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Apartments Mid Rise	12.9129	0.1393	1.1900	0.5064	7.6000e-003		0.0962	0.0962		0.0962	0.0962		1,519.1666	1,519.1666	0.0291	0.0279	1,528.1942
Condo/Townhouse High Rise	6.34319	0.0684	0.5846	0.2488	3.7300e-003		0.0473	0.0473		0.0473	0.0473		746.2573	746.2573	0.0143	0.0137	750.6919
Hotel	7.01458	0.0757	0.6877	0.5777	4.1300e-003		0.0523	0.0523		0.0523	0.0523		825.2442	825.2442	0.0158	0.0151	830.1482
Manufacturing	26.9281	0.2904	2.6400	2.2176	0.0158		0.2006	0.2006		0.2006	0.2006		3,168.0110	3,168.0110	0.0607	0.0581	3,186.8369
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	1.94767	0.0210	0.1910	0.1604	1.1500e-003		0.0145	0.0145		0.0145	0.0145		229.1378	229.1378	4.3900e-003	4.2000e-003	230.4994
Research & Development	45.9971	0.4961	4.5095	3.7880	0.0271		0.3427	0.3427		0.3427	0.3427		5,411.4214	5,411.4214	0.1037	0.0992	5,443.5788
Unenclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**1.0908**	**9.8028**	**7.4988**	**0.0595**		**0.7536**	**0.7536**		**0.7536**	**0.7536**		**11,899.2382**	**11,899.2382**	**0.2281**	**0.2182**	**11,969.9494**

6.0 Area Detail

6.1 Mitigation Measures Area

No Hearths Installed

Use Low VOC Cleaning Supplies

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	85.6825	0.8140	70.7428	3.7700e-003		0.3920	0.3920		0.3920	0.3920	0.0000	128.1303	128.1303	0.1250	0.0000	131.2552
Unmitigated	2,017.7035	34.7937	2,452.4575	4.3059		334.3797	334.3797		334.3797	334.3797	35,089.1179	10,028.1303	45,117.2481	32.9184	2.6622	46,733.5487

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	13.2958					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	75.8248					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	1,926.4146	33.9797	2,381.7147	4.3022		333.9878	333.9878		333.9878	333.9878	35,089.1179	9,900.0000	44,989.1179	32.7934	2.6622	46,602.2935
Landscaping	2.1683	0.8140	70.7428	3.7700e-003		0.3920	0.3920		0.3920	0.3920		128.1303	128.1303	0.1250		131.2552
Total	**2,017.7035**	**34.7937**	**2,452.4575**	**4.3059**		**334.3798**	**334.3798**		**334.3798**	**334.3798**	**35,089.1179**	**10,028.1303**	**45,117.2481**	**32.9184**	**2.6622**	**46,733.5487**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	13.2958					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	70.2184					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	2.1683	0.8140	70.7428	3.7700e-003		0.3920	0.3920		0.3920	0.3920		128.1303	128.1303	0.1250		131.2552
Total	**85.6825**	**0.8140**	**70.7428**	**3.7700e-003**		**0.3920**	**0.3920**		**0.3920**	**0.3920**	**0.0000**	**128.1303**	**128.1303**	**0.1250**	**0.0000**	**131.2552**

7.0 Water Detail

7.1 Mitigation Measures Water

Apply Water Conservation Strategy

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

ARC Operations (E+P)

Yolo County, Mitigation Report

Construction Mitigation Summary

Phase	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction												
Site Preparation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

OFFROAD Equipment Mitigation

Equipment Type	Fuel Type	Tier	Number Mitigated	Total Number of Equipment	DPF	Oxidation Catalyst
Rubber Tired Dozers	Diesel	No Change	0	0	No Change	0.00
Tractors/Loaders/Backhoes	Diesel	No Change	0	0	No Change	0.00

Equipment Type	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	Unmitigated tons/yr						Unmitigated mt/yr					
Rubber Tired Dozers	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000
Tractors/Loaders/ Backhoes	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000

Equipment Type	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	Mitigated tons/yr						Mitigated mt/yr					
Rubber Tired Dozers	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000
Tractors/Loaders/Backhoes	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000

Equipment Type	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction												
Rubber Tired Dozers	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000
Tractors/Loaders/Backhoes	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000

Fugitive Dust Mitigation

Yes/No	Mitigation Measure	Mitigation Input		Mitigation Input		Mitigation Input	
No	Soil Stabilizer for unpaved Roads	PM10 Reduction		PM2.5 Reduction			
No	Replace Ground Cover of Area Disturbed	PM10 Reduction		PM2.5 Reduction			
No	Water Exposed Area	PM10 Reduction		PM2.5 Reduction		Frequency (per day)	
No	Unpaved Road Mitigation	Moisture Content %		Vehicle Speed (mph)			
No	Clean Paved Road	% PM Reduction	0.00				

		Unmitigated		Mitigated		Percent Reduction	
Phase	Source	PM10	PM2.5	PM10	PM2.5	PM10	PM2.5
Site Preparation	Fugitive Dust	0.00	0.00	0.00	0.00	0.00	0.00
Site Preparation	Roads	0.00	0.00	0.00	0.00	0.00	0.00

Operational Percent Reduction Summary

Category	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction												
Architectural Coating	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	7.39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Electricity	0.00	0.00	0.00	0.00	0.00	0.00	0.00	51.10	51.10	51.10	51.10	51.10
Hearth	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Landscaping	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mobile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Natural Gas	14.13	14.16	14.50	14.01	14.11	14.11	0.00	14.13	14.13	14.12	14.08	14.13
Water Indoor	0.00	0.00	0.00	0.00	0.00	0.00	20.00	20.50	20.24	20.00	20.01	20.09
Water Outdoor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Operational Mobile Mitigation

Project Setting:

Mitigation	Category	Measure	% Reduction	Input Value 1	Input Value 2	Input Value
No	Land Use	Increase Density	0.00			
No	Land Use	Increase Diversity	0.28	0.62		
No	Land Use	Improve Walkability Design	0.00			
No	Land Use	Improve Destination Accessibility	0.00			
No	Land Use	Increase Transit Accessibility	0.25			
No	Land Use	Integrate Below Market Rate Housing	0.00			
	Land Use	Land Use SubTotal	0.00			

No	Neighborhood Enhancements	Improve Pedestrian Network				
No	Neighborhood Enhancements	Provide Traffic Calming Measures				
No	Neighborhood Enhancements	Implement NEV Network	0.00			
	Neighborhood Enhancements	Neighborhood Enhancements Subtotal	0.00			
No	Parking Policy Pricing	Limit Parking Supply	0.00			
No	Parking Policy Pricing	Unbundle Parking Costs	0.00			
No	Parking Policy Pricing	On-street Market Pricing	0.00			
	Parking Policy Pricing	Parking Policy Pricing Subtotal	0.00			
No	Transit Improvements	Provide BRT System	0.00			
No	Transit Improvements	Expand Transit Network	0.00			
No	Transit Improvements	Increase Transit Frequency	0.00			
	Transit Improvements	Transit Improvements Subtotal	0.00			
		Land Use and Site Enhancement Subtotal	0.00			
No	Commute	Implement Trip Reduction Program				
No	Commute	Transit Subsidy				
No	Commute	Implement Employee Parking "Cash Out"				
No	Commute	Workplace Parking Charge				
No	Commute	Encourage Telecommuting and Alternative Work Schedules	0.00			
No	Commute	Market Commute Trip Reduction Option	0.00			
No	Commute	Employee Vanpool/Shuttle	0.00		2.00	
No	Commute	Provide Ride Sharing Program				
	Commute	Commute Subtotal	0.00			

No	School Trip	Implement School Bus Program	0.00			
		Total VMT Reduction	0.00			

Area Mitigation

Measure Implemented	Mitigation Measure	Input Value
No	Only Natural Gas Hearth	
Yes	No Hearth	
Yes	Use Low VOC Cleaning Supplies	
No	Use Low VOC Paint (Residential Interior)	100.00
No	Use Low VOC Paint (Residential Exterior)	100.00
No	Use Low VOC Paint (Non-residential Interior)	150.00
No	Use Low VOC Paint (Non-residential Exterior)	150.00
No	Use Low VOC Paint (Parking)	150.00
No	% Electric Lawnmower	0.00
No	% Electric Leafblower	0.00
No	% Electric Chainsaw	0.00

Energy Mitigation Measures

Measure Implemented	Mitigation Measure	Input Value 1	Input Value 2
Yes	Exceed Title 24	15.00	
No	Install High Efficiency Lighting	0.00	
Yes	On-site Renewable	0.00	50.00

Appliance Type	Land Use Subtype	% Improvement
ClothWasher		30.00
DishWasher		15.00
Fan		50.00
Refrigerator		15.00

Water Mitigation Measures

Measure Implemented	Mitigation Measure	Input Value 1	Input Value 2
Yes	Apply Water Conservation on Strategy	20.00	40.00
No	Use Reclaimed Water	0.00	0.00
No	Use Grey Water	0.00	
No	Install low-flow bathroom faucet	32.00	
No	Install low-flow Kitchen faucet	18.00	
No	Install low-flow Toilet	20.00	
No	Install low-flow Shower	20.00	
No	Turf Reduction	0.00	
No	Use Water Efficient Irrigation Systems	6.10	
No	Water Efficient Landscape	0.00	0.00

Solid Waste Mitigation

Mitigation Measures	Input Value

Institute Recycling and Composting Services Percent Reduction in Waste Disposed	

ARC CalEEMod
Cumulative Operations

ARC Operations (Cumulative)

Yolo County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Research & Development	1,510.00	1000sqft	44.70	1,510,000.00	0
Manufacturing	884.00	1000sqft	57.20	884,000.00	0
Other Asphalt Surfaces	0.60	Acre	0.60	26,136.00	0
Parking Lot	2,573.00	Space	11.20	1,029,200.00	0
Unenclosed Parking Structure	3,285.00	Space	5.28	1,314,000.00	0
Hotel	150.00	Room	5.00	160,000.00	0
Apartments Mid Rise	570.00	Dwelling Unit	15.00	570,000.00	1630
Condo/Townhouse High Rise	280.00	Dwelling Unit	4.38	280,000.00	801
Regional Shopping Center	100.00	1000sqft	2.30	100,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	6.8	**Precipitation Freq (Days)**	54
Climate Zone	2			**Operational Year**	2035
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	116.67	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - CO2 Intensity Factor adjusted to reflect PG&E's calculated progress towards RPS

Land Use - Information based on project application

Construction Phase - Construction modeled separately

Off-road Equipment - Construction modeled separately

Trips and VMT - Construction modeled separately

Grading -

Vehicle Trips - Adjusted based on project-specific traffic information from Fehr and Peers

Road Dust - Adjusted based on location in County and urban nature of the project

Energy Use - Energy intensity upgraded in compliance with 2019 CBSC

Area Mitigation - Per applicant provided information

Energy Mitigation - Per applicant provided information

Water Mitigation - Per applicant provided information

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	120.00	1.00
tblEnergyUse	T24E	460.92	428.66
tblEnergyUse	T24E	460.92	428.66
tblEnergyUse	T24E	1.87	4.31
tblEnergyUse	T24E	1.65	1.16
tblEnergyUse	T24E	3.90	2.73
tblEnergyUse	T24E	1.65	1.16
tblEnergyUse	T24NG	7,061.10	6,566.82
tblEnergyUse	T24NG	7,061.10	6,566.82
tblEnergyUse	T24NG	26.46	18.52
tblEnergyUse	T24NG	18.58	13.01
tblEnergyUse	T24NG	11.34	7.94
tblEnergyUse	T24NG	18.58	13.01

tblLandUse	LandUseSquareFeet	217,800.00	160,000.00
tblLandUse	LotAcreage	34.66	44.70
tblLandUse	LotAcreage	20.29	57.20
tblLandUse	LotAcreage	23.16	11.20
tblLandUse	LotAcreage	29.56	5.28
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00
tblProjectCharacteristics	CO2IntensityFactor	641.35	116.67
tblRoadDust	RoadPercentPave	94	100
tblVehicleTrips	CC_TL	5.00	6.89
tblVehicleTrips	CC_TL	5.00	6.89
tblVehicleTrips	CC_TL	5.00	6.89
tblVehicleTrips	CC_TL	5.00	6.89
tblVehicleTrips	CNW_TL	7.00	9.65
tblVehicleTrips	CNW_TL	7.00	9.65
tblVehicleTrips	CNW_TL	7.00	9.65
tblVehicleTrips	CNW_TL	7.00	9.65
tblVehicleTrips	CW_TL	10.00	13.80
tblVehicleTrips	CW_TL	10.00	13.80
tblVehicleTrips	CW_TL	10.00	13.80
tblVehicleTrips	CW_TL	10.00	13.80
tblVehicleTrips	HO_TL	7.00	9.65
tblVehicleTrips	HO_TL	7.00	9.65
tblVehicleTrips	HS_TL	5.00	6.89
tblVehicleTrips	HS_TL	5.00	6.89
tblVehicleTrips	HW_TL	10.00	13.80
tblVehicleTrips	HW_TL	10.00	13.80

tblVehicleTrips	WD_TR	6.65	4.94
tblVehicleTrips	WD_TR	4.18	6.73
tblVehicleTrips	WD_TR	8.17	7.67
tblVehicleTrips	WD_TR	3.82	3.57
tblVehicleTrips	WD_TR	42.70	9.24
tblVehicleTrips	WD_TR	8.11	9.24

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2021	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
		Highest		

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	95.4427	1.4664	104.0172	0.1767		13.7288	13.7288		13.7288	13.7288	1,305.1248	378.6877	1,683.8125	1.2299	0.0990	1,744.0690
Energy	0.2318	2.0842	1.6005	0.0126		0.1602	0.1602		0.1602	0.1602	0.0000	3,770.1172	3,770.1172	0.4109	0.1180	3,815.5421
Mobile	3.4050	37.4515	38.5607	0.2634	24.5053	0.1119	24.6172	6.6209	0.1046	6.7255	0.0000	24,475.1388	24,475.1388	0.6170	0.0000	24,490.5638
Waste						0.0000	0.0000		0.0000	0.0000	363.1590	0.0000	363.1590	21.4621	0.0000	899.7109
Water						0.0000	0.0000		0.0000	0.0000	321.5292	297.5985	619.1277	33.0981	0.7951	1,683.5129
Total	**99.0794**	**41.0021**	**144.1783**	**0.4528**	**24.5053**	**14.0008**	**38.5061**	**6.6209**	**13.9935**	**20.6144**	**1,989.8129**	**28,921.5421**	**30,911.3551**	**56.8180**	**1.0121**	**32,633.3988**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	15.4365	0.0733	6.3669	3.4000e-004		0.0353	0.0353		0.0353	0.0353	0.0000	10.4614	10.4614	0.0102	0.0000	10.7165
Energy	0.1991	1.7890	1.3685	0.0109		0.1375	0.1375		0.1375	0.1375	0.0000	2,691.7635	2,691.7635	0.2172	0.0732	2,719.0158
Mobile	3.4050	37.4515	38.5607	0.2634	24.5053	0.1119	24.6172	6.6209	0.1046	6.7255	0.0000	24,475.1388	24,475.1388	0.6170	0.0000	24,490.5638
Waste						0.0000	0.0000		0.0000	0.0000	363.1590	0.0000	363.1590	21.4621	0.0000	899.7109
Water						0.0000	0.0000		0.0000	0.0000	257.2234	236.6016	493.8249	26.4781	0.6360	1,345.3013
Total	**19.0405**	**39.3137**	**46.2960**	**0.2746**	**24.5053**	**0.2847**	**24.7900**	**6.6209**	**0.2774**	**6.8983**	**620.3823**	**27,413.9652**	**28,034.3475**	**48.7846**	**0.7092**	**29,465.3083**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**80.78**	**4.12**	**67.89**	**39.35**	**0.00**	**97.97**	**35.62**	**0.00**	**98.02**	**66.54**	**68.82**	**5.21**	**9.31**	**14.14**	**29.92**	**9.71**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	1/6/2021	1/6/2021	5	1	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 17.08

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

<u>OffRoad Equipment</u>

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	0	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	0	8.00	97	0.37

<u>Trips and VMT</u>

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	0	0.00	0.00	0.00	10.00	7.00	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Site Preparation - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.2 Site Preparation - 2021

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	3.4050	37.4515	38.5607	0.2634	24.5053	0.1119	24.6172	6.6209	0.1046	6.7255	0.0000	24,475.1388	24,475.1388	0.6170	0.0000	24,490.5638
Unmitigated	3.4050	37.4515	38.5607	0.2634	24.5053	0.1119	24.6172	6.6209	0.1046	6.7255	0.0000	24,475.1388	24,475.1388	0.6170	0.0000	24,490.5638

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	2,815.80	3,642.30	3340.20	10,889,748	10,889,748
Condo/Townhouse High Rise	1,884.40	1,206.80	960.40	5,992,141	5,992,141
Hotel	1,150.50	1,228.50	892.50	2,421,152	2,421,152
Manufacturing	3,155.88	1,317.16	548.08	9,692,892	9,692,892
Other Asphalt Surfaces	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Regional Shopping Center	924.00	4,997.00	2524.00	3,390,447	3,390,447
Research & Development	13,952.40	2,869.00	1676.10	32,133,561	32,133,561
Unenclosed Parking Structure	0.00	0.00	0.00		
Total	23,882.98	15,260.76	9,941.28	64,519,941	64,519,941

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Mid Rise	13.80	6.89	9.65	46.00	13.00	41.00	86	11	3
Condo/Townhouse High Rise	13.80	6.89	9.65	46.00	13.00	41.00	86	11	3
Hotel	13.80	6.89	9.65	19.40	61.60	19.00	58	38	4
Manufacturing	13.80	6.89	9.65	59.00	28.00	13.00	92	5	3
Other Asphalt Surfaces	10.00	5.00	7.00	0.00	0.00	0.00	0	0	0
Parking Lot	10.00	5.00	7.00	0.00	0.00	0.00	0	0	0
Regional Shopping Center	13.80	6.89	9.65	16.30	64.70	19.00	54	35	11
Research & Development	13.80	6.89	9.65	33.00	48.00	19.00	82	15	3
Unenclosed Parking Structure	10.00	5.00	7.00	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Mid Rise	0.510775	0.034299	0.212670	0.100609	0.010702	0.004092	0.073108	0.045201	0.001012	0.001235	0.005125	0.000644	0.000526
Condo/Townhouse High Rise	0.510775	0.034299	0.212670	0.100609	0.010702	0.004092	0.073108	0.045201	0.001012	0.001235	0.005125	0.000644	0.000526
Hotel	0.510775	0.034299	0.212670	0.100609	0.010702	0.004092	0.073108	0.045201	0.001012	0.001235	0.005125	0.000644	0.000526
Manufacturing	0.510775	0.034299	0.212670	0.100609	0.010702	0.004092	0.073108	0.045201	0.001012	0.001235	0.005125	0.000644	0.000526
Other Asphalt Surfaces	0.510775	0.034299	0.212670	0.100609	0.010702	0.004092	0.073108	0.045201	0.001012	0.001235	0.005125	0.000644	0.000526
Parking Lot	0.510775	0.034299	0.212670	0.100609	0.010702	0.004092	0.073108	0.045201	0.001012	0.001235	0.005125	0.000644	0.000526
Regional Shopping Center	0.510775	0.034299	0.212670	0.100609	0.010702	0.004092	0.073108	0.045201	0.001012	0.001235	0.005125	0.000644	0.000526
Research & Development	0.510775	0.034299	0.212670	0.100609	0.010702	0.004092	0.073108	0.045201	0.001012	0.001235	0.005125	0.000644	0.000526
Unenclosed Parking Structure	0.510775	0.034299	0.212670	0.100609	0.010702	0.004092	0.073108	0.045201	0.001012	0.001235	0.005125	0.000644	0.000526

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Exceed Title 24

Percent of Electricity Use Generated with Renewable Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	721.7112	721.7112	0.1794	0.0371	737.2564
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	1,476.0003	1,476.0003	0.3669	0.0759	1,507.7925
NaturalGas Mitigated	0.1991	1.7890	1.3685	0.0109		0.1375	0.1375		0.1375	0.1375	0.0000	1,970.0523	1,970.0523	0.0378	0.0361	1,981.7594
NaturalGas Unmitigated	0.2318	2.0842	1.6005	0.0126		0.1602	0.1602		0.1602	0.1602	0.0000	2,294.1169	2,294.1169	0.0440	0.0421	2,307.7497

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Mid Rise	5.27468e+006	0.0284	0.2431	0.1034	1.5500e-003		0.0197	0.0197		0.0197	0.0197	0.0000	281.4769	281.4769	5.3900e-003	5.1600e-003	283.1496
Condo/Townhouse High Rise	2.59107e+006	0.0140	0.1194	0.0508	7.6000e-004		9.6500e-003	9.6500e-003		9.6500e-003	9.6500e-003	0.0000	138.2693	138.2693	2.6500e-003	2.5300e-003	139.0910
Hotel	3.0048e+006	0.0162	0.1473	0.1237	8.8000e-004		0.0112	0.0112		0.0112	0.0112	0.0000	160.3476	160.3476	3.0700e-003	2.9400e-003	161.3004
Manufacturing	1.15539e+007	0.0623	0.5664	0.4758	3.4000e-003		0.0430	0.0430		0.0430	0.0430	0.0000	616.5590	616.5590	0.0118	0.0113	620.2229
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	830000	4.4800e-003	0.0407	0.0342	2.4000e-004		3.0900e-003	3.0900e-003		3.0900e-003	3.0900e-003	0.0000	44.2920	44.2920	8.5000e-004	8.1000e-004	44.5552
Research & Development	1.97357e+007	0.1064	0.9674	0.8127	5.8000e-003		0.0735	0.0735		0.0735	0.0735	0.0000	1,053.1721	1,053.1721	0.0202	0.0193	1,059.4306
Unenclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.2318**	**2.0842**	**1.6006**	**0.0126**		**0.1602**	**0.1602**		**0.1602**	**0.1602**	**0.0000**	**2,294.1169**	**2,294.1169**	**0.0440**	**0.0421**	**2,307.7497**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Apartments Mid Rise	4.71321e+006	0.0254	0.2172	0.0924	1.3900e-003		0.0176	0.0176		0.0176	0.0176	0.0000	251.5151	251.5151	4.8200e-003	4.6100e-003	253.0097
Condo/Townhouse High Rise	2.31526e+006	0.0125	0.1067	0.0454	6.8000e-004		8.6300e-003	8.6300e-003		8.6300e-003	8.6300e-003	0.0000	123.5513	123.5513	2.3700e-003	2.2700e-003	124.2855
Hotel	2.56032e+006	0.0138	0.1255	0.1054	7.5000e-004		9.5400e-003	9.5400e-003		9.5400e-003	9.5400e-003	0.0000	136.6284	136.6284	2.6200e-003	2.5000e-003	137.4403
Manufacturing	9.82875e+006	0.0530	0.4818	0.4047	2.8900e-003		0.0366	0.0366		0.0366	0.0366	0.0000	524.4997	524.4997	0.0101	9.6200e-003	527.6166
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	710900	3.8300e-003	0.0349	0.0293	2.1000e-004		2.6500e-003	2.6500e-003		2.6500e-003	2.6500e-003	0.0000	37.9363	37.9363	7.3000e-004	7.0000e-004	38.1618
Research & Development	1.67889e+007	0.0905	0.8230	0.6913	4.9400e-003		0.0626	0.0626		0.0626	0.0626	0.0000	895.9215	895.9215	0.0172	0.0164	901.2455
Unenclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total		**0.1991**	**1.7890**	**1.3685**	**0.0109**		**0.1376**	**0.1376**		**0.1376**	**0.1376**	**0.0000**	**1,970.0523**	**1,970.0523**	**0.0378**	**0.0361**	**1,981.7594**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	2.40779e +006	127.4220	0.0317	6.5500e-003	130.1666
Condo/Townhouse High Rise	1.25548e +006	66.4408	0.0165	3.4200e-003	67.8719
Hotel	1.4496e +006	76.7137	0.0191	3.9500e-003	78.3661
Manufacturing	7.03664e +006	372.3834	0.0926	0.0192	380.4043
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	360220	19.0631	4.7400e-003	9.8000e-004	19.4737
Regional Shopping Center	1.062e +006	56.2017	0.0140	2.8900e-003	57.4123
Research & Development	1.20196e +007	636.0847	0.1581	0.0327	649.7856
Unenclosed Parking Structure	2.2995e +006	121.6910	0.0303	6.2600e-003	124.3121
Total		**1,476.0003**	**0.3669**	**0.0759**	**1,507.7925**

5.3 Energy by Land Use - Electricity

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	1.18557e +006	62.7412	0.0156	3.2300e-003	64.0926
Condo/Townhouse High Rise	618739	32.7440	8.1400e-003	1.6800e-003	33.4493
Hotel	673080	35.6198	8.8500e-003	1.8300e-003	36.3870
Manufacturing	3.44141e +006	182.1217	0.0453	9.3700e-003	186.0445
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	180110	9.5315	2.3700e-003	4.9000e-004	9.7368
Regional Shopping Center	510525	27.0173	6.7200e-003	1.3900e-003	27.5992
Research & Development	5.87843e +006	311.0902	0.0773	0.0160	317.7909
Unenclosed Parking Structure	1.14975e +006	60.8455	0.0151	3.1300e-003	62.1561
Total		**721.7112**	**0.1794**	**0.0371**	**737.2564**

6.0 Area Detail

6.1 Mitigation Measures Area

No Hearths Installed

Use Low VOC Cleaning Supplies

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	15.4365	0.0733	6.3669	3.4000e-004		0.0353	0.0353		0.0353	0.0353	0.0000	10.4614	10.4614	0.0102	0.0000	10.7165
Unmitigated	95.4427	1.4664	104.0172	0.1767		13.7288	13.7288		13.7288	13.7288	1,305.1248	378.6877	1,683.8125	1.2299	0.0990	1,744.0690

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	2.4265					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	13.8380					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	78.9830	1.3932	97.6503	0.1764		13.6935	13.6935		13.6935	13.6935	1,305.1248	368.2263	1,673.3511	1.2197	0.0990	1,733.3525
Landscaping	0.1952	0.0733	6.3669	3.4000e-004		0.0353	0.0353		0.0353	0.0353	0.0000	10.4614	10.4614	0.0102	0.0000	10.7165
Total	**95.4427**	**1.4664**	**104.0172**	**0.1767**		**13.7288**	**13.7288**		**13.7288**	**13.7288**	**1,305.1248**	**378.6877**	**1,683.8125**	**1.2300**	**0.0990**	**1,744.0690**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	2.4265					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	12.8149					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	0.1952	0.0733	6.3669	3.4000e-004		0.0353	0.0353		0.0353	0.0353	0.0000	10.4614	10.4614	0.0102	0.0000	10.7165
Total	**15.4365**	**0.0733**	**6.3669**	**3.4000e-004**		**0.0353**	**0.0353**		**0.0353**	**0.0353**	**0.0000**	**10.4614**	**10.4614**	**0.0102**	**0.0000**	**10.7165**

7.0 Water Detail

7.1 Mitigation Measures Water

Apply Water Conservation Strategy

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	493.8249	26.4781	0.6360	1,345.3013
Unmitigated	619.1277	33.0981	0.7951	1,683.5129

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	37.1378 / 23.413	26.7532	1.2139	0.0293	65.8441
Condo/Townhouse High Rise	18.2431 / 11.5011	13.1419	0.5963	0.0144	32.3445
Hotel	3.80502 / 0.422779	2.3750	0.1243	2.9900e-003	6.3723
Manufacturing	204.425 / 0	123.3924	6.6757	0.1603	338.0541
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	7.40725 / 4.53993	5.3120	0.2421	5.8500e-003	13.1083
Research & Development	742.458 / 0	448.1530	24.2459	0.5822	1,227.7897
Unenclosed Parking Structure	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**619.1276**	**33.0981**	**0.7951**	**1,683.5129**

7.2 Water by Land Use

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	29.7102 / 14.0478	20.5353	0.9709	0.0234	51.7893
Condo/Townhouse High Rise	14.5945 / 6.90066	10.0875	0.4769	0.0115	25.4404
Hotel	3.04401 / 0.253668	1.8844	0.0994	2.3900e-003	5.0818
Manufacturing	163.54 / 0	98.7140	5.3406	0.1282	270.4433
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	5.9258 / 2.72396	4.0814	0.1936	4.6700e-003	10.3148
Research & Development	593.966 / 0	358.5224	19.3967	0.4658	982.2317
Unenclosed Parking Structure	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		**493.8249**	**26.4781**	**0.6360**	**1,345.3013**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	363.1590	21.4621	0.0000	899.7109
Unmitigated	363.1590	21.4621	0.0000	899.7109

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	262.2	53.2242	3.1455	0.0000	131.8608
Condo/Townhouse High Rise	128.8	26.1452	1.5451	0.0000	64.7737
Hotel	82.13	16.6717	0.9853	0.0000	41.3033
Manufacturing	1096.16	222.5106	13.1500	0.0000	551.2605
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	105	21.3141	1.2596	0.0000	52.8047
Research & Development	114.75	23.2932	1.3766	0.0000	57.7080
Unenclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000
Total		**363.1590**	**21.4621**	**0.0000**	**899.7109**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	262.2	53.2242	3.1455	0.0000	131.8608
Condo/Townhouse High Rise	128.8	26.1452	1.5451	0.0000	64.7737
Hotel	82.13	16.6717	0.9853	0.0000	41.3033
Manufacturing	1096.16	222.5106	13.1500	0.0000	551.2605
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	105	21.3141	1.2596	0.0000	52.8047
Research & Development	114.75	23.2932	1.3766	0.0000	57.7080
Unenclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000
Total		**363.1590**	**21.4621**	**0.0000**	**899.7109**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

ARC Operations (Cumulative)

Yolo County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Research & Development	1,510.00	1000sqft	44.70	1,510,000.00	0
Manufacturing	884.00	1000sqft	57.20	884,000.00	0
Other Asphalt Surfaces	0.60	Acre	0.60	26,136.00	0
Parking Lot	2,573.00	Space	11.20	1,029,200.00	0
Unenclosed Parking Structure	3,285.00	Space	5.28	1,314,000.00	0
Hotel	150.00	Room	5.00	160,000.00	0
Apartments Mid Rise	570.00	Dwelling Unit	15.00	570,000.00	1630
Condo/Townhouse High Rise	280.00	Dwelling Unit	4.38	280,000.00	801
Regional Shopping Center	100.00	1000sqft	2.30	100,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	6.8	**Precipitation Freq (Days)**	54
Climate Zone	2			**Operational Year**	2035
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	116.67	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - CO2 Intensity Factor adjusted to reflect PG&E's calculated progress towards RPS

Land Use - Information based on project application

Construction Phase - Construction modeled separately

Off-road Equipment - Construction modeled separately

Trips and VMT - Construction modeled separately

Grading -

Vehicle Trips - Adjusted based on project-specific traffic information from Fehr and Peers

Road Dust - Adjusted based on location in County and urban nature of the project

Energy Use - Energy intensity upgraded in compliance with 2019 CBSC

Area Mitigation - Per applicant provided information

Energy Mitigation - Per applicant provided information

Water Mitigation - Per applicant provided information

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	120.00	1.00
tblEnergyUse	T24E	460.92	428.66
tblEnergyUse	T24E	460.92	428.66
tblEnergyUse	T24E	1.87	4.31
tblEnergyUse	T24E	1.65	1.16
tblEnergyUse	T24E	3.90	2.73
tblEnergyUse	T24E	1.65	1.16
tblEnergyUse	T24NG	7,061.10	6,566.82
tblEnergyUse	T24NG	7,061.10	6,566.82
tblEnergyUse	T24NG	26.46	18.52
tblEnergyUse	T24NG	18.58	13.01
tblEnergyUse	T24NG	11.34	7.94
tblEnergyUse	T24NG	18.58	13.01

tblLandUse	LandUseSquareFeet	217,800.00	160,000.00
tblLandUse	LotAcreage	34.66	44.70
tblLandUse	LotAcreage	20.29	57.20
tblLandUse	LotAcreage	23.16	11.20
tblLandUse	LotAcreage	29.56	5.28
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00
tblProjectCharacteristics	CO2IntensityFactor	641.35	116.67
tblRoadDust	RoadPercentPave	94	100
tblVehicleTrips	CC_TL	5.00	6.89
tblVehicleTrips	CC_TL	5.00	6.89
tblVehicleTrips	CC_TL	5.00	6.89
tblVehicleTrips	CC_TL	5.00	6.89
tblVehicleTrips	CNW_TL	7.00	9.65
tblVehicleTrips	CNW_TL	7.00	9.65
tblVehicleTrips	CNW_TL	7.00	9.65
tblVehicleTrips	CNW_TL	7.00	9.65
tblVehicleTrips	CW_TL	10.00	13.80
tblVehicleTrips	CW_TL	10.00	13.80
tblVehicleTrips	CW_TL	10.00	13.80
tblVehicleTrips	CW_TL	10.00	13.80
tblVehicleTrips	HO_TL	7.00	9.65
tblVehicleTrips	HO_TL	7.00	9.65
tblVehicleTrips	HS_TL	5.00	6.89
tblVehicleTrips	HS_TL	5.00	6.89
tblVehicleTrips	HW_TL	10.00	13.80
tblVehicleTrips	HW_TL	10.00	13.80

tblVehicleTrips	WD_TR	6.65	4.94
tblVehicleTrips	WD_TR	4.18	6.73
tblVehicleTrips	WD_TR	8.17	7.67
tblVehicleTrips	WD_TR	3.82	3.57
tblVehicleTrips	WD_TR	42.70	9.24
tblVehicleTrips	WD_TR	8.11	9.24

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	2,017.7035	34.7937	2,452.4575	4.3059		334.3797	334.3797		334.3797	334.3797	35,089.1179	10,028.1303	45,117.2481	32.9184	2.6622	46,733.5487
Energy	1.2702	11.4204	8.7700	0.0693		0.8776	0.8776		0.8776	0.8776		13,856.6082	13,856.6082	0.2656	0.2540	13,938.9511
Mobile	31.3813	278.3404	320.0547	2.0615	186.9409	0.8302	187.7710	50.3637	0.7761	51.1398		210,895.2565	210,895.2565	5.0901		211,022.5096
Total	**2,050.3550**	**324.5545**	**2,781.2822**	**6.4367**	**186.9409**	**336.0875**	**523.0283**	**50.3637**	**336.0334**	**386.3971**	**35,089.1179**	**234,779.9950**	**269,869.1128**	**38.2741**	**2.9163**	**271,695.0094**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	85.6825	0.8140	70.7428	3.7700e-003		0.3920	0.3920		0.3920	0.3920	0.0000	128.1303	128.1303	0.1250	0.0000	131.2552
Energy	1.0908	9.8028	7.4988	0.0595		0.7536	0.7536		0.7536	0.7536		11,899.2382	11,899.2382	0.2281	0.2182	11,969.9494
Mobile	31.3813	278.3404	320.0547	2.0615	186.9409	0.8302	187.7710	50.3637	0.7761	51.1398		210,895.2565	210,895.2565	5.0901		211,022.5096
Total	**118.1546**	**288.9571**	**398.2963**	**2.1248**	**186.9409**	**1.9757**	**188.9166**	**50.3637**	**1.9217**	**52.2854**	**0.0000**	**222,922.6249**	**222,922.6249**	**5.4432**	**0.2182**	**223,123.7142**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**94.24**	**10.97**	**85.68**	**66.99**	**0.00**	**99.41**	**63.88**	**0.00**	**99.43**	**86.47**	**100.00**	**5.05**	**17.40**	**85.78**	**92.52**	**17.88**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	1/6/2021	1/6/2021	5	1	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 17.08

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	0	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	0	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	0	0.00	0.00	0.00	10.00	7.00	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Site Preparation - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

3.2 Site Preparation - 2021

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	lb/day										lb/day					
Mitigated	31.3813	278.3404	320.0547	2.0615	186.9409	0.8302	187.7710	50.3637	0.7761	51.1398		210,895.2565	210,895.2565	5.0901		211,022.5096
Unmitigated	31.3813	278.3404	320.0547	2.0615	186.9409	0.8302	187.7710	50.3637	0.7761	51.1398		210,895.2565	210,895.2565	5.0901		211,022.5096

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	2,815.80	3,642.30	3340.20	10,889,748	10,889,748
Condo/Townhouse High Rise	1,884.40	1,206.80	960.40	5,992,141	5,992,141
Hotel	1,150.50	1,228.50	892.50	2,421,152	2,421,152
Manufacturing	3,155.88	1,317.16	548.08	9,692,892	9,692,892
Other Asphalt Surfaces	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Regional Shopping Center	924.00	4,997.00	2524.00	3,390,447	3,390,447
Research & Development	13,952.40	2,869.00	1676.10	32,133,561	32,133,561
Unenclosed Parking Structure	0.00	0.00	0.00		
Total	23,882.98	15,260.76	9,941.28	64,519,941	64,519,941

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Mid Rise	13.80	6.89	9.65	46.00	13.00	41.00	86	11	3
Condo/Townhouse High Rise	13.80	6.89	9.65	46.00	13.00	41.00	86	11	3
Hotel	13.80	6.89	9.65	19.40	61.60	19.00	58	38	4
Manufacturing	13.80	6.89	9.65	59.00	28.00	13.00	92	5	3
Other Asphalt Surfaces	10.00	5.00	7.00	0.00	0.00	0.00	0	0	0
Parking Lot	10.00	5.00	7.00	0.00	0.00	0.00	0	0	0
Regional Shopping Center	13.80	6.89	9.65	16.30	64.70	19.00	54	35	11
Research & Development	13.80	6.89	9.65	33.00	48.00	19.00	82	15	3
Unenclosed Parking Structure	10.00	5.00	7.00	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Mid Rise	0.510775	0.034299	0.212670	0.100609	0.010702	0.004092	0.073108	0.045201	0.001012	0.001235	0.005125	0.000644	0.000526
Condo/Townhouse High Rise	0.510775	0.034299	0.212670	0.100609	0.010702	0.004092	0.073108	0.045201	0.001012	0.001235	0.005125	0.000644	0.000526
Hotel	0.510775	0.034299	0.212670	0.100609	0.010702	0.004092	0.073108	0.045201	0.001012	0.001235	0.005125	0.000644	0.000526
Manufacturing	0.510775	0.034299	0.212670	0.100609	0.010702	0.004092	0.073108	0.045201	0.001012	0.001235	0.005125	0.000644	0.000526
Other Asphalt Surfaces	0.510775	0.034299	0.212670	0.100609	0.010702	0.004092	0.073108	0.045201	0.001012	0.001235	0.005125	0.000644	0.000526
Parking Lot	0.510775	0.034299	0.212670	0.100609	0.010702	0.004092	0.073108	0.045201	0.001012	0.001235	0.005125	0.000644	0.000526
Regional Shopping Center	0.510775	0.034299	0.212670	0.100609	0.010702	0.004092	0.073108	0.045201	0.001012	0.001235	0.005125	0.000644	0.000526
Research & Development	0.510775	0.034299	0.212670	0.100609	0.010702	0.004092	0.073108	0.045201	0.001012	0.001235	0.005125	0.000644	0.000526
Unenclosed Parking Structure	0.510775	0.034299	0.212670	0.100609	0.010702	0.004092	0.073108	0.045201	0.001012	0.001235	0.005125	0.000644	0.000526

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Exceed Title 24

Percent of Electricity Use Generated with Renewable Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	1.0908	9.8028	7.4988	0.0595		0.7536	0.7536		0.7536	0.7536		11,899.2382	11,899.2382	0.2281	0.2182	11,969.9494
NaturalGas Unmitigated	1.2702	11.4204	8.7700	0.0693		0.8776	0.8776		0.8776	0.8776		13,856.6082	13,856.6082	0.2656	0.2540	13,938.9511

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Apartments Mid Rise	14451.2	0.1559	1.3318	0.5667	8.5000e-003		0.1077	0.1077		0.1077	0.1077		1,700.1378	1,700.1378	0.0326	0.0312	1,710.2408
Condo/Townhouse High Rise	7098.82	0.0766	0.6542	0.2784	4.1800e-003		0.0529	0.0529		0.0529	0.0529		835.1554	835.1554	0.0160	0.0153	840.1183
Hotel	8232.33	0.0888	0.8071	0.6780	4.8400e-003		0.0613	0.0613		0.0613	0.0613		968.5093	968.5093	0.0186	0.0178	974.2646
Manufacturing	31654.5	0.3414	3.1034	2.6068	0.0186		0.2359	0.2359		0.2359	0.2359		3,724.0548	3,724.0548	0.0714	0.0683	3,746.1850
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	2273.97	0.0245	0.2229	0.1873	1.3400e-003		0.0169	0.0169		0.0169	0.0169		267.5262	267.5262	5.1300e-003	4.9000e-003	269.1160
Research & Development	54070.4	0.5831	5.3010	4.4529	0.0318		0.4029	0.4029		0.4029	0.4029		6,361.2248	6,361.2248	0.1219	0.1166	6,399.0264
Unenclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**1.2702**	**11.4204**	**8.7700**	**0.0693**		**0.8776**	**0.8776**		**0.8776**	**0.8776**		**13,856.6082**	**13,856.6082**	**0.2656**	**0.2540**	**13,938.9511**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Apartments Mid Rise	12.9129	0.1393	1.1900	0.5064	7.6000e-003		0.0962	0.0962		0.0962	0.0962		1,519.1666	1,519.1666	0.0291	0.0279	1,528.1942
Condo/Townhouse High Rise	6.34319	0.0684	0.5846	0.2488	3.7300e-003		0.0473	0.0473		0.0473	0.0473		746.2573	746.2573	0.0143	0.0137	750.6919
Hotel	7.01458	0.0757	0.6877	0.5777	4.1300e-003		0.0523	0.0523		0.0523	0.0523		825.2442	825.2442	0.0158	0.0151	830.1482
Manufacturing	26.9281	0.2904	2.6400	2.2176	0.0158		0.2006	0.2006		0.2006	0.2006		3,168.0110	3,168.0110	0.0607	0.0581	3,186.8369
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	1.94767	0.0210	0.1910	0.1604	1.1500e-003		0.0145	0.0145		0.0145	0.0145		229.1378	229.1378	4.3900e-003	4.2000e-003	230.4994
Research & Development	45.9971	0.4961	4.5095	3.7880	0.0271		0.3427	0.3427		0.3427	0.3427		5,411.4214	5,411.4214	0.1037	0.0992	5,443.5788
Unenclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**1.0908**	**9.8028**	**7.4988**	**0.0595**		**0.7536**	**0.7536**		**0.7536**	**0.7536**		**11,899.2382**	**11,899.2382**	**0.2281**	**0.2182**	**11,969.9494**

6.0 Area Detail

6.1 Mitigation Measures Area

No Hearths Installed

Use Low VOC Cleaning Supplies

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	85.6825	0.8140	70.7428	3.7700e-003		0.3920	0.3920		0.3920	0.3920	0.0000	128.1303	128.1303	0.1250	0.0000	131.2552
Unmitigated	2,017.7035	34.7937	2,452.4575	4.3059		334.3797	334.3797		334.3797	334.3797	35,089.1179	10,028.1303	45,117.2481	32.9184	2.6622	46,733.5487

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	13.2958					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	75.8248					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	1,926.4146	33.9797	2,381.7147	4.3022		333.9878	333.9878		333.9878	333.9878	35,089.1179	9,900.0000	44,989.1179	32.7934	2.6622	46,602.2935
Landscaping	2.1683	0.8140	70.7428	3.7700e-003		0.3920	0.3920		0.3920	0.3920		128.1303	128.1303	0.1250		131.2552
Total	**2,017.7035**	**34.7937**	**2,452.4575**	**4.3059**		**334.3798**	**334.3798**		**334.3798**	**334.3798**	**35,089.1179**	**10,028.1303**	**45,117.2481**	**32.9184**	**2.6622**	**46,733.5487**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	13.2958					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	70.2184					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	2.1683	0.8140	70.7428	3.7700e-003		0.3920	0.3920		0.3920	0.3920		128.1303	128.1303	0.1250		131.2552
Total	**85.6825**	**0.8140**	**70.7428**	**3.7700e-003**		**0.3920**	**0.3920**		**0.3920**	**0.3920**	**0.0000**	**128.1303**	**128.1303**	**0.1250**	**0.0000**	**131.2552**

7.0 Water Detail

7.1 Mitigation Measures Water

Apply Water Conservation Strategy

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

ARC Operations (Cumulative)

Yolo County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Research & Development	1,510.00	1000sqft	44.70	1,510,000.00	0
Manufacturing	884.00	1000sqft	57.20	884,000.00	0
Other Asphalt Surfaces	0.60	Acre	0.60	26,136.00	0
Parking Lot	2,573.00	Space	11.20	1,029,200.00	0
Unenclosed Parking Structure	3,285.00	Space	5.28	1,314,000.00	0
Hotel	150.00	Room	5.00	160,000.00	0
Apartments Mid Rise	570.00	Dwelling Unit	15.00	570,000.00	1630
Condo/Townhouse High Rise	280.00	Dwelling Unit	4.38	280,000.00	801
Regional Shopping Center	100.00	1000sqft	2.30	100,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	6.8	**Precipitation Freq (Days)**	54
Climate Zone	2			**Operational Year**	2035

Utility Company Pacific Gas & Electric Company

CO2 Intensity (lb/MWhr)	116.67	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - CO2 Intensity Factor adjusted to reflect PG&E's calculated progress towards RPS

Land Use - Information based on project application

Construction Phase - Construction modeled separately

Off-road Equipment - Construction modeled separately

Trips and VMT - Construction modeled separately

Grading -

Vehicle Trips - Adjusted based on project-specific traffic information from Fehr and Peers

Road Dust - Adjusted based on location in County and urban nature of the project

Energy Use - Energy intensity upgraded in compliance with 2019 CBSC

Area Mitigation - Per applicant provided information

Energy Mitigation - Per applicant provided information

Water Mitigation - Per applicant provided information

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	120.00	1.00
tblEnergyUse	T24E	460.92	428.66
tblEnergyUse	T24E	460.92	428.66
tblEnergyUse	T24E	1.87	4.31
tblEnergyUse	T24E	1.65	1.16
tblEnergyUse	T24E	3.90	2.73
tblEnergyUse	T24E	1.65	1.16
tblEnergyUse	T24NG	7,061.10	6,566.82
tblEnergyUse	T24NG	7,061.10	6,566.82
tblEnergyUse	T24NG	26.46	18.52
tblEnergyUse	T24NG	18.58	13.01
tblEnergyUse	T24NG	11.34	7.94
tblEnergyUse	T24NG	18.58	13.01

ARC Operations (Cumulative) - Yolo County, Winter

tblLandUse	LandUseSquareFeet	217,800.00	160,000.00
tblLandUse	LotAcreage	34.66	44.70
tblLandUse	LotAcreage	20.29	57.20
tblLandUse	LotAcreage	23.16	11.20
tblLandUse	LotAcreage	29.56	5.28
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00
tblProjectCharacteristics	CO2IntensityFactor	641.35	116.67
tblRoadDust	RoadPercentPave	94	100
tblVehicleTrips	CC_TL	5.00	6.89
tblVehicleTrips	CC_TL	5.00	6.89
tblVehicleTrips	CC_TL	5.00	6.89
tblVehicleTrips	CC_TL	5.00	6.89
tblVehicleTrips	CNW_TL	7.00	9.65
tblVehicleTrips	CNW_TL	7.00	9.65
tblVehicleTrips	CNW_TL	7.00	9.65
tblVehicleTrips	CNW_TL	7.00	9.65
tblVehicleTrips	CW_TL	10.00	13.80
tblVehicleTrips	CW_TL	10.00	13.80
tblVehicleTrips	CW_TL	10.00	13.80
tblVehicleTrips	CW_TL	10.00	13.80
tblVehicleTrips	HO_TL	7.00	9.65
tblVehicleTrips	HO_TL	7.00	9.65
tblVehicleTrips	HS_TL	5.00	6.89
tblVehicleTrips	HS_TL	5.00	6.89
tblVehicleTrips	HW_TL	10.00	13.80
tblVehicleTrips	HW_TL	10.00	13.80

tblVehicleTrips	WD_TR	6.65	4.94
tblVehicleTrips	WD_TR	4.18	6.73
tblVehicleTrips	WD_TR	8.17	7.67
tblVehicleTrips	WD_TR	3.82	3.57
tblVehicleTrips	WD_TR	42.70	9.24
tblVehicleTrips	WD_TR	8.11	9.24

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2021	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Maximum	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	2,017.7035	34.7937	2,452.4575	4.3059		334.3797	334.3797		334.3797	334.3797	35,089.1179	10,028.1303	45,117.2481	32.9184	2.6622	46,733.5487
Energy	1.2702	11.4204	8.7700	0.0693		0.8776	0.8776		0.8776	0.8776		13,856.6082	13,856.6082	0.2656	0.2540	13,938.9511
Mobile	24.3017	286.1381	296.4416	1.9178	186.9409	0.8328	187.7736	50.3637	0.7786	51.1423		196,448.2020	196,448.2020	5.3018		196,580.7467
Total	**2,043.2753**	**332.3522**	**2,757.6691**	**6.2930**	**186.9409**	**336.0901**	**523.0310**	**50.3637**	**336.0360**	**386.3996**	**35,089.1179**	**220,332.9405**	**255,422.0583**	**38.4858**	**2.9163**	**257,253.2464**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	85.6825	0.8140	70.7428	3.7700e-003		0.3920	0.3920		0.3920	0.3920	0.0000	128.1303	128.1303	0.1250	0.0000	131.2552
Energy	1.0908	9.8028	7.4988	0.0595		0.7536	0.7536		0.7536	0.7536		11,899.2382	11,899.2382	0.2281	0.2182	11,969.9494
Mobile	24.3017	286.1381	296.4416	1.9178	186.9409	0.8328	187.7736	50.3637	0.7786	51.1423		196,448.2020	196,448.2020	5.3018		196,580.7467
Total	**111.0749**	**296.7548**	**374.6832**	**1.9811**	**186.9409**	**1.9784**	**188.9192**	**50.3637**	**1.9242**	**52.2879**	**0.0000**	**208,475.5704**	**208,475.5704**	**5.6549**	**0.2182**	**208,681.9512**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	94.56	10.71	86.41	68.52	0.00	99.41	63.88	0.00	99.43	86.47	100.00	5.38	18.38	85.31	92.52	18.88

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	1/6/2021	1/6/2021	5	1	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 17.08

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Rubber Tired Dozers	0	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	0	8.00	97	0.37

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	0	0.00	0.00	0.00	10.00	7.00	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Site Preparation - 2021

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

3.2 Site Preparation - 2021

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	24.3017	286.1381	296.4416	1.9178	186.9409	0.8328	187.7736	50.3637	0.7786	51.1423		196,448.2020	196,448.2020	5.3018		196,580.7467
Unmitigated	24.3017	286.1381	296.4416	1.9178	186.9409	0.8328	187.7736	50.3637	0.7786	51.1423		196,448.2020	196,448.2020	5.3018		196,580.7467

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	2,815.80	3,642.30	3340.20	10,889,748	10,889,748
Condo/Townhouse High Rise	1,884.40	1,206.80	960.40	5,992,141	5,992,141
Hotel	1,150.50	1,228.50	892.50	2,421,152	2,421,152
Manufacturing	3,155.88	1,317.16	548.08	9,692,892	9,692,892
Other Asphalt Surfaces	0.00	0.00	0.00		
Parking Lot	0.00	0.00	0.00		
Regional Shopping Center	924.00	4,997.00	2524.00	3,390,447	3,390,447
Research & Development	13,952.40	2,869.00	1676.10	32,133,561	32,133,561
Unenclosed Parking Structure	0.00	0.00	0.00		
Total	23,882.98	15,260.76	9,941.28	64,519,941	64,519,941

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Apartments Mid Rise	13.80	6.89	9.65	46.00	13.00	41.00	86	11	3
Condo/Townhouse High Rise	13.80	6.89	9.65	46.00	13.00	41.00	86	11	3
Hotel	13.80	6.89	9.65	19.40	61.60	19.00	58	38	4
Manufacturing	13.80	6.89	9.65	59.00	28.00	13.00	92	5	3
Other Asphalt Surfaces	10.00	5.00	7.00	0.00	0.00	0.00	0	0	0
Parking Lot	10.00	5.00	7.00	0.00	0.00	0.00	0	0	0
Regional Shopping Center	13.80	6.89	9.65	16.30	64.70	19.00	54	35	11
Research & Development	13.80	6.89	9.65	33.00	48.00	19.00	82	15	3
Unenclosed Parking Structure	10.00	5.00	7.00	0.00	0.00	0.00	0	0	0

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Mid Rise	0.510775	0.034299	0.212670	0.100609	0.010702	0.004092	0.073108	0.045201	0.001012	0.001235	0.005125	0.000644	0.000526
Condo/Townhouse High Rise	0.510775	0.034299	0.212670	0.100609	0.010702	0.004092	0.073108	0.045201	0.001012	0.001235	0.005125	0.000644	0.000526
Hotel	0.510775	0.034299	0.212670	0.100609	0.010702	0.004092	0.073108	0.045201	0.001012	0.001235	0.005125	0.000644	0.000526
Manufacturing	0.510775	0.034299	0.212670	0.100609	0.010702	0.004092	0.073108	0.045201	0.001012	0.001235	0.005125	0.000644	0.000526
Other Asphalt Surfaces	0.510775	0.034299	0.212670	0.100609	0.010702	0.004092	0.073108	0.045201	0.001012	0.001235	0.005125	0.000644	0.000526
Parking Lot	0.510775	0.034299	0.212670	0.100609	0.010702	0.004092	0.073108	0.045201	0.001012	0.001235	0.005125	0.000644	0.000526
Regional Shopping Center	0.510775	0.034299	0.212670	0.100609	0.010702	0.004092	0.073108	0.045201	0.001012	0.001235	0.005125	0.000644	0.000526
Research & Development	0.510775	0.034299	0.212670	0.100609	0.010702	0.004092	0.073108	0.045201	0.001012	0.001235	0.005125	0.000644	0.000526
Unenclosed Parking Structure	0.510775	0.034299	0.212670	0.100609	0.010702	0.004092	0.073108	0.045201	0.001012	0.001235	0.005125	0.000644	0.000526

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Exceed Title 24

Percent of Electricity Use Generated with Renewable Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	1.0908	9.8028	7.4988	0.0595		0.7536	0.7536		0.7536	0.7536		11,899.238 2	11,899.238 2	0.2281	0.2182	11,969.949 4
NaturalGas Unmitigated	1.2702	11.4204	8.7700	0.0693		0.8776	0.8776		0.8776	0.8776		13,856.60 82	13,856.60 82	0.2656	0.2540	13,938.951 1

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Apartments Mid Rise	14451.2	0.1559	1.3318	0.5667	8.5000e-003		0.1077	0.1077		0.1077	0.1077		1,700.1378	1,700.1378	0.0326	0.0312	1,710.2408
Condo/Townhouse High Rise	7098.82	0.0766	0.6542	0.2784	4.1800e-003		0.0529	0.0529		0.0529	0.0529		835.1554	835.1554	0.0160	0.0153	840.1183
Hotel	8232.33	0.0888	0.8071	0.6780	4.8400e-003		0.0613	0.0613		0.0613	0.0613		968.5093	968.5093	0.0186	0.0178	974.2646
Manufacturing	31654.5	0.3414	3.1034	2.6068	0.0186		0.2359	0.2359		0.2359	0.2359		3,724.0548	3,724.0548	0.0714	0.0683	3,746.1850
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	2273.97	0.0245	0.2229	0.1873	1.3400e-003		0.0169	0.0169		0.0169	0.0169		267.5262	267.5262	5.1300e-003	4.9000e-003	269.1160
Research & Development	54070.4	0.5831	5.3010	4.4529	0.0318		0.4029	0.4029		0.4029	0.4029		6,361.2248	6,361.2248	0.1219	0.1166	6,399.0264
Unenclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**1.2702**	**11.4204**	**8.7700**	**0.0693**		**0.8776**	**0.8776**		**0.8776**	**0.8776**		**13,856.6082**	**13,856.6082**	**0.2656**	**0.2540**	**13,938.9511**

5.2 Energy by Land Use - NaturalGas

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Apartments Mid Rise	12.9129	0.1393	1.1900	0.5064	7.6000e-003		0.0962	0.0962		0.0962	0.0962		1,519.1666	1,519.1666	0.0291	0.0279	1,528.1942
Condo/Townhouse High Rise	6.34319	0.0684	0.5846	0.2488	3.7300e-003		0.0473	0.0473		0.0473	0.0473		746.2573	746.2573	0.0143	0.0137	750.6919
Hotel	7.01458	0.0757	0.6877	0.5777	4.1300e-003		0.0523	0.0523		0.0523	0.0523		825.2442	825.2442	0.0158	0.0151	830.1482
Manufacturing	26.9281	0.2904	2.6400	2.2176	0.0158		0.2006	0.2006		0.2006	0.2006		3,168.0110	3,168.0110	0.0607	0.0581	3,186.8369
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	1.94767	0.0210	0.1910	0.1604	1.1500e-003		0.0145	0.0145		0.0145	0.0145		229.1378	229.1378	4.3900e-003	4.2000e-003	230.4994
Research & Development	45.9971	0.4961	4.5095	3.7880	0.0271		0.3427	0.3427		0.3427	0.3427		5,411.4214	5,411.4214	0.1037	0.0992	5,443.5788
Unenclosed Parking Structure	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Total		**1.0908**	**9.8028**	**7.4988**	**0.0595**		**0.7536**	**0.7536**		**0.7536**	**0.7536**		**11,899.2382**	**11,899.2382**	**0.2281**	**0.2182**	**11,969.9494**

6.0 Area Detail

6.1 Mitigation Measures Area

No Hearths Installed

Use Low VOC Cleaning Supplies

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	85.6825	0.8140	70.7428	3.7700e-003		0.3920	0.3920		0.3920	0.3920	0.0000	128.1303	128.1303	0.1250	0.0000	131.2552
Unmitigated	2,017.7035	34.7937	2,452.4575	4.3059		334.3797	334.3797		334.3797	334.3797	35,089.1179	10,028.1303	45,117.2481	32.9184	2.6622	46,733.5487

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	13.2958					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	75.8248					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	1,926.4146	33.9797	2,381.7147	4.3022		333.9878	333.9878		333.9878	333.9878	35,089.1179	9,900.0000	44,989.1179	32.7934	2.6622	46,602.2935
Landscaping	2.1683	0.8140	70.7428	3.7700e-003		0.3920	0.3920		0.3920	0.3920		128.1303	128.1303	0.1250		131.2552
Total	**2,017.7035**	**34.7937**	**2,452.4575**	**4.3059**		**334.3798**	**334.3798**		**334.3798**	**334.3798**	**35,089.1179**	**10,028.1303**	**45,117.2481**	**32.9184**	**2.6622**	**46,733.5487**

6.2 Area by SubCategory

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	13.2958					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	70.2184					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Hearth	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	2.1683	0.8140	70.7428	3.7700e-003		0.3920	0.3920		0.3920	0.3920		128.1303	128.1303	0.1250		131.2552
Total	**85.6825**	**0.8140**	**70.7428**	**3.7700e-003**		**0.3920**	**0.3920**		**0.3920**	**0.3920**	**0.0000**	**128.1303**	**128.1303**	**0.1250**	**0.0000**	**131.2552**

7.0 Water Detail

7.1 Mitigation Measures Water

Apply Water Conservation Strategy

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

ARC Operations (Cumulative)

Yolo County, Mitigation Report

Construction Mitigation Summary

Phase	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction												
Site Preparation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

OFFROAD Equipment Mitigation

Equipment Type	Fuel Type	Tier	Number Mitigated	Total Number of Equipment	DPF	Oxidation Catalyst
Rubber Tired Dozers	Diesel	No Change	0	0	No Change	0.00
Tractors/Loaders/Backhoes	Diesel	No Change	0	0	No Change	0.00

Equipment Type	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	Unmitigated tons/yr						Unmitigated mt/yr					
Rubber Tired Dozers	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000
Tractors/Loaders/Backhoes	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000

Equipment Type	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	Mitigated tons/yr						Mitigated mt/yr					
Rubber Tired Dozers	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000
Tractors/Loaders/Backhoes	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000

Equipment Type	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction												
Rubber Tired Dozers	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000
Tractors/Loaders/Backhoes	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000

Fugitive Dust Mitigation

Yes/No	Mitigation Measure	Mitigation Input		Mitigation Input		Mitigation Input	
No	Soil Stabilizer for unpaved Roads	PM10 Reduction		PM2.5 Reduction			
No	Replace Ground Cover of Area Disturbed	PM10 Reduction		PM2.5 Reduction			
No	Water Exposed Area	PM10 Reduction		PM2.5 Reduction		Frequency (per day)	
No	Unpaved Road Mitigation	Moisture Content %		Vehicle Speed (mph)			
No	Clean Paved Road	% PM Reduction	0.00				

		Unmitigated		Mitigated		Percent Reduction	
Phase	Source	PM10	PM2.5	PM10	PM2.5	PM10	PM2.5
Site Preparation	Fugitive Dust	0.00	0.00	0.00	0.00	0.00	0.00
Site Preparation	Roads	0.00	0.00	0.00	0.00	0.00	0.00

Operational Percent Reduction Summary

Category	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction												
Architectural Coating	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	7.39	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Electricity	0.00	0.00	0.00	0.00	0.00	0.00	0.00	51.10	51.10	51.10	51.10	51.10
Hearth	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00
Landscaping	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mobile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Natural Gas	14.13	14.16	14.50	14.01	14.11	14.11	0.00	14.13	14.13	14.12	14.08	14.13
Water Indoor	0.00	0.00	0.00	0.00	0.00	0.00	20.00	20.50	20.24	20.00	20.01	20.09
Water Outdoor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Operational Mobile Mitigation

Project Setting:

Mitigation	Category	Measure	% Reduction	Input Value 1	Input Value 2	Input Value
No	Land Use	Increase Density	0.00			
No	Land Use	Increase Diversity	0.28	0.62		
No	Land Use	Improve Walkability Design	0.00			
No	Land Use	Improve Destination Accessibility	0.00			
No	Land Use	Increase Transit Accessibility	0.25			
No	Land Use	Integrate Below Market Rate Housing	0.00			
	Land Use	Land Use SubTotal	0.00			

No	Neighborhood Enhancements	Improve Pedestrian Network					
No	Neighborhood Enhancements	Provide Traffic Calming Measures					
No	Neighborhood Enhancements	Implement NEV Network	0.00				
	Neighborhood Enhancements	Neighborhood Enhancements Subtotal	0.00				
No	Parking Policy Pricing	Limit Parking Supply	0.00				
No	Parking Policy Pricing	Unbundle Parking Costs	0.00				
No	Parking Policy Pricing	On-street Market Pricing	0.00				
	Parking Policy Pricing	Parking Policy Pricing Subtotal	0.00				
No	Transit Improvements	Provide BRT System	0.00				
No	Transit Improvements	Expand Transit Network	0.00				
No	Transit Improvements	Increase Transit Frequency	0.00				
	Transit Improvements	Transit Improvements Subtotal	0.00				
		Land Use and Site Enhancement Subtotal	0.00				
No	Commute	Implement Trip Reduction Program					
No	Commute	Transit Subsidy					
No	Commute	Implement Employee Parking "Cash Out"					
No	Commute	Workplace Parking Charge					
No	Commute	Encourage Telecommuting and Alternative Work Schedules	0.00				
No	Commute	Market Commute Trip Reduction Option	0.00				
No	Commute	Employee Vanpool/Shuttle	0.00			2.00	
No	Commute	Provide Ride Sharing Program					
	Commute	Commute Subtotal	0.00				

No	School Trip	Implement School Bus Program	0.00			
		Total VMT Reduction	0.00			

Area Mitigation

Measure Implemented	Mitigation Measure	Input Value
No	Only Natural Gas Hearth	
Yes	No Hearth	
Yes	Use Low VOC Cleaning Supplies	
No	Use Low VOC Paint (Residential Interior)	100.00
No	Use Low VOC Paint (Residential Exterior)	100.00
No	Use Low VOC Paint (Non-residential Interior)	150.00
No	Use Low VOC Paint (Non-residential Exterior)	150.00
No	Use Low VOC Paint (Parking)	150.00
No	% Electric Lawnmower	0.00
No	% Electric Leafblower	0.00
No	% Electric Chainsaw	0.00

Energy Mitigation Measures

Measure Implemented	Mitigation Measure	Input Value 1	Input Value 2
Yes	Exceed Title 24	15.00	
No	Install High Efficiency Lighting	0.00	
Yes	On-site Renewable	0.00	50.00

Appliance Type	Land Use Subtype	% Improvement
ClothWasher		30.00
DishWasher		15.00
Fan		50.00
Refrigerator		15.00

Water Mitigation Measures

Measure Implemented	Mitigation Measure	Input Value 1	Input Value 2
Yes	Apply Water Conservation on Strategy	20.00	40.00
No	Use Reclaimed Water	0.00	0.00
No	Use Grey Water	0.00	
No	Install low-flow bathroom faucet	32.00	
No	Install low-flow Kitchen faucet	18.00	
No	Install low-flow Toilet	20.00	
No	Install low-flow Shower	20.00	
No	Turf Reduction	0.00	
No	Use Water Efficient Irrigation Systems	6.10	
No	Water Efficient Landscape	0.00	0.00

Solid Waste Mitigation

Mitigation Measures	Input Value

Institute Recycling and Composting Services Percent Reduction in Waste Disposed	

Mace Triangle CalEEMod
Existing Plus Project

Mace Triangle (Existing Plus Project)

Yolo County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Research & Development	45.90	1000sqft	1.05	45,901.00	0
Regional Shopping Center	25.16	1000sqft	0.58	25,155.00	0
Parking Lot	170.00	Space	1.53	68,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	6.8	**Precipitation Freq (Days)**	54
Climate Zone	2			**Operational Year**	2035
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	116.67	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - CO2 Intensity Factor adjusted basedon PG&E progress towards RPS

Land Use -

Construction Phase - Construction not modeled

Off-road Equipment - Construction not modeled

Vehicle Trips - Trip rates based on Fehr and Peers provided information and assumed uses

Energy Use - Adjusted per 2019 CBSC

Road Dust - % paved updated per location of site in urbanized area

Area Mitigation -

Energy Mitigation - Updated based on City of Davis Municipal Code requirements

Water Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	5.00	1.00
tblConstructionPhase	PhaseEndDate	5/5/2022	4/29/2022
tblEnergyUse	T24E	3.90	2.73
tblEnergyUse	T24E	1.65	1.16
tblEnergyUse	T24NG	11.34	7.94
tblEnergyUse	T24NG	18.58	13.01
tblLandUse	LandUseSquareFeet	45,900.00	45,901.00
tblLandUse	LandUseSquareFeet	25,160.00	25,155.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblProjectCharacteristics	CO2IntensityFactor	641.35	116.67
tblRoadDust	RoadPercentPave	94	100
tblTripsAndVMT	WorkerTripNumber	10.00	0.00
tblVehicleTrips	CC_TL	5.00	11.50
tblVehicleTrips	CC_TL	5.00	11.50
tblVehicleTrips	CNW_TL	7.00	16.10
tblVehicleTrips	CNW_TL	7.00	16.10
tblVehicleTrips	CW_TL	10.00	23.00
tblVehicleTrips	CW_TL	10.00	23.00
tblVehicleTrips	ST_TR	49.97	10.72
tblVehicleTrips	SU_TR	25.24	10.72
tblVehicleTrips	WD_TR	42.70	10.72
tblVehicleTrips	WD_TR	8.11	10.72

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022	3.3000e-004	3.3500e-003	4.4800e-003	1.0000e-005	0.0000	1.8000e-004	1.8000e-004	0.0000	1.7000e-004	1.7000e-004	0.0000	0.5466	0.5466	1.8000e-004	0.0000	0.5510
Maximum	**3.3000e-004**	**3.3500e-003**	**4.4800e-003**	**1.0000e-005**	**0.0000**	**1.8000e-004**	**1.8000e-004**	**0.0000**	**1.7000e-004**	**1.7000e-004**	**0.0000**	**0.5466**	**0.5466**	**1.8000e-004**	**0.0000**	**0.5510**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022	3.3000e-004	3.3500e-003	4.4800e-003	1.0000e-005	0.0000	1.8000e-004	1.8000e-004	0.0000	1.7000e-004	1.7000e-004	0.0000	0.5466	0.5466	1.8000e-004	0.0000	0.5510
Maximum	**3.3000e-004**	**3.3500e-003**	**4.4800e-003**	**1.0000e-005**	**0.0000**	**1.8000e-004**	**1.8000e-004**	**0.0000**	**1.7000e-004**	**1.7000e-004**	**0.0000**	**0.5466**	**0.5466**	**1.8000e-004**	**0.0000**	**0.5510**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**4-1-2022**	**6-30-2022**	0.0026	0.0026
		Highest	0.0026	0.0026

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.3329	2.0000e-005	2.2000e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	4.3100e-003	4.3100e-003	1.0000e-005	0.0000	4.5800e-003
Energy	4.3600e-003	0.0396	0.0333	2.4000e-004		3.0100e-003	3.0100e-003		3.0100e-003	3.0100e-003	0.0000	77.8641	77.8641	9.4600e-003	2.5800e-003	78.8684
Mobile	0.1249	1.3164	1.5626	0.0110	1.0455	4.6400e-003	1.0501	0.2825	4.3400e-003	0.2868	0.0000	1,021.6463	1,021.6463	0.0234	0.0000	1,022.2323
Waste						0.0000	0.0000		0.0000	0.0000	6.0715	0.0000	6.0715	0.3588	0.0000	15.0418
Water						0.0000	0.0000		0.0000	0.0000	7.7513	7.2079	14.9592	0.7979	0.0192	40.6196
Total	**0.4622**	**1.3561**	**1.5981**	**0.0112**	**1.0455**	**7.6600e-003**	**1.0531**	**0.2825**	**7.3600e-003**	**0.2898**	**13.8227**	**1,106.7226**	**1,120.5453**	**1.1896**	**0.0218**	**1,156.7666**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.3122	2.0000e-005	2.2000e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	4.3100e-003	4.3100e-003	1.0000e-005	0.0000	4.5800e-003
Energy	3.9300e-003	0.0357	0.0300	2.1000e-004		2.7200e-003	2.7200e-003		2.7200e-003	2.7200e-003	0.0000	45.7075	45.7075	2.4400e-003	1.0600e-003	46.0854
Mobile	0.1249	1.3164	1.5626	0.0110	1.0455	4.6400e-003	1.0501	0.2825	4.3400e-003	0.2868	0.0000	1,021.6463	1,021.6463	0.0234	0.0000	1,022.2323
Waste						0.0000	0.0000		0.0000	0.0000	6.0715	0.0000	6.0715	0.3588	0.0000	15.0418
Water						0.0000	0.0000		0.0000	0.0000	6.2010	5.7957	11.9967	0.6384	0.0153	32.5257
Total	**0.4410**	**1.3522**	**1.5948**	**0.0112**	**1.0455**	**7.3700e-003**	**1.0529**	**0.2825**	**7.0700e-003**	**0.2895**	**12.2725**	**1,073.1538**	**1,085.4263**	**1.0231**	**0.0164**	**1,115.8898**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**4.58**	**0.29**	**0.21**	**0.27**	**0.00**	**3.79**	**0.03**	**0.00**	**3.94**	**0.10**	**11.22**	**3.03**	**3.13**	**14.00**	**24.60**	**3.53**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	4/29/2022	4/29/2022	5	1	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 1.53

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Site Preparation	Rubber Tired Dozers	0	0.00	247	0.40

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	4	0.00	0.00	0.00	10.00	7.00	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Site Preparation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.3000e-004	3.3500e-003	4.4800e-003	1.0000e-005		1.8000e-004	1.8000e-004		1.7000e-004	1.7000e-004	0.0000	0.5466	0.5466	1.8000e-004	0.0000	0.5510
Total	**3.3000e-004**	**3.3500e-003**	**4.4800e-003**	**1.0000e-005**	**0.0000**	**1.8000e-004**	**1.8000e-004**	**0.0000**	**1.7000e-004**	**1.7000e-004**	**0.0000**	**0.5466**	**0.5466**	**1.8000e-004**	**0.0000**	**0.5510**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.2 Site Preparation - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.3000e-004	3.3500e-003	4.4800e-003	1.0000e-005		1.8000e-004	1.8000e-004		1.7000e-004	1.7000e-004	0.0000	0.5466	0.5466	1.8000e-004	0.0000	0.5510
Total	**3.3000e-004**	**3.3500e-003**	**4.4800e-003**	**1.0000e-005**	**0.0000**	**1.8000e-004**	**1.8000e-004**	**0.0000**	**1.7000e-004**	**1.7000e-004**	**0.0000**	**0.5466**	**0.5466**	**1.8000e-004**	**0.0000**	**0.5510**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

Category	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	tons/yr										MT/yr					
Mitigated	0.1249	1.3164	1.5626	0.0110	1.0455	4.6400e-003	1.0501	0.2825	4.3400e-003	0.2868	0.0000	1,021.6463	1,021.6463	0.0234	0.0000	1,022.2323
Unmitigated	0.1249	1.3164	1.5626	0.0110	1.0455	4.6400e-003	1.0501	0.2825	4.3400e-003	0.2868	0.0000	1,021.6463	1,021.6463	0.0234	0.0000	1,022.2323

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Parking Lot	0.00	0.00	0.00		
Regional Shopping Center	269.72	269.72	269.72	878,868	878,868
Research & Development	492.05	87.21	50.95	1,873,788	1,873,788
Total	761.76	356.93	320.66	2,752,656	2,752,656

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Parking Lot	10.00	5.00	7.00	0.00	0.00	0.00	0	0	0
Regional Shopping Center	23.00	11.50	16.10	16.30	64.70	19.00	54	35	11
Research & Development	23.00	11.50	16.10	33.00	48.00	19.00	82	15	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Parking Lot	0.510775	0.034299	0.212670	0.100609	0.010702	0.004092	0.073108	0.045201	0.001012	0.001235	0.005125	0.000644	0.000526
Regional Shopping Center	0.510775	0.034299	0.212670	0.100609	0.010702	0.004092	0.073108	0.045201	0.001012	0.001235	0.005125	0.000644	0.000526
Research & Development	0.510775	0.034299	0.212670	0.100609	0.010702	0.004092	0.073108	0.045201	0.001012	0.001235	0.005125	0.000644	0.000526

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Exceed Title 24

Percent of Electricity Use Generated with Renewable Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	6.8153	6.8153	1.6900e-003	3.5000e-004	6.9621
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	34.7206	34.7206	8.6300e-003	1.7900e-003	35.4685
NaturalGas Mitigated	3.9300e-003	0.0357	0.0300	2.1000e-004		2.7200e-003	2.7200e-003		2.7200e-003	2.7200e-003	0.0000	38.8922	38.8922	7.5000e-004	7.1000e-004	39.1233
NaturalGas Unmitigated	4.3600e-003	0.0396	0.0333	2.4000e-004		3.0100e-003	3.0100e-003		3.0100e-003	3.0100e-003	0.0000	43.1435	43.1435	8.3000e-004	7.9000e-004	43.3999

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	208736	1.1300e-003	0.0102	8.6000e-003	6.0000e-005		7.8000e-004	7.8000e-004		7.8000e-004	7.8000e-004	0.0000	11.1390	11.1390	2.1000e-004	2.0000e-004	11.2052
Research & Development	599742	3.2300e-003	0.0294	0.0247	1.8000e-004		2.2300e-003	2.2300e-003		2.2300e-003	2.2300e-003	0.0000	32.0045	32.0045	6.1000e-004	5.9000e-004	32.1947
Total		**4.3600e-003**	**0.0396**	**0.0333**	**2.4000e-004**		**3.0100e-003**	**3.0100e-003**		**3.0100e-003**	**3.0100e-003**	**0.0000**	**43.1435**	**43.1435**	**8.2000e-004**	**7.9000e-004**	**43.3999**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	188768	1.0200e-003	9.2500e-003	7.7700e-003	6.0000e-005		7.0000e-004	7.0000e-004		7.0000e-004	7.0000e-004	0.0000	10.0734	10.0734	1.9000e-004	1.8000e-004	10.1333
Research & Development	540044	2.9100e-003	0.0265	0.0222	1.6000e-004		2.0100e-003	2.0100e-003		2.0100e-003	2.0100e-003	0.0000	28.8188	28.8188	5.5000e-004	5.3000e-004	28.9900
Total		**3.9300e-003**	**0.0357**	**0.0300**	**2.2000e-004**		**2.7100e-003**	**2.7100e-003**		**2.7100e-003**	**2.7100e-003**	**0.0000**	**38.8922**	**38.8922**	**7.4000e-004**	**7.1000e-004**	**39.1233**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Parking Lot	23800	1.2595	3.1000e-004	6.0000e-005	1.2866
Regional Shopping Center	267146	14.1375	3.5100e-003	7.3000e-004	14.4421
Research & Development	365142	19.3236	4.8000e-003	9.9000e-004	19.7398
Total		**34.7206**	**8.6200e-003**	**1.7800e-003**	**35.4685**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Parking Lot	4760	0.2519	6.0000e-005	1.0000e-005	0.2573
Regional Shopping Center	52055.8	2.7548	6.8000e-004	1.4000e-004	2.8142
Research & Development	71968.2	3.8086	9.5000e-004	2.0000e-004	3.8906
Total		**6.8153**	**1.6900e-003**	**3.5000e-004**	**6.9621**

6.0 Area Detail

6.1 Mitigation Measures Area

Use Low VOC Cleaning Supplies

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.3122	2.0000e-005	2.2000e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	4.3100e-003	4.3100e-003	1.0000e-005	0.0000	4.5800e-003
Unmitigated	0.3329	2.0000e-005	2.2000e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	4.3100e-003	4.3100e-003	1.0000e-005	0.0000	4.5800e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0508					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.2819					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	2.0000e-004	2.0000e-005	2.2000e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	4.3100e-003	4.3100e-003	1.0000e-005	0.0000	4.5800e-003
Total	**0.3329**	**2.0000e-005**	**2.2000e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**	**0.0000**	**4.3100e-003**	**4.3100e-003**	**1.0000e-005**	**0.0000**	**4.5800e-003**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0508					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.2612					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	2.0000e-004	2.0000e-005	2.2000e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	4.3100e-003	4.3100e-003	1.0000e-005	0.0000	4.5800e-003
Total	**0.3122**	**2.0000e-005**	**2.2000e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**	**0.0000**	**4.3100e-003**	**4.3100e-003**	**1.0000e-005**	**0.0000**	**4.5800e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

Install Low Flow Toilet

Install Low Flow Shower

Use Water Efficient Irrigation System

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	11.9967	0.6384	0.0153	32.5257
Unmitigated	14.9592	0.7979	0.0192	40.6196

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	1.86366 / 1.14225	1.3365	0.0609	1.4700e-003	3.2980
Research & Development	22.5688 / 0	13.6227	0.7370	0.0177	37.3216
Total		**14.9592**	**0.7979**	**0.0192**	**40.6196**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	1.49093 / 1.07257	1.0986	0.0487	1.1800e-003	2.6685
Research & Development	18.055 / 0	10.8981	0.5896	0.0142	29.8572
Total		**11.9967**	**0.6384**	**0.0153**	**32.5257**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	6.0715	0.3588	0.0000	15.0418
Unmitigated	6.0715	0.3588	0.0000	15.0418

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	26.42	5.3630	0.3170	0.0000	13.2867
Research & Development	3.49	0.7084	0.0419	0.0000	1.7551
Total		**6.0715**	**0.3588**	**0.0000**	**15.0418**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	26.42	5.3630	0.3170	0.0000	13.2867
Research & Development	3.49	0.7084	0.0419	0.0000	1.7551
Total		**6.0715**	**0.3588**	**0.0000**	**15.0418**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Mace Triangle (Existing Plus Project)

Yolo County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Research & Development	45.90	1000sqft	1.05	45,901.00	0
Regional Shopping Center	25.16	1000sqft	0.58	25,155.00	0
Parking Lot	170.00	Space	1.53	68,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	6.8	**Precipitation Freq (Days)**	54
Climate Zone	2			**Operational Year**	2035
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	116.67	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - CO2 Intensity Factor adjusted basedon PG&E progress towards RPS

Land Use -

Construction Phase - Construction not modeled

Off-road Equipment - Construction not modeled

Vehicle Trips - Trip rates based on Fehr and Peers provided information and assumed uses

Energy Use - Adjusted per 2019 CBSC

Road Dust - % paved updated per location of site in urbanized area

Area Mitigation -

Energy Mitigation - Updated based on City of Davis Municipal Code requirements

Water Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	5.00	1.00
tblConstructionPhase	PhaseEndDate	5/5/2022	4/29/2022
tblEnergyUse	T24E	3.90	2.73
tblEnergyUse	T24E	1.65	1.16
tblEnergyUse	T24NG	11.34	7.94
tblEnergyUse	T24NG	18.58	13.01
tblLandUse	LandUseSquareFeet	45,900.00	45,901.00
tblLandUse	LandUseSquareFeet	25,160.00	25,155.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblProjectCharacteristics	CO2IntensityFactor	641.35	116.67
tblRoadDust	RoadPercentPave	94	100
tblTripsAndVMT	WorkerTripNumber	10.00	0.00
tblVehicleTrips	CC_TL	5.00	11.50
tblVehicleTrips	CC_TL	5.00	11.50
tblVehicleTrips	CNW_TL	7.00	16.10
tblVehicleTrips	CNW_TL	7.00	16.10
tblVehicleTrips	CW_TL	10.00	23.00
tblVehicleTrips	CW_TL	10.00	23.00
tblVehicleTrips	ST_TR	49.97	10.72
tblVehicleTrips	SU_TR	25.24	10.72
tblVehicleTrips	WD_TR	42.70	10.72
tblVehicleTrips	WD_TR	8.11	10.72

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	0.6588	6.7026	8.9518	0.0124	0.0000	0.3605	0.3605	0.0000	0.3316	0.3316	0.0000	1,204.955 8	1,204.955 8	0.3897	0.0000	1,214.698 5
Maximum	**0.6588**	**6.7026**	**8.9518**	**0.0124**	**0.0000**	**0.3605**	**0.3605**	**0.0000**	**0.3316**	**0.3316**	**0.0000**	**1,204.955 8**	**1,204.955 8**	**0.3897**	**0.0000**	**1,214.698 5**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	0.6588	6.7026	8.9518	0.0124	0.0000	0.3605	0.3605	0.0000	0.3316	0.3316	0.0000	1,204.955 8	1,204.955 8	0.3897	0.0000	1,214.698 5
Maximum	**0.6588**	**6.7026**	**8.9518**	**0.0124**	**0.0000**	**0.3605**	**0.3605**	**0.0000**	**0.3316**	**0.3316**	**0.0000**	**1,204.955 8**	**1,204.955 8**	**0.3897**	**0.0000**	**1,214.698 5**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.8254	2.2000e-004	0.0245	0.0000		9.0000e-005	9.0000e-005		9.0000e-005	9.0000e-005		0.0528	0.0528	1.4000e-004		0.0562
Energy	0.0239	0.2172	0.1824	1.3000e-003		0.0165	0.0165		0.0165	0.0165		260.5894	260.5894	4.9900e-003	4.7800e-003	262.1380
Mobile	0.9819	8.4770	11.8341	0.0778	7.2434	0.0311	7.2744	1.9514	0.0291	1.9805		7,958.7768	7,958.7768	0.1730		7,963.1029
Total	**2.8312**	**8.6944**	**12.0410**	**0.0791**	**7.2434**	**0.0477**	**7.2910**	**1.9514**	**0.0456**	**1.9971**		**8,219.4190**	**8,219.4190**	**0.1782**	**4.7800e-003**	**8,225.2970**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.7117	2.2000e-004	0.0245	0.0000		9.0000e-005	9.0000e-005		9.0000e-005	9.0000e-005		0.0528	0.0528	1.4000e-004		0.0562
Energy	0.0215	0.1958	0.1644	1.1700e-003		0.0149	0.0149		0.0149	0.0149		234.9111	234.9111	4.5000e-003	4.3100e-003	236.3071
Mobile	0.9819	8.4770	11.8341	0.0778	7.2434	0.0311	7.2744	1.9514	0.0291	1.9805		7,958.7768	7,958.7768	0.1730		7,963.1029
Total	**2.7152**	**8.6730**	**12.0230**	**0.0790**	**7.2434**	**0.0460**	**7.2894**	**1.9514**	**0.0440**	**1.9955**		**8,193.7407**	**8,193.7407**	**0.1777**	**4.3100e-003**	**8,199.4661**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**4.10**	**0.25**	**0.15**	**0.16**	**0.00**	**3.40**	**0.02**	**0.00**	**3.55**	**0.08**	**0.00**	**0.31**	**0.31**	**0.28**	**9.83**	**0.31**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	4/29/2022	4/29/2022	5	1	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 1.53

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Site Preparation	Rubber Tired Dozers	0	0.00	247	0.40

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	4	0.00	0.00	0.00	10.00	7.00	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Site Preparation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.6588	6.7026	8.9518	0.0124		0.3605	0.3605		0.3316	0.3316		1,204.955 8	1,204.955 8	0.3897		1,214.698 5
Total	**0.6588**	**6.7026**	**8.9518**	**0.0124**	**0.0000**	**0.3605**	**0.3605**	**0.0000**	**0.3316**	**0.3316**		**1,204.955 8**	**1,204.955 8**	**0.3897**		**1,214.698 5**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

3.2 Site Preparation - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.6588	6.7026	8.9518	0.0124		0.3605	0.3605		0.3316	0.3316	0.0000	1,204.955 8	1,204.955 8	0.3897		1,214.698 5
Total	**0.6588**	**6.7026**	**8.9518**	**0.0124**	**0.0000**	**0.3605**	**0.3605**	**0.0000**	**0.3316**	**0.3316**	**0.0000**	**1,204.955 8**	**1,204.955 8**	**0.3897**		**1,214.698 5**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.9819	8.4770	11.8341	0.0778	7.2434	0.0311	7.2744	1.9514	0.0291	1.9805		7,958.776 8	7,958.776 8	0.1730		7,963.102 9
Unmitigated	0.9819	8.4770	11.8341	0.0778	7.2434	0.0311	7.2744	1.9514	0.0291	1.9805		7,958.776 8	7,958.776 8	0.1730		7,963.102 9

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Parking Lot	0.00	0.00	0.00		
Regional Shopping Center	269.72	269.72	269.72	878,868	878,868
Research & Development	492.05	87.21	50.95	1,873,788	1,873,788
Total	761.76	356.93	320.66	2,752,656	2,752,656

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Parking Lot	10.00	5.00	7.00	0.00	0.00	0.00	0	0	0
Regional Shopping Center	23.00	11.50	16.10	16.30	64.70	19.00	54	35	11
Research & Development	23.00	11.50	16.10	33.00	48.00	19.00	82	15	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Parking Lot	0.510775	0.034299	0.212670	0.100609	0.010702	0.004092	0.073108	0.045201	0.001012	0.001235	0.005125	0.000644	0.000526
Regional Shopping Center	0.510775	0.034299	0.212670	0.100609	0.010702	0.004092	0.073108	0.045201	0.001012	0.001235	0.005125	0.000644	0.000526
Research & Development	0.510775	0.034299	0.212670	0.100609	0.010702	0.004092	0.073108	0.045201	0.001012	0.001235	0.005125	0.000644	0.000526

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Exceed Title 24

Percent of Electricity Use Generated with Renewable Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0215	0.1958	0.1644	1.1700e-003		0.0149	0.0149		0.0149	0.0149		234.9111	234.9111	4.5000e-003	4.3100e-003	236.3071
NaturalGas Unmitigated	0.0239	0.2172	0.1824	1.3000e-003		0.0165	0.0165		0.0165	0.0165		260.5894	260.5894	4.9900e-003	4.7800e-003	262.1380

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	571.88	6.1700e-003	0.0561	0.0471	3.4000e-004		4.2600e-003	4.2600e-003		4.2600e-003	4.2600e-003		67.2800	67.2800	1.2900e-003	1.2300e-003	67.6798
Research & Development	1643.13	0.0177	0.1611	0.1353	9.7000e-004		0.0122	0.0122		0.0122	0.0122		193.3094	193.3094	3.7100e-003	3.5400e-003	194.4582
Total		**0.0239**	**0.2172**	**0.1824**	**1.3100e-003**		**0.0165**	**0.0165**		**0.0165**	**0.0165**		**260.5894**	**260.5894**	**5.0000e-003**	**4.7700e-003**	**262.1380**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	0.517173	5.5800e-003	0.0507	0.0426	3.0000e-004		3.8500e-003	3.8500e-003		3.8500e-003	3.8500e-003		60.8439	60.8439	1.1700e-003	1.1200e-003	61.2055
Research & Development	1.47957	0.0160	0.1451	0.1219	8.7000e-004		0.0110	0.0110		0.0110	0.0110		174.0672	174.0672	3.3400e-003	3.1900e-003	175.1016
Total		**0.0215**	**0.1958**	**0.1644**	**1.1700e-003**		**0.0149**	**0.0149**		**0.0149**	**0.0149**		**234.9111**	**234.9111**	**4.5100e-003**	**4.3100e-003**	**236.3071**

6.0 Area Detail

6.1 Mitigation Measures Area

Use Low VOC Cleaning Supplies

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	1.7117	2.2000e-004	0.0245	0.0000		9.0000e-005	9.0000e-005		9.0000e-005	9.0000e-005		0.0528	0.0528	1.4000e-004		0.0562
Unmitigated	1.8254	2.2000e-004	0.0245	0.0000		9.0000e-005	9.0000e-005		9.0000e-005	9.0000e-005		0.0528	0.0528	1.4000e-004		0.0562

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.2785					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.5447					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	2.2400e-003	2.2000e-004	0.0245	0.0000		9.0000e-005	9.0000e-005		9.0000e-005	9.0000e-005		0.0528	0.0528	1.4000e-004		0.0562
Total	**1.8254**	**2.2000e-004**	**0.0245**	**0.0000**		**9.0000e-005**	**9.0000e-005**		**9.0000e-005**	**9.0000e-005**		**0.0528**	**0.0528**	**1.4000e-004**		**0.0562**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.2785					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.4310					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	2.2400e-003	2.2000e-004	0.0245	0.0000		9.0000e-005	9.0000e-005		9.0000e-005	9.0000e-005		0.0528	0.0528	1.4000e-004		0.0562
Total	**1.7117**	**2.2000e-004**	**0.0245**	**0.0000**		**9.0000e-005**	**9.0000e-005**		**9.0000e-005**	**9.0000e-005**		**0.0528**	**0.0528**	**1.4000e-004**		**0.0562**

7.0 Water Detail

7.1 Mitigation Measures Water

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

Install Low Flow Toilet

Install Low Flow Shower

Use Water Efficient Irrigation System

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Mace Triangle (Existing Plus Project)

Yolo County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Research & Development	45.90	1000sqft	1.05	45,901.00	0
Regional Shopping Center	25.16	1000sqft	0.58	25,155.00	0
Parking Lot	170.00	Space	1.53	68,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	6.8	**Precipitation Freq (Days)**	54
Climate Zone	2			**Operational Year**	2035

Utility Company Pacific Gas & Electric Company

CO2 Intensity (lb/MWhr)	116.67	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - CO2 Intensity Factor adjusted basedon PG&E progress towards RPS

Land Use -

Construction Phase - Construction not modeled

Off-road Equipment - Construction not modeled

Vehicle Trips - Trip rates based on Fehr and Peers provided information and assumed uses

Energy Use - Adjusted per 2019 CBSC

Road Dust - % paved updated per location of site in urbanized area

Area Mitigation -

Energy Mitigation - Updated based on City of Davis Municipal Code requirements

Water Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	5.00	1.00
tblConstructionPhase	PhaseEndDate	5/5/2022	4/29/2022
tblEnergyUse	T24E	3.90	2.73
tblEnergyUse	T24E	1.65	1.16
tblEnergyUse	T24NG	11.34	7.94
tblEnergyUse	T24NG	18.58	13.01
tblLandUse	LandUseSquareFeet	45,900.00	45,901.00
tblLandUse	LandUseSquareFeet	25,160.00	25,155.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblProjectCharacteristics	CO2IntensityFactor	641.35	116.67
tblRoadDust	RoadPercentPave	94	100
tblTripsAndVMT	WorkerTripNumber	10.00	0.00
tblVehicleTrips	CC_TL	5.00	11.50
tblVehicleTrips	CC_TL	5.00	11.50
tblVehicleTrips	CNW_TL	7.00	16.10
tblVehicleTrips	CNW_TL	7.00	16.10
tblVehicleTrips	CW_TL	10.00	23.00
tblVehicleTrips	CW_TL	10.00	23.00
tblVehicleTrips	ST_TR	49.97	10.72
tblVehicleTrips	SU_TR	25.24	10.72
tblVehicleTrips	WD_TR	42.70	10.72
tblVehicleTrips	WD_TR	8.11	10.72

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	0.6588	6.7026	8.9518	0.0124	0.0000	0.3605	0.3605	0.0000	0.3316	0.3316	0.0000	1,204.955 8	1,204.955 8	0.3897	0.0000	1,214.698 5
Maximum	**0.6588**	**6.7026**	**8.9518**	**0.0124**	**0.0000**	**0.3605**	**0.3605**	**0.0000**	**0.3316**	**0.3316**	**0.0000**	**1,204.955 8**	**1,204.955 8**	**0.3897**	**0.0000**	**1,214.698 5**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	0.6588	6.7026	8.9518	0.0124	0.0000	0.3605	0.3605	0.0000	0.3316	0.3316	0.0000	1,204.955 8	1,204.955 8	0.3897	0.0000	1,214.698 5
Maximum	**0.6588**	**6.7026**	**8.9518**	**0.0124**	**0.0000**	**0.3605**	**0.3605**	**0.0000**	**0.3316**	**0.3316**	**0.0000**	**1,204.955 8**	**1,204.955 8**	**0.3897**	**0.0000**	**1,214.698 5**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.8254	2.2000e-004	0.0245	0.0000		9.0000e-005	9.0000e-005		9.0000e-005	9.0000e-005		0.0528	0.0528	1.4000e-004		0.0562
Energy	0.0239	0.2172	0.1824	1.3000e-003		0.0165	0.0165		0.0165	0.0165		260.5894	260.5894	4.9900e-003	4.7800e-003	262.1380
Mobile	0.7942	8.8099	10.6619	0.0725	7.2434	0.0311	7.2745	1.9514	0.0291	1.9806		7,422.8720	7,422.8720	0.1773		7,427.3033
Total	**2.6434**	**9.0273**	**10.8688**	**0.0738**	**7.2434**	**0.0477**	**7.2911**	**1.9514**	**0.0457**	**1.9971**		**7,683.5142**	**7,683.5142**	**0.1824**	**4.7800e-003**	**7,689.4974**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.7117	2.2000e-004	0.0245	0.0000		9.0000e-005	9.0000e-005		9.0000e-005	9.0000e-005		0.0528	0.0528	1.4000e-004		0.0562
Energy	0.0215	0.1958	0.1644	1.1700e-003		0.0149	0.0149		0.0149	0.0149		234.9111	234.9111	4.5000e-003	4.3100e-003	236.3071
Mobile	0.7942	8.8099	10.6619	0.0725	7.2434	0.0311	7.2745	1.9514	0.0291	1.9806		7,422.8720	7,422.8720	0.1773		7,427.3033
Total	**2.5274**	**9.0059**	**10.8508**	**0.0737**	**7.2434**	**0.0461**	**7.2895**	**1.9514**	**0.0441**	**1.9955**		**7,657.8359**	**7,657.8359**	**0.1819**	**4.3100e-003**	**7,663.6665**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	**4.39**	**0.24**	**0.17**	**0.18**	**0.00**	**3.39**	**0.02**	**0.00**	**3.54**	**0.08**	**0.00**	**0.33**	**0.33**	**0.27**	**9.83**	**0.34**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	4/29/2022	4/29/2022	5	1	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 1.53

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Site Preparation	Rubber Tired Dozers	0	0.00	247	0.40

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	4	0.00	0.00	0.00	10.00	7.00	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Site Preparation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.6588	6.7026	8.9518	0.0124		0.3605	0.3605		0.3316	0.3316		1,204.955 8	1,204.955 8	0.3897		1,214.698 5
Total	**0.6588**	**6.7026**	**8.9518**	**0.0124**	**0.0000**	**0.3605**	**0.3605**	**0.0000**	**0.3316**	**0.3316**		**1,204.955 8**	**1,204.955 8**	**0.3897**		**1,214.698 5**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

3.2 Site Preparation - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.6588	6.7026	8.9518	0.0124		0.3605	0.3605		0.3316	0.3316	0.0000	1,204.955 8	1,204.955 8	0.3897		1,214.698 5
Total	**0.6588**	**6.7026**	**8.9518**	**0.0124**	**0.0000**	**0.3605**	**0.3605**	**0.0000**	**0.3316**	**0.3316**	**0.0000**	**1,204.955 8**	**1,204.955 8**	**0.3897**		**1,214.698 5**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.7942	8.8099	10.6619	0.0725	7.2434	0.0311	7.2745	1.9514	0.0291	1.9806		7,422.8720	7,422.8720	0.1773		7,427.3033
Unmitigated	0.7942	8.8099	10.6619	0.0725	7.2434	0.0311	7.2745	1.9514	0.0291	1.9806		7,422.8720	7,422.8720	0.1773		7,427.3033

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Parking Lot	0.00	0.00	0.00		
Regional Shopping Center	269.72	269.72	269.72	878,868	878,868
Research & Development	492.05	87.21	50.95	1,873,788	1,873,788
Total	761.76	356.93	320.66	2,752,656	2,752,656

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Parking Lot	10.00	5.00	7.00	0.00	0.00	0.00	0	0	0
Regional Shopping Center	23.00	11.50	16.10	16.30	64.70	19.00	54	35	11
Research & Development	23.00	11.50	16.10	33.00	48.00	19.00	82	15	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Parking Lot	0.510775	0.034299	0.212670	0.100609	0.010702	0.004092	0.073108	0.045201	0.001012	0.001235	0.005125	0.000644	0.000526
Regional Shopping Center	0.510775	0.034299	0.212670	0.100609	0.010702	0.004092	0.073108	0.045201	0.001012	0.001235	0.005125	0.000644	0.000526
Research & Development	0.510775	0.034299	0.212670	0.100609	0.010702	0.004092	0.073108	0.045201	0.001012	0.001235	0.005125	0.000644	0.000526

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Exceed Title 24

Percent of Electricity Use Generated with Renewable Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0215	0.1958	0.1644	1.1700e-003		0.0149	0.0149		0.0149	0.0149		234.9111	234.9111	4.5000e-003	4.3100e-003	236.3071
NaturalGas Unmitigated	0.0239	0.2172	0.1824	1.3000e-003		0.0165	0.0165		0.0165	0.0165		260.5894	260.5894	4.9900e-003	4.7800e-003	262.1380

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	571.88	6.1700e-003	0.0561	0.0471	3.4000e-004		4.2600e-003	4.2600e-003		4.2600e-003	4.2600e-003		67.2800	67.2800	1.2900e-003	1.2300e-003	67.6798
Research & Development	1643.13	0.0177	0.1611	0.1353	9.7000e-004		0.0122	0.0122		0.0122	0.0122		193.3094	193.3094	3.7100e-003	3.5400e-003	194.4582
Total		**0.0239**	**0.2172**	**0.1824**	**1.3100e-003**		**0.0165**	**0.0165**		**0.0165**	**0.0165**		**260.5894**	**260.5894**	**5.0000e-003**	**4.7700e-003**	**262.1380**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	0.517173	5.5800e-003	0.0507	0.0426	3.0000e-004		3.8500e-003	3.8500e-003		3.8500e-003	3.8500e-003		60.8439	60.8439	1.1700e-003	1.1200e-003	61.2055
Research & Development	1.47957	0.0160	0.1451	0.1219	8.7000e-004		0.0110	0.0110		0.0110	0.0110		174.0672	174.0672	3.3400e-003	3.1900e-003	175.1016
Total		**0.0215**	**0.1958**	**0.1644**	**1.1700e-003**		**0.0149**	**0.0149**		**0.0149**	**0.0149**		**234.9111**	**234.9111**	**4.5100e-003**	**4.3100e-003**	**236.3071**

6.0 Area Detail

6.1 Mitigation Measures Area

Use Low VOC Cleaning Supplies

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	1.7117	2.2000e-004	0.0245	0.0000		9.0000e-005	9.0000e-005		9.0000e-005	9.0000e-005		0.0528	0.0528	1.4000e-004		0.0562
Unmitigated	1.8254	2.2000e-004	0.0245	0.0000		9.0000e-005	9.0000e-005		9.0000e-005	9.0000e-005		0.0528	0.0528	1.4000e-004		0.0562

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.2785					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.5447					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	2.2400e-003	2.2000e-004	0.0245	0.0000		9.0000e-005	9.0000e-005		9.0000e-005	9.0000e-005		0.0528	0.0528	1.4000e-004		0.0562
Total	**1.8254**	**2.2000e-004**	**0.0245**	**0.0000**		**9.0000e-005**	**9.0000e-005**		**9.0000e-005**	**9.0000e-005**		**0.0528**	**0.0528**	**1.4000e-004**		**0.0562**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.2785					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.4310					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	2.2400e-003	2.2000e-004	0.0245	0.0000		9.0000e-005	9.0000e-005		9.0000e-005	9.0000e-005		0.0528	0.0528	1.4000e-004		0.0562
Total	**1.7117**	**2.2000e-004**	**0.0245**	**0.0000**		**9.0000e-005**	**9.0000e-005**		**9.0000e-005**	**9.0000e-005**		**0.0528**	**0.0528**	**1.4000e-004**		**0.0562**

7.0 Water Detail

7.1 Mitigation Measures Water

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

Install Low Flow Toilet

Install Low Flow Shower

Use Water Efficient Irrigation System

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Mace Triangle (Existing Plus Project)

Yolo County, Mitigation Report

Construction Mitigation Summary

Phase	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction												
Site Preparation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

OFFROAD Equipment Mitigation

Equipment Type	Fuel Type	Tier	Number Mitigated	Total Number of Equipment	DPF	Oxidation Catalyst
Tractors/Loaders/Backhoes	Diesel	No Change	0	4	No Change	0.00
Rubber Tired Dozers	Diesel	No Change	0	0	No Change	0.00

Equipment Type	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	Unmitigated tons/yr						Unmitigated mt/yr					
Rubber Tired Dozers	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000
Tractors/Loaders/Backhoes	3.30000E-004	3.35000E-003	4.48000E-003	1.00000E-005	1.80000E-004	1.70000E-004	0.00000E+000	5.46560E-001	5.46560E-001	1.80000E-004	0.00000E+000	5.50980E-001

Equipment Type	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	Mitigated tons/yr						Mitigated mt/yr					
Rubber Tired Dozers	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000
Tractors/Loaders/Backhoes	3.30000E-004	3.35000E-003	4.48000E-003	1.00000E-005	1.80000E-004	1.70000E-004	0.00000E+000	5.46560E-001	5.46560E-001	1.80000E-004	0.00000E+000	5.50980E-001

Equipment Type	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction												
Rubber Tired Dozers	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000
Tractors/Loaders/Backhoes	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000

Fugitive Dust Mitigation

Yes/No	Mitigation Measure	Mitigation Input		Mitigation Input		Mitigation Input	
No	Soil Stabilizer for unpaved Roads	PM10 Reduction		PM2.5 Reduction			
No	Replace Ground Cover of Area Disturbed	PM10 Reduction		PM2.5 Reduction			
No	Water Exposed Area	PM10 Reduction		PM2.5 Reduction		Frequency (per day)	
No	Unpaved Road Mitigation	Moisture Content %		Vehicle Speed (mph)	0.00		
No	Clean Paved Road	% PM Reduction	0.00				

		Unmitigated		Mitigated		Percent Reduction	
Phase	Source	PM10	PM2.5	PM10	PM2.5	PM10	PM2.5
Site Preparation	Fugitive Dust	0.00	0.00	0.00	0.00	0.00	0.00
Site Preparation	Roads	0.00	0.00	0.00	0.00	0.00	0.00

Operational Percent Reduction Summary

Category	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction												
Architectural Coating	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	7.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Electricity	0.00	0.00	0.00	0.00	0.00	0.00	0.00	80.37	80.37	80.39	80.34	80.37
Hearth	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Landscaping	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mobile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Natural Gas	9.86	9.87	9.88	8.33	9.97	9.97	0.00	9.85	9.85	9.76	10.13	9.85
Water Indoor	0.00	0.00	0.00	0.00	0.00	0.00	20.00	19.59	19.80	20.00	19.98	19.93
Water Outdoor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Operational Mobile Mitigation

Project Setting:

Mitigation Selected	Category	Measure	% Reduction	Input Value 1	Input Value 2	Input Value 3
No	Land Use	Increase Density	0.00			
No	Land Use	Increase Diversity	0.10	0.32		
No	Land Use	Improve Walkability Design	0.00			
No	Land Use	Improve Destination Accessibility	0.00			
No	Land Use	Increase Transit Accessibility	0.25			
No	Land Use	Integrate Below Market Rate Housing	0.00			
	Land Use	Land Use SubTotal	0.00			

No	Neighborhood Enhancements	Improve Pedestrian Network				
No	Neighborhood Enhancements	Provide Traffic Calming Measures				
No	Neighborhood Enhancements	Implement NEV Network	0.00			
	Neighborhood Enhancements	Neighborhood Enhancements Subtotal	0.00			
No	Parking Policy Pricing	Limit Parking Supply	0.00			
No	Parking Policy Pricing	Unbundle Parking Costs	0.00			
No	Parking Policy Pricing	On-street Market Pricing	0.00			
	Parking Policy Pricing	Parking Policy Pricing Subtotal	0.00			
No	Transit Improvements	Provide BRT System	0.00			
No	Transit Improvements	Expand Transit Network	0.00			
No	Transit Improvements	Increase Transit Frequency	0.00			
	Transit Improvements	Transit Improvements Subtotal	0.00			
		Land Use and Site Enhancement Subtotal	0.00			
No	Commute	Implement Trip Reduction Program				
No	Commute	Transit Subsidy				
No	Commute	Implement Employee Parking "Cash Out"				
No	Commute	Workplace Parking Charge				
No	Commute	Encourage Telecommuting and Alternative Work Schedules	0.00			
No	Commute	Market Commute Trip Reduction Option	0.00			
No	Commute	Employee Vanpool/Shuttle	0.00		2.00	
No	Commute	Provide Ride Sharing Program				
	Commute	Commute Subtotal	0.00			

No	School Trip	Implement School Bus Program	0.00			
		Total VMT Reduction	0.00			

Area Mitigation

Measure Implemented	Mitigation Measure	Input Value
No	Only Natural Gas Hearth	
No	No Hearth	
Yes	Use Low VOC Cleaning Supplies	
No	Use Low VOC Paint (Residential Interior)	100.00
No	Use Low VOC Paint (Residential Exterior)	100.00
No	Use Low VOC Paint (Non-residential Interior)	150.00
No	Use Low VOC Paint (Non-residential Exterior)	150.00
No	Use Low VOC Paint (Parking)	150.00
No	% Electric Lawnmower	0.00
No	% Electric Leafblower	0.00
No	% Electric Chainsaw	0.00

Energy Mitigation Measures

Measure Implemented	Mitigation Measure	Input Value 1	Input Value 2
Yes	Exceed Title 24	10.00	
No	Install High Efficiency Lighting		
Yes	On-site Renewable		80.00

Appliance Type	Land Use Subtype	% Improvement
ClothWasher		30.00
DishWasher		15.00
Fan		50.00
Refrigerator		15.00

Water Mitigation Measures

Measure Implemented	Mitigation Measure	Input Value 1	Input Value 2
No	Apply Water Conservation on Strategy	0.00	0.00
No	Use Reclaimed Water	0.00	0.00
No	Use Grey Water	0.00	
Yes	Install low-flow bathroom faucet	32.00	
Yes	Install low-flow Kitchen faucet	18.00	
Yes	Install low-flow Toilet	20.00	
Yes	Install low-flow Shower	20.00	
No	Turf Reduction	0.00	
Yes	Use Water Efficient Irrigation Systems	6.10	
No	Water Efficient Landscape	0.00	0.00

Solid Waste Mitigation

Mitigation Measures	Input Value

Institute Recycling and Composting Services Percent Reduction in Waste Disposed	

Mace Triangle CalEEMod Cumulative Operations

Mace Triangle (Cumulative)

Yolo County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Research & Development	45.90	1000sqft	1.05	45,901.00	0
Regional Shopping Center	25.16	1000sqft	0.58	25,155.00	0
Parking Lot	170.00	Space	1.53	68,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	6.8	**Precipitation Freq (Days)**	54
Climate Zone	2			**Operational Year**	2035
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	116.67	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - CO2 Intensity Factor adjusted basedon PG&E progress towards RPS

Land Use -

Construction Phase - Construction not modeled

Off-road Equipment - Construction not modeled

Vehicle Trips - Trip rates based on Fehr and Peers provided information and assumed uses

Energy Use - Adjusted per 2019 CBSC

Road Dust - % paved updated per location of site in urbanized area

Area Mitigation -

Energy Mitigation - Updated based on City of Davis Municipal Code requirements

Water Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	5.00	1.00
tblConstructionPhase	PhaseEndDate	5/5/2022	4/29/2022
tblEnergyUse	T24E	3.90	2.73
tblEnergyUse	T24E	1.65	1.16
tblEnergyUse	T24NG	11.34	7.94
tblEnergyUse	T24NG	18.58	13.01
tblLandUse	LandUseSquareFeet	45,900.00	45,901.00
tblLandUse	LandUseSquareFeet	25,160.00	25,155.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblProjectCharacteristics	CO2IntensityFactor	641.35	116.67
tblRoadDust	RoadPercentPave	94	100
tblTripsAndVMT	WorkerTripNumber	10.00	0.00
tblVehicleTrips	CC_TL	5.00	9.05
tblVehicleTrips	CC_TL	5.00	9.05
tblVehicleTrips	CNW_TL	7.00	12.67
tblVehicleTrips	CNW_TL	7.00	12.67
tblVehicleTrips	CW_TL	10.00	18.10
tblVehicleTrips	CW_TL	10.00	18.10
tblVehicleTrips	ST_TR	49.97	10.72
tblVehicleTrips	SU_TR	25.24	10.72
tblVehicleTrips	WD_TR	42.70	10.72
tblVehicleTrips	WD_TR	8.11	10.72

2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022	3.3000e-004	3.3500e-003	4.4800e-003	1.0000e-005	0.0000	1.8000e-004	1.8000e-004	0.0000	1.7000e-004	1.7000e-004	0.0000	0.5466	0.5466	1.8000e-004	0.0000	0.5510
Maximum	**3.3000e-004**	**3.3500e-003**	**4.4800e-003**	**1.0000e-005**	**0.0000**	**1.8000e-004**	**1.8000e-004**	**0.0000**	**1.7000e-004**	**1.7000e-004**	**0.0000**	**0.5466**	**0.5466**	**1.8000e-004**	**0.0000**	**0.5510**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	tons/yr										MT/yr					
2022	3.3000e-004	3.3500e-003	4.4800e-003	1.0000e-005	0.0000	1.8000e-004	1.8000e-004	0.0000	1.7000e-004	1.7000e-004	0.0000	0.5466	0.5466	1.8000e-004	0.0000	0.5510
Maximum	**3.3000e-004**	**3.3500e-003**	**4.4800e-003**	**1.0000e-005**	**0.0000**	**1.8000e-004**	**1.8000e-004**	**0.0000**	**1.7000e-004**	**1.7000e-004**	**0.0000**	**0.5466**	**0.5466**	**1.8000e-004**	**0.0000**	**0.5510**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	**4-1-2022**	**6-30-2022**	0.0026	0.0026
		Highest	0.0026	0.0026

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.3329	2.0000e-005	2.2000e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	4.3100e-003	4.3100e-003	1.0000e-005	0.0000	4.5800e-003
Energy	4.3600e-003	0.0396	0.0333	2.4000e-004		3.0100e-003	3.0100e-003		3.0100e-003	3.0100e-003	0.0000	77.8641	77.8641	9.4600e-003	2.5800e-003	78.8684
Mobile	0.1099	1.1958	1.2767	8.7900e-003	0.8229	3.7300e-003	0.8266	0.2223	3.4800e-003	0.2258	0.0000	816.9059	816.9059	0.0201	0.0000	817.4080
Waste						0.0000	0.0000		0.0000	0.0000	6.0715	0.0000	6.0715	0.3588	0.0000	15.0418
Water						0.0000	0.0000		0.0000	0.0000	7.7513	7.2079	14.9592	0.7979	0.0192	40.6196
Total	**0.4472**	**1.2354**	**1.3122**	**9.0300e-003**	**0.8229**	**6.7500e-003**	**0.8296**	**0.2223**	**6.5000e-003**	**0.2288**	**13.8227**	**901.9822**	**915.8049**	**1.1863**	**0.0218**	**951.9424**

2.2 Overall Operational

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Area	0.3122	2.0000e-005	2.2000e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	4.3100e-003	4.3100e-003	1.0000e-005	0.0000	4.5800e-003
Energy	3.9300e-003	0.0357	0.0300	2.1000e-004		2.7200e-003	2.7200e-003		2.7200e-003	2.7200e-003	0.0000	45.7075	45.7075	2.4400e-003	1.0600e-003	46.0854
Mobile	0.1099	1.1958	1.2767	8.7900e-003	0.8229	3.7300e-003	0.8266	0.2223	3.4800e-003	0.2258	0.0000	816.9059	816.9059	0.0201	0.0000	817.4080
Waste						0.0000	0.0000		0.0000	0.0000	6.0715	0.0000	6.0715	0.3588	0.0000	15.0418
Water						0.0000	0.0000		0.0000	0.0000	6.2010	5.7957	11.9967	0.6384	0.0153	32.5257
Total	**0.4260**	**1.2315**	**1.3089**	**9.0000e-003**	**0.8229**	**6.4600e-003**	**0.8293**	**0.2223**	**6.2100e-003**	**0.2285**	**12.2725**	**868.4134**	**880.6859**	**1.0197**	**0.0164**	**911.0655**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**4.74**	**0.32**	**0.25**	**0.33**	**0.00**	**4.30**	**0.03**	**0.00**	**4.46**	**0.13**	**11.22**	**3.72**	**3.83**	**14.04**	**24.60**	**4.29**

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	4/29/2022	4/29/2022	5	1	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 1.53

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Site Preparation	Rubber Tired Dozers	0	0.00	247	0.40

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	4	0.00	0.00	0.00	10.00	7.00	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Site Preparation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.3000e-004	3.3500e-003	4.4800e-003	1.0000e-005		1.8000e-004	1.8000e-004		1.7000e-004	1.7000e-004	0.0000	0.5466	0.5466	1.8000e-004	0.0000	0.5510
Total	**3.3000e-004**	**3.3500e-003**	**4.4800e-003**	**1.0000e-005**	**0.0000**	**1.8000e-004**	**1.8000e-004**	**0.0000**	**1.7000e-004**	**1.7000e-004**	**0.0000**	**0.5466**	**0.5466**	**1.8000e-004**	**0.0000**	**0.5510**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

3.2 Site Preparation - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	3.3000e-004	3.3500e-003	4.4800e-003	1.0000e-005		1.8000e-004	1.8000e-004		1.7000e-004	1.7000e-004	0.0000	0.5466	0.5466	1.8000e-004	0.0000	0.5510
Total	**3.3000e-004**	**3.3500e-003**	**4.4800e-003**	**1.0000e-005**	**0.0000**	**1.8000e-004**	**1.8000e-004**	**0.0000**	**1.7000e-004**	**1.7000e-004**	**0.0000**	**0.5466**	**0.5466**	**1.8000e-004**	**0.0000**	**0.5510**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.1099	1.1958	1.2767	8.7900e-003	0.8229	3.7300e-003	0.8266	0.2223	3.4800e-003	0.2258	0.0000	816.9059	816.9059	0.0201	0.0000	817.4080
Unmitigated	0.1099	1.1958	1.2767	8.7900e-003	0.8229	3.7300e-003	0.8266	0.2223	3.4800e-003	0.2258	0.0000	816.9059	816.9059	0.0201	0.0000	817.4080

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Parking Lot	0.00	0.00	0.00		
Regional Shopping Center	269.72	269.72	269.72	691,861	691,861
Research & Development	492.05	87.21	50.95	1,474,676	1,474,676
Total	761.76	356.93	320.66	2,166,537	2,166,537

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Parking Lot	10.00	5.00	7.00	0.00	0.00	0.00	0	0	0
Regional Shopping Center	18.10	9.05	12.67	16.30	64.70	19.00	54	35	11
Research & Development	18.10	9.05	12.67	33.00	48.00	19.00	82	15	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Parking Lot	0.510775	0.034299	0.212670	0.100609	0.010702	0.004092	0.073108	0.045201	0.001012	0.001235	0.005125	0.000644	0.000526
Regional Shopping Center	0.510775	0.034299	0.212670	0.100609	0.010702	0.004092	0.073108	0.045201	0.001012	0.001235	0.005125	0.000644	0.000526
Research & Development	0.510775	0.034299	0.212670	0.100609	0.010702	0.004092	0.073108	0.045201	0.001012	0.001235	0.005125	0.000644	0.000526

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Exceed Title 24

Percent of Electricity Use Generated with Renewable Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Electricity Mitigated						0.0000	0.0000		0.0000	0.0000	0.0000	6.8153	6.8153	1.6900e-003	3.5000e-004	6.9621
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	34.7206	34.7206	8.6300e-003	1.7900e-003	35.4685
NaturalGas Mitigated	3.9300e-003	0.0357	0.0300	2.1000e-004		2.7200e-003	2.7200e-003		2.7200e-003	2.7200e-003	0.0000	38.8922	38.8922	7.5000e-004	7.1000e-004	39.1233
NaturalGas Unmitigated	4.3600e-003	0.0396	0.0333	2.4000e-004		3.0100e-003	3.0100e-003		3.0100e-003	3.0100e-003	0.0000	43.1435	43.1435	8.3000e-004	7.9000e-004	43.3999

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	208736	1.1300e-003	0.0102	8.6000e-003	6.0000e-005		7.8000e-004	7.8000e-004		7.8000e-004	7.8000e-004	0.0000	11.1390	11.1390	2.1000e-004	2.0000e-004	11.2052
Research & Development	599742	3.2300e-003	0.0294	0.0247	1.8000e-004		2.2300e-003	2.2300e-003		2.2300e-003	2.2300e-003	0.0000	32.0045	32.0045	6.1000e-004	5.9000e-004	32.1947
Total		**4.3600e-003**	**0.0396**	**0.0333**	**2.4000e-004**		**3.0100e-003**	**3.0100e-003**		**3.0100e-003**	**3.0100e-003**	**0.0000**	**43.1435**	**43.1435**	**8.2000e-004**	**7.9000e-004**	**43.3999**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	tons/yr										MT/yr					
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	188768	1.0200e-003	9.2500e-003	7.7700e-003	6.0000e-005		7.0000e-004	7.0000e-004		7.0000e-004	7.0000e-004	0.0000	10.0734	10.0734	1.9000e-004	1.8000e-004	10.1333
Research & Development	540044	2.9100e-003	0.0265	0.0222	1.6000e-004		2.0100e-003	2.0100e-003		2.0100e-003	2.0100e-003	0.0000	28.8188	28.8188	5.5000e-004	5.3000e-004	28.9900
Total		**3.9300e-003**	**0.0357**	**0.0300**	**2.2000e-004**		**2.7100e-003**	**2.7100e-003**		**2.7100e-003**	**2.7100e-003**	**0.0000**	**38.8922**	**38.8922**	**7.4000e-004**	**7.1000e-004**	**39.1233**

5.3 Energy by Land Use - Electricity

Unmitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Parking Lot	23800	1.2595	3.1000e-004	6.0000e-005	1.2866
Regional Shopping Center	267146	14.1375	3.5100e-003	7.3000e-004	14.4421
Research & Development	365142	19.3236	4.8000e-003	9.9000e-004	19.7398
Total		**34.7206**	**8.6200e-003**	**1.7800e-003**	**35.4685**

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Parking Lot	4760	0.2519	6.0000e-005	1.0000e-005	0.2573
Regional Shopping Center	52055.8	2.7548	6.8000e-004	1.4000e-004	2.8142
Research & Development	71968.2	3.8086	9.5000e-004	2.0000e-004	3.8906
Total		**6.8153**	**1.6900e-003**	**3.5000e-004**	**6.9621**

6.0 Area Detail

6.1 Mitigation Measures Area

Use Low VOC Cleaning Supplies

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	tons/yr										MT/yr					
Mitigated	0.3122	2.0000e-005	2.2000e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	4.3100e-003	4.3100e-003	1.0000e-005	0.0000	4.5800e-003
Unmitigated	0.3329	2.0000e-005	2.2000e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	4.3100e-003	4.3100e-003	1.0000e-005	0.0000	4.5800e-003

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0508					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.2819					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	2.0000e-004	2.0000e-005	2.2000e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	4.3100e-003	4.3100e-003	1.0000e-005	0.0000	4.5800e-003
Total	**0.3329**	**2.0000e-005**	**2.2000e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**	**0.0000**	**4.3100e-003**	**4.3100e-003**	**1.0000e-005**	**0.0000**	**4.5800e-003**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	tons/yr										MT/yr					
Architectural Coating	0.0508					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.2612					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	2.0000e-004	2.0000e-005	2.2000e-003	0.0000		1.0000e-005	1.0000e-005		1.0000e-005	1.0000e-005	0.0000	4.3100e-003	4.3100e-003	1.0000e-005	0.0000	4.5800e-003
Total	**0.3122**	**2.0000e-005**	**2.2000e-003**	**0.0000**		**1.0000e-005**	**1.0000e-005**		**1.0000e-005**	**1.0000e-005**	**0.0000**	**4.3100e-003**	**4.3100e-003**	**1.0000e-005**	**0.0000**	**4.5800e-003**

7.0 Water Detail

7.1 Mitigation Measures Water

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

Install Low Flow Toilet

Install Low Flow Shower

Use Water Efficient Irrigation System

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	11.9967	0.6384	0.0153	32.5257
Unmitigated	14.9592	0.7979	0.0192	40.6196

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	1.86366 / 1.14225	1.3365	0.0609	1.4700e-003	3.2980
Research & Development	22.5688 / 0	13.6227	0.7370	0.0177	37.3216
Total		**14.9592**	**0.7979**	**0.0192**	**40.6196**

Mitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Parking Lot	0 / 0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	1.49093 / 1.07257	1.0986	0.0487	1.1800e-003	2.6685
Research & Development	18.055 / 0	10.8981	0.5896	0.0142	29.8572
Total		**11.9967**	**0.6384**	**0.0153**	**32.5257**

8.0 Waste Detail

8.1 Mitigation Measures Waste

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	6.0715	0.3588	0.0000	15.0418
Unmitigated	6.0715	0.3588	0.0000	15.0418

8.2 Waste by Land Use

Unmitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	26.42	5.3630	0.3170	0.0000	13.2867
Research & Development	3.49	0.7084	0.0419	0.0000	1.7551
Total		**6.0715**	**0.3588**	**0.0000**	**15.0418**

8.2 Waste by Land Use

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Parking Lot	0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	26.42	5.3630	0.3170	0.0000	13.2867
Research & Development	3.49	0.7084	0.0419	0.0000	1.7551
Total		**6.0715**	**0.3588**	**0.0000**	**15.0418**

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Mace Triangle (Cumulative)

Yolo County, Summer

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Research & Development	45.90	1000sqft	1.05	45,901.00	0
Regional Shopping Center	25.16	1000sqft	0.58	25,155.00	0
Parking Lot	170.00	Space	1.53	68,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	6.8	**Precipitation Freq (Days)**	54
Climate Zone	2			**Operational Year**	2035
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	116.67	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - CO2 Intensity Factor adjusted basedon PG&E progress towards RPS

Land Use -

Construction Phase - Construction not modeled

Off-road Equipment - Construction not modeled

Vehicle Trips - Trip rates based on Fehr and Peers provided information and assumed uses

Energy Use - Adjusted per 2019 CBSC

Road Dust - % paved updated per location of site in urbanized area

Area Mitigation -

Energy Mitigation - Updated based on City of Davis Municipal Code requirements

Water Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	5.00	1.00
tblConstructionPhase	PhaseEndDate	5/5/2022	4/29/2022
tblEnergyUse	T24E	3.90	2.73
tblEnergyUse	T24E	1.65	1.16
tblEnergyUse	T24NG	11.34	7.94
tblEnergyUse	T24NG	18.58	13.01
tblLandUse	LandUseSquareFeet	45,900.00	45,901.00
tblLandUse	LandUseSquareFeet	25,160.00	25,155.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblProjectCharacteristics	CO2IntensityFactor	641.35	116.67
tblRoadDust	RoadPercentPave	94	100
tblTripsAndVMT	WorkerTripNumber	10.00	0.00
tblVehicleTrips	CC_TL	5.00	9.05
tblVehicleTrips	CC_TL	5.00	9.05
tblVehicleTrips	CNW_TL	7.00	12.67
tblVehicleTrips	CNW_TL	7.00	12.67
tblVehicleTrips	CW_TL	10.00	18.10
tblVehicleTrips	CW_TL	10.00	18.10
tblVehicleTrips	ST_TR	49.97	10.72
tblVehicleTrips	SU_TR	25.24	10.72
tblVehicleTrips	WD_TR	42.70	10.72
tblVehicleTrips	WD_TR	8.11	10.72

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	0.6588	6.7026	8.9518	0.0124	0.0000	0.3605	0.3605	0.0000	0.3316	0.3316	0.0000	1,204.9558	1,204.9558	0.3897	0.0000	1,214.6985
Maximum	**0.6588**	**6.7026**	**8.9518**	**0.0124**	**0.0000**	**0.3605**	**0.3605**	**0.0000**	**0.3316**	**0.3316**	**0.0000**	**1,204.9558**	**1,204.9558**	**0.3897**	**0.0000**	**1,214.6985**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	0.6588	6.7026	8.9518	0.0124	0.0000	0.3605	0.3605	0.0000	0.3316	0.3316	0.0000	1,204.9558	1,204.9558	0.3897	0.0000	1,214.6985
Maximum	**0.6588**	**6.7026**	**8.9518**	**0.0124**	**0.0000**	**0.3605**	**0.3605**	**0.0000**	**0.3316**	**0.3316**	**0.0000**	**1,204.9558**	**1,204.9558**	**0.3897**	**0.0000**	**1,214.6985**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.8254	2.2000e-004	0.0245	0.0000		9.0000e-005	9.0000e-005		9.0000e-005	9.0000e-005		0.0528	0.0528	1.4000e-004		0.0562
Energy	0.0239	0.2172	0.1824	1.3000e-003		0.0165	0.0165		0.0165	0.0165		260.5894	260.5894	4.9900e-003	4.7800e-003	262.1380
Mobile	0.8793	7.7220	9.5721	0.0622	5.7010	0.0250	5.7259	1.5359	0.0233	1.5592		6,360.8285	6,360.8285	0.1472		6,364.5085
Total	**2.7286**	**7.9394**	**9.7790**	**0.0635**	**5.7010**	**0.0415**	**5.7425**	**1.5359**	**0.0399**	**1.5758**		**6,621.4707**	**6,621.4707**	**0.1523**	**4.7800e-003**	**6,626.7026**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.7117	2.2000e-004	0.0245	0.0000		9.0000e-005	9.0000e-005		9.0000e-005	9.0000e-005		0.0528	0.0528	1.4000e-004		0.0562
Energy	0.0215	0.1958	0.1644	1.1700e-003		0.0149	0.0149		0.0149	0.0149		234.9111	234.9111	4.5000e-003	4.3100e-003	236.3071
Mobile	0.8793	7.7220	9.5721	0.0622	5.7010	0.0250	5.7259	1.5359	0.0233	1.5592		6,360.8285	6,360.8285	0.1472		6,364.5085
Total	**2.6125**	**7.9180**	**9.7610**	**0.0634**	**5.7010**	**0.0399**	**5.7409**	**1.5359**	**0.0383**	**1.5742**		**6,595.7924**	**6,595.7924**	**0.1518**	**4.3100e-003**	**6,600.8717**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	4.25	0.27	0.18	0.20	0.00	3.90	0.03	0.00	4.06	0.10	0.00	0.39	0.39	0.32	9.83	0.39

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	4/29/2022	4/29/2022	5	1	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 1.53

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Site Preparation	Rubber Tired Dozers	0	0.00	247	0.40

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	4	0.00	0.00	0.00	10.00	7.00	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Site Preparation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.6588	6.7026	8.9518	0.0124		0.3605	0.3605		0.3316	0.3316		1,204.955 8	1,204.955 8	0.3897		1,214.698 5
Total	**0.6588**	**6.7026**	**8.9518**	**0.0124**	**0.0000**	**0.3605**	**0.3605**	**0.0000**	**0.3316**	**0.3316**		**1,204.955 8**	**1,204.955 8**	**0.3897**		**1,214.698 5**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

3.2 Site Preparation - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.6588	6.7026	8.9518	0.0124		0.3605	0.3605		0.3316	0.3316	0.0000	1,204.955 8	1,204.955 8	0.3897		1,214.698 5
Total	**0.6588**	**6.7026**	**8.9518**	**0.0124**	**0.0000**	**0.3605**	**0.3605**	**0.0000**	**0.3316**	**0.3316**	**0.0000**	**1,204.955 8**	**1,204.955 8**	**0.3897**		**1,214.698 5**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.8793	7.7220	9.5721	0.0622	5.7010	0.0250	5.7259	1.5359	0.0233	1.5592		6,360.8285	6,360.8285	0.1472		6,364.5085
Unmitigated	0.8793	7.7220	9.5721	0.0622	5.7010	0.0250	5.7259	1.5359	0.0233	1.5592		6,360.8285	6,360.8285	0.1472		6,364.5085

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Parking Lot	0.00	0.00	0.00		
Regional Shopping Center	269.72	269.72	269.72	691,861	691,861
Research & Development	492.05	87.21	50.95	1,474,676	1,474,676
Total	761.76	356.93	320.66	2,166,537	2,166,537

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Parking Lot	10.00	5.00	7.00	0.00	0.00	0.00	0	0	0
Regional Shopping Center	18.10	9.05	12.67	16.30	64.70	19.00	54	35	11
Research & Development	18.10	9.05	12.67	33.00	48.00	19.00	82	15	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Parking Lot	0.510775	0.034299	0.212670	0.100609	0.010702	0.004092	0.073108	0.045201	0.001012	0.001235	0.005125	0.000644	0.000526
Regional Shopping Center	0.510775	0.034299	0.212670	0.100609	0.010702	0.004092	0.073108	0.045201	0.001012	0.001235	0.005125	0.000644	0.000526
Research & Development	0.510775	0.034299	0.212670	0.100609	0.010702	0.004092	0.073108	0.045201	0.001012	0.001235	0.005125	0.000644	0.000526

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Exceed Title 24

Percent of Electricity Use Generated with Renewable Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0215	0.1958	0.1644	1.1700e-003		0.0149	0.0149		0.0149	0.0149		234.9111	234.9111	4.5000e-003	4.3100e-003	236.3071
NaturalGas Unmitigated	0.0239	0.2172	0.1824	1.3000e-003		0.0165	0.0165		0.0165	0.0165		260.5894	260.5894	4.9900e-003	4.7800e-003	262.1380

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	571.88	6.1700e-003	0.0561	0.0471	3.4000e-004		4.2600e-003	4.2600e-003		4.2600e-003	4.2600e-003		67.2800	67.2800	1.2900e-003	1.2300e-003	67.6798
Research & Development	1643.13	0.0177	0.1611	0.1353	9.7000e-004		0.0122	0.0122		0.0122	0.0122		193.3094	193.3094	3.7100e-003	3.5400e-003	194.4582
Total		**0.0239**	**0.2172**	**0.1824**	**1.3100e-003**		**0.0165**	**0.0165**		**0.0165**	**0.0165**		**260.5894**	**260.5894**	**5.0000e-003**	**4.7700e-003**	**262.1380**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	0.517173	5.5800e-003	0.0507	0.0426	3.0000e-004		3.8500e-003	3.8500e-003		3.8500e-003	3.8500e-003		60.8439	60.8439	1.1700e-003	1.1200e-003	61.2055
Research & Development	1.47957	0.0160	0.1451	0.1219	8.7000e-004		0.0110	0.0110		0.0110	0.0110		174.0672	174.0672	3.3400e-003	3.1900e-003	175.1016
Total		**0.0215**	**0.1958**	**0.1644**	**1.1700e-003**		**0.0149**	**0.0149**		**0.0149**	**0.0149**		**234.9111**	**234.9111**	**4.5100e-003**	**4.3100e-003**	**236.3071**

6.0 Area Detail

6.1 Mitigation Measures Area

Use Low VOC Cleaning Supplies

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	1.7117	2.2000e-004	0.0245	0.0000		9.0000e-005	9.0000e-005		9.0000e-005	9.0000e-005		0.0528	0.0528	1.4000e-004		0.0562
Unmitigated	1.8254	2.2000e-004	0.0245	0.0000		9.0000e-005	9.0000e-005		9.0000e-005	9.0000e-005		0.0528	0.0528	1.4000e-004		0.0562

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.2785					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.5447					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	2.2400e-003	2.2000e-004	0.0245	0.0000		9.0000e-005	9.0000e-005		9.0000e-005	9.0000e-005		0.0528	0.0528	1.4000e-004		0.0562
Total	**1.8254**	**2.2000e-004**	**0.0245**	**0.0000**		**9.0000e-005**	**9.0000e-005**		**9.0000e-005**	**9.0000e-005**		**0.0528**	**0.0528**	**1.4000e-004**		**0.0562**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.2785					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.4310					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	2.2400e-003	2.2000e-004	0.0245	0.0000		9.0000e-005	9.0000e-005		9.0000e-005	9.0000e-005		0.0528	0.0528	1.4000e-004		0.0562
Total	**1.7117**	**2.2000e-004**	**0.0245**	**0.0000**		**9.0000e-005**	**9.0000e-005**		**9.0000e-005**	**9.0000e-005**		**0.0528**	**0.0528**	**1.4000e-004**		**0.0562**

7.0 Water Detail

7.1 Mitigation Measures Water

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

Install Low Flow Toilet

Install Low Flow Shower

Use Water Efficient Irrigation System

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Mace Triangle (Cumulative)

Yolo County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Research & Development	45.90	1000sqft	1.05	45,901.00	0
Regional Shopping Center	25.16	1000sqft	0.58	25,155.00	0
Parking Lot	170.00	Space	1.53	68,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	**Wind Speed (m/s)**	6.8	**Precipitation Freq (Days)**	54
Climate Zone	2			**Operational Year**	2035
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	116.67	**CH4 Intensity (lb/MWhr)**	0.029	**N2O Intensity (lb/MWhr)**	0.006

1.3 User Entered Comments & Non-Default Data

Project Characteristics - CO2 Intensity Factor adjusted basedon PG&E progress towards RPS

Land Use -

Construction Phase - Construction not modeled

Off-road Equipment - Construction not modeled

Vehicle Trips - Trip rates based on Fehr and Peers provided information and assumed uses

Energy Use - Adjusted per 2019 CBSC

Road Dust - % paved updated per location of site in urbanized area

Area Mitigation -

Energy Mitigation - Updated based on City of Davis Municipal Code requirements

Water Mitigation -

Table Name	Column Name	Default Value	New Value
tblConstructionPhase	NumDays	5.00	1.00
tblConstructionPhase	PhaseEndDate	5/5/2022	4/29/2022
tblEnergyUse	T24E	3.90	2.73
tblEnergyUse	T24E	1.65	1.16
tblEnergyUse	T24NG	11.34	7.94
tblEnergyUse	T24NG	18.58	13.01
tblLandUse	LandUseSquareFeet	45,900.00	45,901.00
tblLandUse	LandUseSquareFeet	25,160.00	25,155.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	UsageHours	8.00	0.00
tblProjectCharacteristics	CO2IntensityFactor	641.35	116.67
tblRoadDust	RoadPercentPave	94	100
tblTripsAndVMT	WorkerTripNumber	10.00	0.00
tblVehicleTrips	CC_TL	5.00	9.05
tblVehicleTrips	CC_TL	5.00	9.05
tblVehicleTrips	CNW_TL	7.00	12.67
tblVehicleTrips	CNW_TL	7.00	12.67
tblVehicleTrips	CW_TL	10.00	18.10
tblVehicleTrips	CW_TL	10.00	18.10
tblVehicleTrips	ST_TR	49.97	10.72
tblVehicleTrips	SU_TR	25.24	10.72
tblVehicleTrips	WD_TR	42.70	10.72
tblVehicleTrips	WD_TR	8.11	10.72

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	0.6588	6.7026	8.9518	0.0124	0.0000	0.3605	0.3605	0.0000	0.3316	0.3316	0.0000	1,204.955 8	1,204.955 8	0.3897	0.0000	1,214.698 5
Maximum	**0.6588**	**6.7026**	**8.9518**	**0.0124**	**0.0000**	**0.3605**	**0.3605**	**0.0000**	**0.3316**	**0.3316**	**0.0000**	**1,204.955 8**	**1,204.955 8**	**0.3897**	**0.0000**	**1,214.698 5**

Mitigated Construction

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Year	lb/day										lb/day					
2022	0.6588	6.7026	8.9518	0.0124	0.0000	0.3605	0.3605	0.0000	0.3316	0.3316	0.0000	1,204.955 8	1,204.955 8	0.3897	0.0000	1,214.698 5
Maximum	**0.6588**	**6.7026**	**8.9518**	**0.0124**	**0.0000**	**0.3605**	**0.3605**	**0.0000**	**0.3316**	**0.3316**	**0.0000**	**1,204.955 8**	**1,204.955 8**	**0.3897**	**0.0000**	**1,214.698 5**

	ROG	**NOx**	**CO**	**SO2**	**Fugitive PM10**	**Exhaust PM10**	**PM10 Total**	**Fugitive PM2.5**	**Exhaust PM2.5**	**PM2.5 Total**	**Bio- CO2**	**NBio-CO2**	**Total CO2**	**CH4**	**N20**	**CO2e**
Percent Reduction	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**	**0.00**

2.2 Overall Operational

Unmitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.8254	2.2000e-004	0.0245	0.0000		9.0000e-005	9.0000e-005		9.0000e-005	9.0000e-005		0.0528	0.0528	1.4000e-004		0.0562
Energy	0.0239	0.2172	0.1824	1.3000e-003		0.0165	0.0165		0.0165	0.0165		260.5894	260.5894	4.9900e-003	4.7800e-003	262.1380
Mobile	0.6921	7.9700	8.7666	0.0579	5.7010	0.0250	5.7260	1.5359	0.0234	1.5593		5,928.1773	5,928.1773	0.1523		5,931.9855
Total	**2.5414**	**8.1874**	**8.9735**	**0.0592**	**5.7010**	**0.0416**	**5.7426**	**1.5359**	**0.0400**	**1.5759**		**6,188.8195**	**6,188.8195**	**0.1575**	**4.7800e-003**	**6,194.1797**

Mitigated Operational

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Area	1.7117	2.2000e-004	0.0245	0.0000		9.0000e-005	9.0000e-005		9.0000e-005	9.0000e-005		0.0528	0.0528	1.4000e-004		0.0562
Energy	0.0215	0.1958	0.1644	1.1700e-003		0.0149	0.0149		0.0149	0.0149		234.9111	234.9111	4.5000e-003	4.3100e-003	236.3071
Mobile	0.6921	7.9700	8.7666	0.0579	5.7010	0.0250	5.7260	1.5359	0.0234	1.5593		5,928.1773	5,928.1773	0.1523		5,931.9855
Total	**2.4254**	**8.1660**	**8.9555**	**0.0591**	**5.7010**	**0.0400**	**5.7409**	**1.5359**	**0.0384**	**1.5743**		**6,163.1412**	**6,163.1412**	**0.1570**	**4.3100e-003**	**6,168.3488**

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N20	CO2e
Percent Reduction	4.57	0.26	0.20	0.22	0.00	3.89	0.03	0.00	4.05	0.10	0.00	0.41	0.41	0.31	9.83	0.42

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Site Preparation	Site Preparation	4/29/2022	4/29/2022	5	1	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 1.53

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Site Preparation	Rubber Tired Dozers	0	0.00	247	0.40

Trips and VMT

Phase Name	Offroad Equipment Count	Worker Trip Number	Vendor Trip Number	Hauling Trip Number	Worker Trip Length	Vendor Trip Length	Hauling Trip Length	Worker Vehicle Class	Vendor Vehicle Class	Hauling Vehicle Class
Site Preparation	4	0.00	0.00	0.00	10.00	7.00	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Site Preparation - 2022

Unmitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.6588	6.7026	8.9518	0.0124		0.3605	0.3605		0.3316	0.3316		1,204.955 8	1,204.955 8	0.3897		1,214.698 5
Total	**0.6588**	**6.7026**	**8.9518**	**0.0124**	**0.0000**	**0.3605**	**0.3605**	**0.0000**	**0.3316**	**0.3316**		**1,204.955 8**	**1,204.955 8**	**0.3897**		**1,214.698 5**

Unmitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

3.2 Site Preparation - 2022

Mitigated Construction On-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Fugitive Dust					0.0000	0.0000	0.0000	0.0000	0.0000	0.0000			0.0000			0.0000
Off-Road	0.6588	6.7026	8.9518	0.0124		0.3605	0.3605		0.3316	0.3316	0.0000	1,204.955 8	1,204.955 8	0.3897		1,214.698 5
Total	**0.6588**	**6.7026**	**8.9518**	**0.0124**	**0.0000**	**0.3605**	**0.3605**	**0.0000**	**0.3316**	**0.3316**	**0.0000**	**1,204.955 8**	**1,204.955 8**	**0.3897**		**1,214.698 5**

Mitigated Construction Off-Site

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Hauling	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Vendor	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Worker	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000	0.0000		0.0000
Total	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**	**0.0000**		**0.0000**	**0.0000**	**0.0000**		**0.0000**

4.0 Operational Detail - Mobile

4.1 Mitigation Measures Mobile

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	0.6921	7.9700	8.7666	0.0579	5.7010	0.0250	5.7260	1.5359	0.0234	1.5593		5,928.1773	5,928.1773	0.1523		5,931.9855
Unmitigated	0.6921	7.9700	8.7666	0.0579	5.7010	0.0250	5.7260	1.5359	0.0234	1.5593		5,928.1773	5,928.1773	0.1523		5,931.9855

4.2 Trip Summary Information

	Average Daily Trip Rate			Unmitigated	Mitigated
Land Use	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Parking Lot	0.00	0.00	0.00		
Regional Shopping Center	269.72	269.72	269.72	691,861	691,861
Research & Development	492.05	87.21	50.95	1,474,676	1,474,676
Total	761.76	356.93	320.66	2,166,537	2,166,537

4.3 Trip Type Information

	Miles			Trip %			Trip Purpose %		
Land Use	H-W or C-W	H-S or C-C	H-O or C-NW	H-W or C-W	H-S or C-C	H-O or C-NW	Primary	Diverted	Pass-by
Parking Lot	10.00	5.00	7.00	0.00	0.00	0.00	0	0	0
Regional Shopping Center	18.10	9.05	12.67	16.30	64.70	19.00	54	35	11
Research & Development	18.10	9.05	12.67	33.00	48.00	19.00	82	15	3

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Parking Lot	0.510775	0.034299	0.212670	0.100609	0.010702	0.004092	0.073108	0.045201	0.001012	0.001235	0.005125	0.000644	0.000526
Regional Shopping Center	0.510775	0.034299	0.212670	0.100609	0.010702	0.004092	0.073108	0.045201	0.001012	0.001235	0.005125	0.000644	0.000526
Research & Development	0.510775	0.034299	0.212670	0.100609	0.010702	0.004092	0.073108	0.045201	0.001012	0.001235	0.005125	0.000644	0.000526

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Exceed Title 24

Percent of Electricity Use Generated with Renewable Energy

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
NaturalGas Mitigated	0.0215	0.1958	0.1644	1.1700e-003		0.0149	0.0149		0.0149	0.0149		234.9111	234.9111	4.5000e-003	4.3100e-003	236.3071
NaturalGas Unmitigated	0.0239	0.2172	0.1824	1.3000e-003		0.0165	0.0165		0.0165	0.0165		260.5894	260.5894	4.9900e-003	4.7800e-003	262.1380

5.2 Energy by Land Use - NaturalGas

Unmitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	571.88	6.1700e-003	0.0561	0.0471	3.4000e-004		4.2600e-003	4.2600e-003		4.2600e-003	4.2600e-003		67.2800	67.2800	1.2900e-003	1.2300e-003	67.6798
Research & Development	1643.13	0.0177	0.1611	0.1353	9.7000e-004		0.0122	0.0122		0.0122	0.0122		193.3094	193.3094	3.7100e-003	3.5400e-003	194.4582
Total		**0.0239**	**0.2172**	**0.1824**	**1.3100e-003**		**0.0165**	**0.0165**		**0.0165**	**0.0165**		**260.5894**	**260.5894**	**5.0000e-003**	**4.7700e-003**	**262.1380**

Mitigated

	NaturalGas Use	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Land Use	kBTU/yr	lb/day										lb/day					
Parking Lot	0	0.0000	0.0000	0.0000	0.0000		0.0000	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	0.517173	5.5800e-003	0.0507	0.0426	3.0000e-004		3.8500e-003	3.8500e-003		3.8500e-003	3.8500e-003		60.8439	60.8439	1.1700e-003	1.1200e-003	61.2055
Research & Development	1.47957	0.0160	0.1451	0.1219	8.7000e-004		0.0110	0.0110		0.0110	0.0110		174.0672	174.0672	3.3400e-003	3.1900e-003	175.1016
Total		**0.0215**	**0.1958**	**0.1644**	**1.1700e-003**		**0.0149**	**0.0149**		**0.0149**	**0.0149**		**234.9111**	**234.9111**	**4.5100e-003**	**4.3100e-003**	**236.3071**

6.0 Area Detail

6.1 Mitigation Measures Area

Use Low VOC Cleaning Supplies

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Category	lb/day										lb/day					
Mitigated	1.7117	2.2000e-004	0.0245	0.0000		9.0000e-005	9.0000e-005		9.0000e-005	9.0000e-005		0.0528	0.0528	1.4000e-004		0.0562
Unmitigated	1.8254	2.2000e-004	0.0245	0.0000		9.0000e-005	9.0000e-005		9.0000e-005	9.0000e-005		0.0528	0.0528	1.4000e-004		0.0562

6.2 Area by SubCategory

Unmitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.2785					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.5447					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	2.2400e-003	2.2000e-004	0.0245	0.0000		9.0000e-005	9.0000e-005		9.0000e-005	9.0000e-005		0.0528	0.0528	1.4000e-004		0.0562
Total	**1.8254**	**2.2000e-004**	**0.0245**	**0.0000**		**9.0000e-005**	**9.0000e-005**		**9.0000e-005**	**9.0000e-005**		**0.0528**	**0.0528**	**1.4000e-004**		**0.0562**

Mitigated

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
SubCategory	lb/day										lb/day					
Architectural Coating	0.2785					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.4310					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	2.2400e-003	2.2000e-004	0.0245	0.0000		9.0000e-005	9.0000e-005		9.0000e-005	9.0000e-005		0.0528	0.0528	1.4000e-004		0.0562
Total	**1.7117**	**2.2000e-004**	**0.0245**	**0.0000**		**9.0000e-005**	**9.0000e-005**		**9.0000e-005**	**9.0000e-005**		**0.0528**	**0.0528**	**1.4000e-004**		**0.0562**

7.0 Water Detail

7.1 Mitigation Measures Water

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

Install Low Flow Toilet

Install Low Flow Shower

Use Water Efficient Irrigation System

8.0 Waste Detail

8.1 Mitigation Measures Waste

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type

User Defined Equipment

Equipment Type	Number

11.0 Vegetation

Mace Triangle (Cumulative)

Yolo County, Mitigation Report

Construction Mitigation Summary

Phase	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction												
Site Preparation	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

OFFROAD Equipment Mitigation

Equipment Type	Fuel Type	Tier	Number Mitigated	Total Number of Equipment	DPF	Oxidation Catalyst
Tractors/Loaders/Backhoes	Diesel	No Change	0	4	No Change	0.00
Rubber Tired Dozers	Diesel	No Change	0	0	No Change	0.00

Equipment Type	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	Unmitigated tons/yr						Unmitigated mt/yr					
Rubber Tired Dozers	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000
Tractors/Loaders/ Backhoes	3.30000E-004	3.35000E-003	4.48000E-003	1.00000E-005	1.80000E-004	1.70000E-004	0.00000E+000	5.46560E-001	5.46560E-001	1.80000E-004	0.00000E+000	5.50980E-001

Equipment Type	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
	Mitigated tons/yr						Mitigated mt/yr					
Rubber Tired Dozers	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000
Tractors/Loaders/Ba ckhoes	3.30000E-004	3.35000E-003	4.48000E-003	1.00000E-005	1.80000E-004	1.70000E-004	0.00000E+000	5.46560E-001	5.46560E-001	1.80000E-004	0.00000E+000	5.50980E-001

Equipment Type	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction												
Rubber Tired Dozers	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000
Tractors/Loaders/Backhoes	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000	0.00000E+000

Fugitive Dust Mitigation

Yes/No	Mitigation Measure	Mitigation Input		Mitigation Input		Mitigation Input	
No	Soil Stabilizer for unpaved Roads	PM10 Reduction		PM2.5 Reduction			
No	Replace Ground Cover of Area Disturbed	PM10 Reduction		PM2.5 Reduction			
No	Water Exposed Area	PM10 Reduction		PM2.5 Reduction		Frequency (per day)	
No	Unpaved Road Mitigation	Moisture Content %		Vehicle Speed (mph)	0.00		
No	Clean Paved Road	% PM Reduction	0.00				

		Unmitigated		Mitigated		Percent Reduction	
Phase	Source	PM10	PM2.5	PM10	PM2.5	PM10	PM2.5
Site Preparation	Fugitive Dust	0.00	0.00	0.00	0.00	0.00	0.00
Site Preparation	Roads	0.00	0.00	0.00	0.00	0.00	0.00

Operational Percent Reduction Summary

Category	ROG	NOx	CO	SO2	Exhaust PM10	Exhaust PM2.5	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction												
Architectural Coating	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Consumer Products	7.36	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Electricity	0.00	0.00	0.00	0.00	0.00	0.00	0.00	80.37	80.37	80.39	80.34	80.37
Hearth	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Landscaping	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mobile	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Natural Gas	9.86	9.87	9.88	8.33	9.97	9.97	0.00	9.85	9.85	9.76	10.13	9.85
Water Indoor	0.00	0.00	0.00	0.00	0.00	0.00	20.00	19.59	19.80	20.00	19.98	19.93
Water Outdoor	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Operational Mobile Mitigation

Project Setting:

Mitigation	Category	Measure	% Reduction	Input Value 1	Input Value 2	Input Value
No	Land Use	Increase Density	0.00			
No	Land Use	Increase Diversity	0.10	0.32		
No	Land Use	Improve Walkability Design	0.00			
No	Land Use	Improve Destination Accessibility	0.00			
No	Land Use	Increase Transit Accessibility	0.25			
No	Land Use	Integrate Below Market Rate Housing	0.00			
	Land Use	Land Use SubTotal	0.00			

No	Neighborhood Enhancements	Improve Pedestrian Network				
No	Neighborhood Enhancements	Provide Traffic Calming Measures				
No	Neighborhood Enhancements	Implement NEV Network	0.00			
	Neighborhood Enhancements	Neighborhood Enhancements Subtotal	0.00			
No	Parking Policy Pricing	Limit Parking Supply	0.00			
No	Parking Policy Pricing	Unbundle Parking Costs	0.00			
No	Parking Policy Pricing	On-street Market Pricing	0.00			
	Parking Policy Pricing	Parking Policy Pricing Subtotal	0.00			
No	Transit Improvements	Provide BRT System	0.00			
No	Transit Improvements	Expand Transit Network	0.00			
No	Transit Improvements	Increase Transit Frequency	0.00			
	Transit Improvements	Transit Improvements Subtotal	0.00			
		Land Use and Site Enhancement Subtotal	0.00			
No	Commute	Implement Trip Reduction Program				
No	Commute	Transit Subsidy				
No	Commute	Implement Employee Parking "Cash Out"				
No	Commute	Workplace Parking Charge				
No	Commute	Encourage Telecommuting and Alternative Work Schedules	0.00			
No	Commute	Market Commute Trip Reduction Option	0.00			
No	Commute	Employee Vanpool/Shuttle	0.00		2.00	
No	Commute	Provide Ride Sharing Program				
	Commute	Commute Subtotal	0.00			

No	School Trip	Implement School Bus Program	0.00			
		Total VMT Reduction	0.00			

Area Mitigation

Measure Implemented	Mitigation Measure	Input Value
No	Only Natural Gas Hearth	
No	No Hearth	
Yes	Use Low VOC Cleaning Supplies	
No	Use Low VOC Paint (Residential Interior)	100.00
No	Use Low VOC Paint (Residential Exterior)	100.00
No	Use Low VOC Paint (Non-residential Interior)	150.00
No	Use Low VOC Paint (Non-residential Exterior)	150.00
No	Use Low VOC Paint (Parking)	150.00
No	% Electric Lawnmower	0.00
No	% Electric Leafblower	0.00
No	% Electric Chainsaw	0.00

Energy Mitigation Measures

Measure Implemented	Mitigation Measure	Input Value 1	Input Value 2
Yes	Exceed Title 24	10.00	
No	Install High Efficiency Lighting		
Yes	On-site Renewable		80.00

Appliance Type	Land Use Subtype	% Improvement
ClothWasher		30.00
DishWasher		15.00
Fan		50.00
Refrigerator		15.00

Water Mitigation Measures

Measure Implemented	Mitigation Measure	Input Value 1	Input Value 2
No	Apply Water Conservation on Strategy	0.00	0.00
No	Use Reclaimed Water	0.00	0.00
No	Use Grey Water	0.00	
Yes	Install low-flow bathroom faucet	32.00	
Yes	Install low-flow Kitchen faucet	18.00	
Yes	Install low-flow Toilet	20.00	
Yes	Install low-flow Shower	20.00	
No	Turf Reduction	0.00	
Yes	Use Water Efficient Irrigation Systems	6.10	
No	Water Efficient Landscape	0.00	0.00

Solid Waste Mitigation

Mitigation Measures	Input Value

Institute Recycling and Composting Services Percent Reduction in Waste Disposed	

ARC Construction
AERMOD

AERMOD Model Options

Model Options

Pathway	Keyword	Description	Value
CO	TITLEONE	Project title 1	Aggie Research Campus
CO	TITLETWO	Project title 2	
CO	MODELOPT	Model options	DFAULT,CONC,NODRYDPLT,NOWETDPLT
CO	AVERTIME	Averaging times	1,ANNUAL
CO	URBANOPT	Urban options	
CO	POLLUTID	Pollutant ID	PM25 H1H
CO	HALFLIFE	Half life	
CO	DCAYCOEF	Decay coefficient	
CO	FLAGPOLE	Flagpole receptor heights	1.8
CO	RUNORNOT	Run or Not	RUN
CO	EVENTFIL	Event file	F
CO	SAVEFILE	Save file	F
CO	INITFILE	Initialization file	
CO	MULTYEAR	Multiple year option	N/A
CO	DEBUGOPT	Debug options	N/A
CO	ERRORFIL	Error file	F
SO	ELEVUNIT	Elevation units	METERS
SO	EMISUNIT	Emission units	N/A
RE	ELEVUNIT	Elevation units	METERS
ME	SURFFILE	Surface met file	C:\USERS\JBYRNE\DESKTOP\SACINT~1\2020\724839\INT10-~1.SFC
ME	PROFFILE	Profile met file	C:\USERS\JBYRNE\DESKTOP\SACINT~1\2020\724839\INT10-~1.PFL
ME	SURFDATA	Surf met data info.	93225 2010
ME	UAIRDATA	U-Air met data info.	23230 2010
ME	SITEDATA	On-site met data info.	
ME	PROFBASE	Elev. above MSL	0
ME	STARTEND	Start-end met dates	
ME	WDROTATE	Wind dir. rot. adjust.	
ME	WINDCATS	Wind speed cat. max.	
ME	SCIMBYHR	SCIM sample params	
EV	DAYTABLE	Print summary opt.	N/A
OU	EVENTOUT	Output info. level	N/A

OU	DAYTABLE	Print summary opt.	

Source Parameter Tables

All Sources

Source ID / Pollutant ID	Source Type	Description	UTM		Elev.	Emiss. Rate	Emiss. Units	Release Height
			East (m)	North (m)	(m)			(m)
FLT1B091	VOLUME	Construction Equip	614115.6	4268283.2	0	0.000076194	(g/s)	5
FLT1B092	VOLUME	Construction Equip	614179.2	4268283.2	0	0.000076194	(g/s)	5
FLT1B093	VOLUME	Construction Equip	614242.8	4268283.2	0	0.000076194	(g/s)	5
FLT1B094	VOLUME	Construction Equip	614306.4	4268283.2	0	0.000076194	(g/s)	5
FLT1B095	VOLUME	Construction Equip	614370.0	4268283.2	0	0.000076194	(g/s)	5
FLT1B098	VOLUME	Construction Equip	614052.0	4268346.8	0	0.000076194	(g/s)	5
FLT1B099	VOLUME	Construction Equip	614115.6	4268346.8	0	0.000076194	(g/s)	5
FLT1B09A	VOLUME	Construction Equip	614179.2	4268346.8	0	0.000076194	(g/s)	5
FLT1B09B	VOLUME	Construction Equip	614242.8	4268346.8	0	0.000076194	(g/s)	5
FLT1B09C	VOLUME	Construction Equip	614306.4	4268346.8	0	0.000076194	(g/s)	5
FLT1B09D	VOLUME	Construction Equip	614370.0	4268346.8	0	0.000076194	(g/s)	5
FLT1B09E	VOLUME	Construction Equip	614433.7	4268346.8	0	0.000076194	(g/s)	5
FLT1B09F	VOLUME	Construction Equip	614497.3	4268346.8	0	0.000076194	(g/s)	5
FLT1B09G	VOLUME	Construction Equip	614560.9	4268346.8	0	0.000076194	(g/s)	5
FLT1B09H	VOLUME	Construction Equip	613861.1	4268410.4	0	0.000076194	(g/s)	5
FLT1B09I	VOLUME	Construction Equip	613924.7	4268410.4	0	0.000076194	(g/s)	5
FLT1B09J	VOLUME	Construction Equip	613988.3	4268410.4	0	0.000076194	(g/s)	5
FLT1B09K	VOLUME	Construction Equip	614052.0	4268410.4	0	0.000076194	(g/s)	5
FLT1B09L	VOLUME	Construction Equip	614115.6	4268410.4	0	0.000076194	(g/s)	5
FLT1B09M	VOLUME	Construction Equip	614179.2	4268410.4	0	0.000076194	(g/s)	5
FLT1B09N	VOLUME	Construction Equip	614242.8	4268410.4	0	0.000076194	(g/s)	5
FLT1B09O	VOLUME	Construction Equip	614306.4	4268410.4	0	0.000076194	(g/s)	5
FLT1B09P	VOLUME	Construction Equip	614370.0	4268410.4	0	0.000076194	(g/s)	5
FLT1B09Q	VOLUME	Construction Equip	614433.7	4268410.4	0	0.000076194	(g/s)	5
FLT1B09R	VOLUME	Construction Equip	614497.3	4268410.4	0	0.000076194	(g/s)	5
FLT1B09S	VOLUME	Construction Equip	614560.9	4268410.4	0	0.000076194	(g/s)	5
FLT1B09T	VOLUME	Construction Equip	613861.1	4268474.1	0	0.000076194	(g/s)	5
FLT1B09U	VOLUME	Construction Equip	613924.7	4268474.1	0	0.000076194	(g/s)	5
FLT1B09V	VOLUME	Construction Equip	613988.3	4268474.1	0	0.000076194	(g/s)	5
FLT1B09W	VOLUME	Construction Equip	614052.0	4268474.1	0	0.000076194	(g/s)	5
FLT1B09X	VOLUME	Construction Equip	614115.6	4268474.1	0	0.000076194	(g/s)	5
FLT1B09Y	VOLUME	Construction Equip	614179.2	4268474.1	0	0.000076194	(g/s)	5
FLT1B09Z	VOLUME	Construction Equip	614242.8	4268474.1	0	0.000076194	(g/s)	5
FLT1B0A0	VOLUME	Construction Equip	614306.4	4268474.1	0	0.000076194	(g/s)	5

FLT1B0A1	VOLUME	Construction Equip	614370.0	4268474.1	0	0.000076194	(g/s)	5
FLT1B0A2	VOLUME	Construction Equip	614433.7	4268474.1	0	0.000076194	(g/s)	5
FLT1B0A3	VOLUME	Construction Equip	614497.3	4268474.1	0	0.000076194	(g/s)	5
FLT1B0A4	VOLUME	Construction Equip	614560.9	4268474.1	0	0.000076194	(g/s)	5
FLT1B0A5	VOLUME	Construction Equip	613861.1	4268537.7	0	0.000076194	(g/s)	5
FLT1B0A6	VOLUME	Construction Equip	613924.7	4268537.7	0	0.000076194	(g/s)	5
FLT1B0A7	VOLUME	Construction Equip	613988.3	4268537.7	0	0.000076194	(g/s)	5
FLT1B0A8	VOLUME	Construction Equip	614052.0	4268537.7	0	0.000076194	(g/s)	5
FLT1B0A9	VOLUME	Construction Equip	614115.6	4268537.7	0	0.000076194	(g/s)	5
FLT1B0AA	VOLUME	Construction Equip	614179.2	4268537.7	0	0.000076194	(g/s)	5
FLT1B0AB	VOLUME	Construction Equip	614242.8	4268537.7	0	0.000076194	(g/s)	5
FLT1B0AC	VOLUME	Construction Equip	614306.4	4268537.7	0	0.000076194	(g/s)	5
FLT1B0AD	VOLUME	Construction Equip	614370.0	4268537.7	0	0.000076194	(g/s)	5
FLT1B0AE	VOLUME	Construction Equip	614433.7	4268537.7	0	0.000076194	(g/s)	5
FLT1B0AF	VOLUME	Construction Equip	614497.3	4268537.7	0	0.000076194	(g/s)	5
FLT1B0AG	VOLUME	Construction Equip	614560.9	4268537.7	0	0.000076194	(g/s)	5
FLT1B0AH	VOLUME	Construction Equip	613861.1	4268601.3	0	0.000076194	(g/s)	5
FLT1B0AI	VOLUME	Construction Equip	613924.7	4268601.3	0	0.000076194	(g/s)	5
FLT1B0AJ	VOLUME	Construction Equip	613988.3	4268601.3	0	0.000076194	(g/s)	5
FLT1B0AK	VOLUME	Construction Equip	614052.0	4268601.3	0	0.000076194	(g/s)	5
FLT1B0AL	VOLUME	Construction Equip	614115.6	4268601.3	0	0.000076194	(g/s)	5
FLT1B0AM	VOLUME	Construction Equip	614179.2	4268601.3	0	0.000076194	(g/s)	5
FLT1B0AN	VOLUME	Construction Equip	614242.8	4268601.3	0	0.000076194	(g/s)	5
FLT1B0AO	VOLUME	Construction Equip	614306.4	4268601.3	0	0.000076194	(g/s)	5
FLT1B0AP	VOLUME	Construction Equip	614370.0	4268601.3	0	0.000076194	(g/s)	5
FLT1B0AQ	VOLUME	Construction Equip	614433.7	4268601.3	0	0.000076194	(g/s)	5
FLT1B0AR	VOLUME	Construction Equip	614497.3	4268601.3	0	0.000076194	(g/s)	5
FLT1B0AS	VOLUME	Construction Equip	614560.9	4268601.3	0	0.000076194	(g/s)	5
FLT1B0AT	VOLUME	Construction Equip	613861.1	4268664.9	0	0.000076194	(g/s)	5
FLT1B0AU	VOLUME	Construction Equip	613924.7	4268664.9	0	0.000076194	(g/s)	5
FLT1B0AV	VOLUME	Construction Equip	613988.3	4268664.9	0	0.000076194	(g/s)	5
FLT1B0AW	VOLUME	Construction Equip	614052.0	4268664.9	0	0.000076194	(g/s)	5
FLT1B0AX	VOLUME	Construction Equip	614115.6	4268664.9	0	0.000076194	(g/s)	5
FLT1B0AY	VOLUME	Construction Equip	614179.2	4268664.9	0	0.000076194	(g/s)	5
FLT1B0AZ	VOLUME	Construction Equip	614242.8	4268664.9	0	0.000076194	(g/s)	5
FLT1B0B0	VOLUME	Construction Equip	614306.4	4268664.9	0	0.000076194	(g/s)	5
FLT1B0B1	VOLUME	Construction Equip	614370.0	4268664.9	0	0.000076194	(g/s)	5
FLT1B0B2	VOLUME	Construction Equip	614433.7	4268664.9	0	0.000076194	(g/s)	5
FLT1B0B3	VOLUME	Construction Equip	614497.3	4268664.9	0	0.000076194	(g/s)	5
FLT1B0B4	VOLUME	Construction Equip	614560.9	4268664.9	0	0.000076194	(g/s)	5
FLT1B0B5	VOLUME	Construction Equip	613861.1	4268728.5	0	0.000076194	(g/s)	5
FLT1B0B6	VOLUME	Construction Equip	613924.7	4268728.5	0	0.000076194	(g/s)	5
FLT1B0B7	VOLUME	Construction Equip	613988.3	4268728.5	0	0.000076194	(g/s)	5
FLT1B0B8	VOLUME	Construction Equip	614052.0	4268728.5	0	0.000076194	(g/s)	5
FLT1B0B9	VOLUME	Construction Equip	614115.6	4268728.5	0	0.000076194	(g/s)	5
FLT1B0BA	VOLUME	Construction Equip	614179.2	4268728.5	0	0.000076194	(g/s)	5

FLT1B0BB	VOLUME	Construction Equip	614242.8	4268728.5	0	0.000076194	(g/s)	5
FLT1B0BC	VOLUME	Construction Equip	614306.4	4268728.5	0	0.000076194	(g/s)	5
FLT1B0BD	VOLUME	Construction Equip	614370.0	4268728.5	0	0.000076194	(g/s)	5
FLT1B0BE	VOLUME	Construction Equip	614433.7	4268728.5	0	0.000076194	(g/s)	5
FLT1B0BF	VOLUME	Construction Equip	614497.3	4268728.5	0	0.000076194	(g/s)	5
FLT1B0BG	VOLUME	Construction Equip	614560.9	4268728.5	0	0.000076194	(g/s)	5
FLT1B0BH	VOLUME	Construction Equip	613861.1	4268792.1	0	0.000076194	(g/s)	5
FLT1B0BI	VOLUME	Construction Equip	613924.7	4268792.1	0	0.000076194	(g/s)	5
FLT1B0BJ	VOLUME	Construction Equip	613988.3	4268792.1	0	0.000076194	(g/s)	5
FLT1B0BK	VOLUME	Construction Equip	614052.0	4268792.1	0	0.000076194	(g/s)	5
FLT1B0BL	VOLUME	Construction Equip	614115.6	4268792.1	0	0.000076194	(g/s)	5
FLT1B0BM	VOLUME	Construction Equip	614179.2	4268792.1	0	0.000076194	(g/s)	5
FLT1B0BN	VOLUME	Construction Equip	614242.8	4268792.1	0	0.000076194	(g/s)	5
FLT1B0BO	VOLUME	Construction Equip	614306.4	4268792.1	0	0.000076194	(g/s)	5
FLT1B0BP	VOLUME	Construction Equip	614370.0	4268792.1	0	0.000076194	(g/s)	5
FLT1B0BQ	VOLUME	Construction Equip	614433.7	4268792.1	0	0.000076194	(g/s)	5
FLT1B0BR	VOLUME	Construction Equip	614497.3	4268792.1	0	0.000076194	(g/s)	5
FLT1B0BS	VOLUME	Construction Equip	614560.9	4268792.1	0	0.000076194	(g/s)	5

Volume Sources

Source ID / Pollutant ID	Description	UTM		Elev.	Emiss. Rate	Release Height	Init. Lat. Dim.	Init. Vert. Dim.
		East (m)	North (m)	(m)	(g/s)	(m)	(m)	(m)
FLT1B091	Construction Equip	614115.6	4268283.2	0	0.000076194	5	29.59	1
FLT1B092	Construction Equip	614179.2	4268283.2	0	0.000076194	5	29.59	1
FLT1B093	Construction Equip	614242.8	4268283.2	0	0.000076194	5	29.59	1
FLT1B094	Construction Equip	614306.4	4268283.2	0	0.000076194	5	29.59	1
FLT1B095	Construction Equip	614370.0	4268283.2	0	0.000076194	5	29.59	1
FLT1B098	Construction Equip	614052.0	4268346.8	0	0.000076194	5	29.59	1
FLT1B099	Construction Equip	614115.6	4268346.8	0	0.000076194	5	29.59	1
FLT1B09A	Construction Equip	614179.2	4268346.8	0	0.000076194	5	29.59	1
FLT1B09B	Construction Equip	614242.8	4268346.8	0	0.000076194	5	29.59	1
FLT1B09C	Construction Equip	614306.4	4268346.8	0	0.000076194	5	29.59	1
FLT1B09D	Construction Equip	614370.0	4268346.8	0	0.000076194	5	29.59	1
FLT1B09E	Construction Equip	614433.7	4268346.8	0	0.000076194	5	29.59	1
FLT1B09F	Construction Equip	614497.3	4268346.8	0	0.000076194	5	29.59	1
FLT1B09G	Construction Equip	614560.9	4268346.8	0	0.000076194	5	29.59	1
FLT1B09H	Construction Equip	613861.1	4268410.4	0	0.000076194	5	29.59	1
FLT1B09I	Construction Equip	613924.7	4268410.4	0	0.000076194	5	29.59	1
FLT1B09J	Construction Equip	613988.3	4268410.4	0	0.000076194	5	29.59	1
FLT1B09K	Construction Equip	614052.0	4268410.4	0	0.000076194	5	29.59	1
FLT1B09L	Construction Equip	614115.6	4268410.4	0	0.000076194	5	29.59	1
FLT1B09M	Construction Equip	614179.2	4268410.4	0	0.000076194	5	29.59	1
FLT1B09N	Construction Equip	614242.8	4268410.4	0	0.000076194	5	29.59	1
FLT1B09O	Construction Equip	614306.4	4268410.4	0	0.000076194	5	29.59	1

FLT1B09P	Construction Equip	614370.0	4268410.4	0	0.000076194	5	29.59	1
FLT1B09Q	Construction Equip	614433.7	4268410.4	0	0.000076194	5	29.59	1
FLT1B09R	Construction Equip	614497.3	4268410.4	0	0.000076194	5	29.59	1
FLT1B09S	Construction Equip	614560.9	4268410.4	0	0.000076194	5	29.59	1
FLT1B09T	Construction Equip	613861.1	4268474.1	0	0.000076194	5	29.59	1
FLT1B09U	Construction Equip	613924.7	4268474.1	0	0.000076194	5	29.59	1
FLT1B09V	Construction Equip	613988.3	4268474.1	0	0.000076194	5	29.59	1
FLT1B09W	Construction Equip	614052.0	4268474.1	0	0.000076194	5	29.59	1
FLT1B09X	Construction Equip	614115.6	4268474.1	0	0.000076194	5	29.59	1
FLT1B09Y	Construction Equip	614179.2	4268474.1	0	0.000076194	5	29.59	1
FLT1B09Z	Construction Equip	614242.8	4268474.1	0	0.000076194	5	29.59	1
FLT1B0A0	Construction Equip	614306.4	4268474.1	0	0.000076194	5	29.59	1
FLT1B0A1	Construction Equip	614370.0	4268474.1	0	0.000076194	5	29.59	1
FLT1B0A2	Construction Equip	614433.7	4268474.1	0	0.000076194	5	29.59	1
FLT1B0A3	Construction Equip	614497.3	4268474.1	0	0.000076194	5	29.59	1
FLT1B0A4	Construction Equip	614560.9	4268474.1	0	0.000076194	5	29.59	1
FLT1B0A5	Construction Equip	613861.1	4268537.7	0	0.000076194	5	29.59	1
FLT1B0A6	Construction Equip	613924.7	4268537.7	0	0.000076194	5	29.59	1
FLT1B0A7	Construction Equip	613988.3	4268537.7	0	0.000076194	5	29.59	1
FLT1B0A8	Construction Equip	614052.0	4268537.7	0	0.000076194	5	29.59	1
FLT1B0A9	Construction Equip	614115.6	4268537.7	0	0.000076194	5	29.59	1
FLT1B0AA	Construction Equip	614179.2	4268537.7	0	0.000076194	5	29.59	1
FLT1B0AB	Construction Equip	614242.8	4268537.7	0	0.000076194	5	29.59	1
FLT1B0AC	Construction Equip	614306.4	4268537.7	0	0.000076194	5	29.59	1
FLT1B0AD	Construction Equip	614370.0	4268537.7	0	0.000076194	5	29.59	1
FLT1B0AE	Construction Equip	614433.7	4268537.7	0	0.000076194	5	29.59	1
FLT1B0AF	Construction Equip	614497.3	4268537.7	0	0.000076194	5	29.59	1
FLT1B0AG	Construction Equip	614560.9	4268537.7	0	0.000076194	5	29.59	1
FLT1B0AH	Construction Equip	613861.1	4268601.3	0	0.000076194	5	29.59	1
FLT1B0AI	Construction Equip	613924.7	4268601.3	0	0.000076194	5	29.59	1
FLT1B0AJ	Construction Equip	613988.3	4268601.3	0	0.000076194	5	29.59	1
FLT1B0AK	Construction Equip	614052.0	4268601.3	0	0.000076194	5	29.59	1
FLT1B0AL	Construction Equip	614115.6	4268601.3	0	0.000076194	5	29.59	1
FLT1B0AM	Construction Equip	614179.2	4268601.3	0	0.000076194	5	29.59	1
FLT1B0AN	Construction Equip	614242.8	4268601.3	0	0.000076194	5	29.59	1
FLT1B0AO	Construction Equip	614306.4	4268601.3	0	0.000076194	5	29.59	1
FLT1B0AP	Construction Equip	614370.0	4268601.3	0	0.000076194	5	29.59	1
FLT1B0AQ	Construction Equip	614433.7	4268601.3	0	0.000076194	5	29.59	1
FLT1B0AR	Construction Equip	614497.3	4268601.3	0	0.000076194	5	29.59	1
FLT1B0AS	Construction Equip	614560.9	4268601.3	0	0.000076194	5	29.59	1
FLT1B0AT	Construction Equip	613861.1	4268664.9	0	0.000076194	5	29.59	1
FLT1B0AU	Construction Equip	613924.7	4268664.9	0	0.000076194	5	29.59	1
FLT1B0AV	Construction Equip	613988.3	4268664.9	0	0.000076194	5	29.59	1
FLT1B0AW	Construction Equip	614052.0	4268664.9	0	0.000076194	5	29.59	1
FLT1B0AX	Construction Equip	614115.6	4268664.9	0	0.000076194	5	29.59	1

FLT1B0AY	Construction Equip	614179.2	4268664.9	0	0.000076194	5	29.59	1
FLT1B0AZ	Construction Equip	614242.8	4268664.9	0	0.000076194	5	29.59	1
FLT1B0B0	Construction Equip	614306.4	4268664.9	0	0.000076194	5	29.59	1
FLT1B0B1	Construction Equip	614370.0	4268664.9	0	0.000076194	5	29.59	1
FLT1B0B2	Construction Equip	614433.7	4268664.9	0	0.000076194	5	29.59	1
FLT1B0B3	Construction Equip	614497.3	4268664.9	0	0.000076194	5	29.59	1
FLT1B0B4	Construction Equip	614560.9	4268664.9	0	0.000076194	5	29.59	1
FLT1B0B5	Construction Equip	613861.1	4268728.5	0	0.000076194	5	29.59	1
FLT1B0B6	Construction Equip	613924.7	4268728.5	0	0.000076194	5	29.59	1
FLT1B0B7	Construction Equip	613988.3	4268728.5	0	0.000076194	5	29.59	1
FLT1B0B8	Construction Equip	614052.0	4268728.5	0	0.000076194	5	29.59	1
FLT1B0B9	Construction Equip	614115.6	4268728.5	0	0.000076194	5	29.59	1
FLT1B0BA	Construction Equip	614179.2	4268728.5	0	0.000076194	5	29.59	1
FLT1B0BB	Construction Equip	614242.8	4268728.5	0	0.000076194	5	29.59	1
FLT1B0BC	Construction Equip	614306.4	4268728.5	0	0.000076194	5	29.59	1
FLT1B0BD	Construction Equip	614370.0	4268728.5	0	0.000076194	5	29.59	1
FLT1B0BE	Construction Equip	614433.7	4268728.5	0	0.000076194	5	29.59	1
FLT1B0BF	Construction Equip	614497.3	4268728.5	0	0.000076194	5	29.59	1
FLT1B0BG	Construction Equip	614560.9	4268728.5	0	0.000076194	5	29.59	1
FLT1B0BH	Construction Equip	613861.1	4268792.1	0	0.000076194	5	29.59	1
FLT1B0BI	Construction Equip	613924.7	4268792.1	0	0.000076194	5	29.59	1
FLT1B0BJ	Construction Equip	613988.3	4268792.1	0	0.000076194	5	29.59	1
FLT1B0BK	Construction Equip	614052.0	4268792.1	0	0.000076194	5	29.59	1
FLT1B0BL	Construction Equip	614115.6	4268792.1	0	0.000076194	5	29.59	1
FLT1B0BM	Construction Equip	614179.2	4268792.1	0	0.000076194	5	29.59	1
FLT1B0BN	Construction Equip	614242.8	4268792.1	0	0.000076194	5	29.59	1
FLT1B0BO	Construction Equip	614306.4	4268792.1	0	0.000076194	5	29.59	1
FLT1B0BP	Construction Equip	614370.0	4268792.1	0	0.000076194	5	29.59	1
FLT1B0BQ	Construction Equip	614433.7	4268792.1	0	0.000076194	5	29.59	1
FLT1B0BR	Construction Equip	614497.3	4268792.1	0	0.000076194	5	29.59	1
FLT1B0BS	Construction Equip	614560.9	4268792.1	0	0.000076194	5	29.59	1

BREEZE AERMOD Model Results

Max. Annual (5 YEARS) Results of Pollutant: PM25 (ug/m**3)

Group ID	High	Avg. Conc.	UTM East (m)	UTM North (m)	Elev. (m)	Hill Ht. (m)	Flag Ht. (m)	Rec. Type	Grid ID
ALL	1ST	0.00881	614420.30	4267950.60	0.00	0.00	1.80	DC	
	2ND	0.00881	614425.30	4267950.60	0.00	0.00	1.80	DC	
	3RD	0.00881	614415.30	4267950.60	0.00	0.00	1.80	DC	
	4TH	0.00881	614430.30	4267950.60	0.00	0.00	1.80	DC	
	5TH	0.00880	614410.30	4267950.60	0.00	0.00	1.80	DC	
	6TH	0.00880	614435.30	4267950.60	0.00	0.00	1.80	DC	
	7TH	0.00880	614405.30	4267950.60	0.00	0.00	1.80	DC	
	8TH	0.00880	614440.30	4267950.60	0.00	0.00	1.80	DC	
	9TH	0.00879	614400.30	4267950.60	0.00	0.00	1.80	DC	
	10TH	0.00879	614445.30	4267950.60	0.00	0.00	1.80	DC	

Highest Results of Pollutant: PM25

Avg. Per.	Grp ID	High	Type	Val	Units	Date YYMMDDHH	UTM East (m)	UTM North (m)	Elev. (m)	Hill Ht. (m)	Flag Ht. (m)	Rec. Type	Grid ID
1-HR	ALL	1ST	Avg. Conc.	1.31501	ug/m**3	10013119	613743.50	4268510.40	0.00	0.00	1.80	DC	

Summary of Total Messages

#	Message Type
0	Fatal Error Message(s)
4	Warning Message(s)
9526	Informational Message(s)
43824	Hours Were Processed
7881	Calm Hours Identified
1645	Missing Hours Identified (3.75 Percent)

Error & Warning Messages

Msg. Type	Pathway	Ref. #	Description
WARNING	CO	W276	Special proc for 1h-NO2/SO2 24hPM25 NAAQS disabled PM25 H1H
WARNING	CO	W363	Multiyr 24h/Ann PM25 processing not applicable for PM25 H1H

WARNING	OU	W565	Possible Conflict With Dynamically Allocated FUNIT PLOTFILE
WARNING	OU	W565	Possible Conflict With Dynamically Allocated FUNIT PLOTFILE

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ARC HARP
Construction

Max Emissions Scenario Output
HARP2 - HRACalc (dated 19044) 2/4/2020 9:18:23 AM - Output Log

GLCs loaded successfully
Pollutants loaded successfully
****
RISK SCENARIO SETTINGS

Receptor Type: Resident
Scenario: All
Calculation Method: Derived

****
EXPOSURE DURATION PARAMETERS FOR CANCER

Start Age: -0.25
Total Exposure Duration: 20

Exposure Duration Bin Distribution
3rd Trimester Bin: 0.25
0<2 Years Bin: 2
2<9 Years Bin: 0
2<16 Years Bin: 14
16<30 Years Bin: 4
16 to 70 Years Bin: 0

****
PATHWAYS ENABLED

NOTE: Inhalation is always enabled and used for all assessments. The remaining pathways are only used for cancer and noncancer chronic assessments.

Inhalation: True
Soil: False
Dermal: False
Mother's milk: False
Water: False
Fish: False
Homegrown crops: False
Beef: False
Dairy: False
Pig: False
Chicken: False
Egg: False

****
INHALATION

Daily breathing rate: Moderate8HR

Worker Adjustment Factors
Worker adjustment factors enabled: NO

Fraction at time at home
3rd Trimester to 16 years: OFF
16 years to 70 years: ON

****
TIER 2 SETTINGS

Tier2 adjustments were used in this assessment. Please see the input file for details.
Tier2 - What was changed: ED or start age changed|
Calculating cancer risk
Cancer risk saved to: C:\Users\jbyrne\Desktop\ARC HARP\Max Emissions Scenario CancerRisk.csv
Calculating chronic risk
Chronic risk saved to: C:\Users\jbyrne\Desktop\ARC HARP\Max Emissions Scenario NCChronicRisk.csv
Calculating acute risk
Acute risk saved to: C:\Users\jbyrne\Desktop\ARC HARP\Max Emissions Scenario NCAcuteRisk.csv
HRA ran successfully

1	9901	DieselExhP	0.00881	1.31501	0	0	0

*HARP - HRACalc v19044 2/4/2020 9:18:23 AM - Cancer Risk - Input File: C:\Users\jbyrne\Desktop\ARC HARP\Max Emissions Scenario HRAInput.hra

INDEX	GRP1	GRP2	POLID	POLABBREV	CONC	RISK_SUM	SCENARIO	DETAILS	INH_RISK	SOIL_RISK	DERMAL_RISK
1			9901	DieselExhPM	0.00881	6.26E-06	20YrCancerDerived_Inh_FAH16to70	*	6.26E-06	0.00E+00	0.00E+00

MMILK_RISK	WATER_RISK	FISH_RISK	CROP_RISK	BEEF_RISK	DAIRY_RISK	PIG_RISK	CHICKEN_RISK	EGG_RISK	1ST_DRIVER	2ND_DRIVER	PASTURE_CONC
0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	INHALATION		0.00E+00

FISH_CONC	WATER_CONC
0.00E+00	0.00E+00

*HARP - HRACalc v19044 2/4/2020 9:18:23 AM - Acute Risk - Input File: C:\Users\jbyrne\Desktop\ARC HARP\Max Emissions Scenario HRAInput.hra

INDEX	GRP1	GRP2	POLID	POLABBREV	CONC	SCENARIO	CV	CNS	IMMUN	KIDNEY	GILV	REPRO/DEVEL
1			9901	DieselExhPM	1.31501	NonCancerAcute	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

RESP	SKIN	EYE	BONE/TEETH	ENDO	BLOOD	ODOR	GENERAL
0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00	0.00E+00

1	2	3	4	5	6	7	8	9	10
POL	POLABBREV	InhalationCancerURF	InhalationCancerSlopeFactor	OralCancerSlopeFactor	AcuteREL	InhalationChronicREL	OralChronicREL	IsMultipathway	AcuteCV_
9901	DieselExhPM	0.0003	1.1			5		FALSE	FALSE

11	12	13	14	15	16	17	18	19	20
AcuteCNS_	AcuteIMMUN_	AcuteKIDNEY_	AcuteGILV_	AcuteREPRO_DEVEL_	AcuteRESP_	AcuteSKIN_	AcuteEYE_	AcuteBONE_TEETH_	AcuteENDO_
FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE

21	22	23	24	25	26	27	28	29	30
AcuteBLOOD_	AcuteODOR_	AcuteGENERAL_	InhalationChronicCV_	InhalationChronicCNS_	InhalationChronicIMMUN_	InhalationChronicKIDNEY_	InhalationChronicGILV_	InhalationChronicREPRO_DEVEL_	InhalationChronicRESP_
FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	TRUE

31	32	33	34	35	36	37	38	39	40
InhalationChronicSKIN_	InhalationChronicEYE_	InhalationChronicBONE_TEETH_	InhalationChronicENDO_	InhalationChronicBLOOD_	InhalationChronicODOR_	InhalationChronicGENERAL_	OralChronicCV_	OralChronicCNS_	OralChronicIMMUN_
FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE

41	42	43	44	45	46	47	48	49	50
OralChronicKIDNEY_	OralChronicGILV_	OralChronicREPRO_DEVEL_	OralChronicRESP_	OralChronicSKIN_	OralChronicEYE_	OralChronicBONE_TEETH_	OralChronicENDO_	OralChronicBLOOD_	OralChronicODOR_
FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE

51	52	53	54	55	56	57	58	59	60
OralChronicGENERAL_	PathwayInhalation	PathwayDrinking	PathwayFood	PathwayCrop	PathwayExposed	PathwayLeafy	PathwayProtected	PathwayRoot	PathwayDairy
FALSE	TRUE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE

61	62	63	64	65	66	67	68	69	70
PathwayMeatEggs	PathwaySoilIngestion	PathwayFish	PathwayDermal	PathwayMothersMilk	SoilUptakeFactorLeafy	SoilUptakeFactorExposed	SoilUptakeFactorProtected	SoilUptakeFactorRoot	FoodTcoMilk
FALSE	FALSE	FALSE	FALSE	FALSE					

71	72	73	74	75	76	77	78	79	80
FoodTcoEgg	FoodTcoChicken	FoodTcoBeef	FoodTcoPig	HalfLifeInSoil	GRAF	FishBCF	MolWtCorrection	DermalAbsorptionFactor	InhalationChronicREL_8HR
							1		

81	82	83	84	85	86	87	88	89	90
InhalationChronicCV_8HR	InhalationChronicCNS_8HR	InhalationChronicIMMUN_8HR	InhalationChronicKIDNEY_8HR	InhalationChronicGILV_8HR	InhalationChronicREPRO_DEVEL_8HR	InhalationChronicRESP_8HR	InhalationChronicSKIN_8HR	InhalationChronicEYE_8HR	InhalationChronicBONE_TEETH_8HR
FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE

91	92	93	94	95	96	97
InhalationChronicENDO_8HR	InhalationChronicBLOOD_8HR	InhalationChronicODOR_8HR	InhalationChronicGENERAL_8HR	Tco_InhMM	Tco_OralMM	RChem_Group_HV
FALSE	FALSE	FALSE	FALSE			

ARC AERMOD
Intersection 15

AERMOD Model Options

Model Options

Pathway	Keyword	Description	Value
CO	TITLEONE	Project title 1	Aggie Research Campus
CO	TITLETWO	Project title 2	
CO	MODELOPT	Model options	DFAULT,CONC,NODRYDPLT,NOWETDPLT
CO	AVERTIME	Averaging times	1,8
CO	URBANOPT	Urban options	
CO	POLLUTID	Pollutant ID	CO
CO	HALFLIFE	Half life	
CO	DCAYCOEF	Decay coefficient	
CO	FLAGPOLE	Flagpole receptor heights	1.8
CO	RUNORNOT	Run or Not	RUN
CO	EVENTFIL	Event file	F
CO	SAVEFILE	Save file	F
CO	INITFILE	Initialization file	
CO	MULTYEAR	Multiple year option	N/A
CO	DEBUGOPT	Debug options	N/A
CO	ERRORFIL	Error file	F
SO	ELEVUNIT	Elevation units	METERS
SO	EMISUNIT	Emission units	N/A
RE	ELEVUNIT	Elevation units	METERS
ME	SURFFILE	Surface met file	C:\Users\jbyrne\Desktop\SACINT~1\2020\724839\INT10-~1.SFC
ME	PROFFILE	Profile met file	C:\Users\jbyrne\Desktop\SACINT~1\2020\724839\INT10-~1.PFL
ME	SURFDATA	Surf met data info.	93225 2010
ME	UAIRDATA	U-Air met data info.	23230 2010
ME	SITEDATA	On-site met data info.	
ME	PROFBASE	Elev. above MSL	0
ME	STARTEND	Start-end met dates	
ME	WDROTATE	Wind dir. rot. adjust.	
ME	WINDCATS	Wind speed cat. max.	
ME	SCIMBYHR	SCIM sample params	
EV	DAYTABLE	Print summary opt.	N/A
OU	EVENTOUT	Output info. level	N/A

OU	DAYTABLE	Print summary opt.	

Source Parameter Tables

All Sources

Source ID / Pollutant ID	Source Type	Description	UTM		Elev.	Emiss. Rate	Emiss. Units	Release Height
			East (m)	North (m)	(m)			(m)
ENBDC03U	VOLUME	ChilesW	613634.7	4267719.3	0	0.00498225	(g/s)	2.3
ENBDC03V	VOLUME	ChilesW	613662.2	4267710.2	0	0.00498225	(g/s)	2.3
ENBDC03W	VOLUME	ChilesW	613690.6	4267704.4	0	0.00498225	(g/s)	2.3
ENBDC03X	VOLUME	ChilesW	613719.4	4267701.9	0	0.00498225	(g/s)	2.3
ENBDC04U	VOLUME	ChilesE	613332.2	4267790.9	0	0.003804067	(g/s)	2.3
ENBDC04V	VOLUME	ChilesE	613352.6	4267786.0	0	0.003804067	(g/s)	2.3
ENBDC04W	VOLUME	ChilesE	613373.1	4267781.1	0	0.003804067	(g/s)	2.3
ENBDC04X	VOLUME	ChilesE	613393.5	4267776.2	0	0.003804067	(g/s)	2.3
ENBDC04Y	VOLUME	ChilesE	613413.9	4267771.3	0	0.003804067	(g/s)	2.3
ENBDC04Z	VOLUME	ChilesE	613434.3	4267766.4	0	0.003804067	(g/s)	2.3
ENBDC050	VOLUME	ChilesE	613454.7	4267761.5	0	0.003804067	(g/s)	2.3
ENBDC051	VOLUME	ChilesE	613475.1	4267756.3	0	0.003804067	(g/s)	2.3
ENBDC052	VOLUME	ChilesE	613495.3	4267750.8	0	0.003804067	(g/s)	2.3
ENBDC053	VOLUME	ChilesE	613515.6	4267745.3	0	0.003804067	(g/s)	2.3
ENBDC054	VOLUME	ChilesE	613535.9	4267740.1	0	0.003804067	(g/s)	2.3
ENBDC055	VOLUME	ChilesE	613556.4	4267735.2	0	0.003804067	(g/s)	2.3
ENBDC056	VOLUME	ChilesE	613577.0	4267731.2	0	0.003804067	(g/s)	2.3
ENBDC057	VOLUME	ChilesE	613597.7	4267727.8	0	0.003804067	(g/s)	2.3
ENBDC058	VOLUME	ChilesE	613618.4	4267724.6	0	0.003804067	(g/s)	2.3
#15IDLE	VOLUME	Int15Idling	613621.5	4267724.0	0	0.065994	(g/s)	2.3
ENBDC0DW	VOLUME	80EB	613386.2	4267848.0	0	0.0093324	(g/s)	2.3
ENBDC0DX	VOLUME	80EB	613403.7	4267848.9	0	0.0093324	(g/s)	2.3
ENBDC0DY	VOLUME	80EB	613421.1	4267850.4	0	0.0093324	(g/s)	2.3
ENBDC0DZ	VOLUME	80EB	613438.5	4267852.4	0	0.0093324	(g/s)	2.3
ENBDC0E0	VOLUME	80EB	613455.9	4267854.3	0	0.0093324	(g/s)	2.3
ENBDC0E1	VOLUME	80EB	613473.4	4267855.8	0	0.0093324	(g/s)	2.3
ENBDC0E2	VOLUME	80EB	613490.8	4267857.4	0	0.0093324	(g/s)	2.3
ENBDC0E3	VOLUME	80EB	613508.2	4267858.8	0	0.0093324	(g/s)	2.3
ENBDC0E4	VOLUME	80EB	613525.7	4267859.9	0	0.0093324	(g/s)	2.3
ENBDC0E5	VOLUME	80EB	613543.2	4267861.0	0	0.0093324	(g/s)	2.3
ENBDC0E6	VOLUME	80EB	613560.6	4267860.4	0	0.0093324	(g/s)	2.3
ENBDC0E7	VOLUME	80EB	613577.7	4267857.8	0	0.0093324	(g/s)	2.3
ENBDC0E8	VOLUME	80EB	613593.1	4267849.5	0	0.0093324	(g/s)	2.3
ENBDC0E9	VOLUME	80EB	613606.5	4267838.5	0	0.0093324	(g/s)	2.3
ENBDC0EA	VOLUME	80EB	613617.7	4267825.0	0	0.0093324	(g/s)	2.3
ENBDC0EB	VOLUME	80EB	613626.5	4267810.5	0	0.0093324	(g/s)	2.3
ENBDC0EC	VOLUME	80EB	613626.4	4267793.0	0	0.0093324	(g/s)	2.3
ENBDC0ED	VOLUME	80EB	613627.4	4267775.5	0	0.0093324	(g/s)	2.3
ENBDC0EE	VOLUME	80EB	613625.7	4267758.1	0	0.0093324	(g/s)	2.3

ENBDC0EF	VOLUME	80EB	613623.5	4267740.8	0	0.0093324	(g/s)	2.3

Volume Sources

Source ID / Pollutant ID	Description	UTM		Elev.	Emiss. Rate	Release Height	Init. Lat. Dim.	Init. Vert. Dim.
		East (m)	North (m)	(m)	(g/s)	(m)	(m)	(m)
ENBDC03U	ChilesW	613634.7	4267719.3	0	0.00498225	2.3	13.48837	2.139535
ENBDC03V	ChilesW	613662.2	4267710.2	0	0.00498225	2.3	13.48837	2.139535
ENBDC03W	ChilesW	613690.6	4267704.4	0	0.00498225	2.3	13.48837	2.139535
ENBDC03X	ChilesW	613719.4	4267701.9	0	0.00498225	2.3	13.48837	2.139535
ENBDC04U	ChilesE	613332.2	4267790.9	0	0.003804067	2.3	9.767442	2.139535
ENBDC04V	ChilesE	613352.6	4267786.0	0	0.003804067	2.3	9.767442	2.139535
ENBDC04W	ChilesE	613373.1	4267781.1	0	0.003804067	2.3	9.767442	2.139535
ENBDC04X	ChilesE	613393.5	4267776.2	0	0.003804067	2.3	9.767442	2.139535
ENBDC04Y	ChilesE	613413.9	4267771.3	0	0.003804067	2.3	9.767442	2.139535
ENBDC04Z	ChilesE	613434.3	4267766.4	0	0.003804067	2.3	9.767442	2.139535
ENBDC050	ChilesE	613454.7	4267761.5	0	0.003804067	2.3	9.767442	2.139535
ENBDC051	ChilesE	613475.1	4267756.3	0	0.003804067	2.3	9.767442	2.139535
ENBDC052	ChilesE	613495.3	4267750.8	0	0.003804067	2.3	9.767442	2.139535
ENBDC053	ChilesE	613515.6	4267745.3	0	0.003804067	2.3	9.767442	2.139535
ENBDC054	ChilesE	613535.9	4267740.1	0	0.003804067	2.3	9.767442	2.139535
ENBDC055	ChilesE	613556.4	4267735.2	0	0.003804067	2.3	9.767442	2.139535
ENBDC056	ChilesE	613577.0	4267731.2	0	0.003804067	2.3	9.767442	2.139535
ENBDC057	ChilesE	613597.7	4267727.8	0	0.003804067	2.3	9.767442	2.139535
ENBDC058	ChilesE	613618.4	4267724.6	0	0.003804067	2.3	9.767442	2.139535
#15IDLE	Int15Idling	613621.5	4267724.0	0	0.065994	2.3	16	1
ENBDC0DW	80EB	613386.2	4267848.0	0	0.0093324	2.3	8.139535	2.139535
ENBDC0DX	80EB	613403.7	4267848.9	0	0.0093324	2.3	8.139535	2.139535
ENBDC0DY	80EB	613421.1	4267850.4	0	0.0093324	2.3	8.139535	2.139535
ENBDC0DZ	80EB	613438.5	4267852.4	0	0.0093324	2.3	8.139535	2.139535
ENBDC0E0	80EB	613455.9	4267854.3	0	0.0093324	2.3	8.139535	2.139535
ENBDC0E1	80EB	613473.4	4267855.8	0	0.0093324	2.3	8.139535	2.139535
ENBDC0E2	80EB	613490.8	4267857.4	0	0.0093324	2.3	8.139535	2.139535
ENBDC0E3	80EB	613508.2	4267858.8	0	0.0093324	2.3	8.139535	2.139535
ENBDC0E4	80EB	613525.7	4267859.9	0	0.0093324	2.3	8.139535	2.139535
ENBDC0E5	80EB	613543.2	4267861.0	0	0.0093324	2.3	8.139535	2.139535
ENBDC0E6	80EB	613560.6	4267860.4	0	0.0093324	2.3	8.139535	2.139535
ENBDC0E7	80EB	613577.7	4267857.8	0	0.0093324	2.3	8.139535	2.139535
ENBDC0E8	80EB	613593.1	4267849.5	0	0.0093324	2.3	8.139535	2.139535
ENBDC0E9	80EB	613606.5	4267838.5	0	0.0093324	2.3	8.139535	2.139535
ENBDC0EA	80EB	613617.7	4267825.0	0	0.0093324	2.3	8.139535	2.139535
ENBDC0EB	80EB	613626.5	4267810.5	0	0.0093324	2.3	8.139535	2.139535
ENBDC0EC	80EB	613626.4	4267793.0	0	0.0093324	2.3	8.139535	2.139535
ENBDC0ED	80EB	613627.4	4267775.5	0	0.0093324	2.3	8.139535	2.139535
ENBDC0EE	80EB	613625.7	4267758.1	0	0.0093324	2.3	8.139535	2.139535
ENBDC0EF	80EB	613623.5	4267740.8	0	0.0093324	2.3	8.139535	2.139535

BREEZE AERMOD Model Results

Highest Results of Pollutant: CO

Avg. Per.	Grp ID	High	Type	Val	Units	Date	UTM		Elev.	Hill Ht.	Flag Ht.	Rec. Type	Grid ID
						YYMMDDHH	East (m)	North (m)	(m)	(m)	(m)		
1-HR	ALL	1ST	Avg. Conc.	1756.84313	ug/m**3	12011208	613647.82	4267696.19	0.00	0.00	1.80	DC	
8-HR	ALL	1ST	Avg. Conc.	1243.06373c	ug/m**3	11121608	613647.82	4267696.19	0.00	0.00	1.80	DC	

Summary of Total Messages

#	Message Type
0	Fatal Error Message(s)
1	Warning Message(s)
9526	Informational Message(s)
43824	Hours Were Processed
7881	Calm Hours Identified
1645	Missing Hours Identified (3.75 Percent)

Error & Warning Messages

Msg. Type	Pathway	Ref. #	Description
WARNING	SO	W298	Results reported for source group ALL include BACKGROUND

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ARC AERMOD
Intersection 13

AERMOD Model Options

Model Options

Pathway	Keyword	Description	Value
CO	TITLEONE	Project title 1	Aggie Research Campus
CO	TITLETWO	Project title 2	
CO	MODELOPT	Model options	DFAULT,CONC,NODRYDPLT,NOWETDPLT
CO	AVERTIME	Averaging times	1,8
CO	URBANOPT	Urban options	
CO	POLLUTID	Pollutant ID	CO
CO	HALFLIFE	Half life	
CO	DCAYCOEF	Decay coefficient	
CO	FLAGPOLE	Flagpole receptor heights	1.8
CO	RUNORNOT	Run or Not	RUN
CO	EVENTFIL	Event file	F
CO	SAVEFILE	Save file	F
CO	INITFILE	Initialization file	
CO	MULTYEAR	Multiple year option	N/A
CO	DEBUGOPT	Debug options	N/A
CO	ERRORFIL	Error file	F
SO	ELEVUNIT	Elevation units	METERS
SO	EMISUNIT	Emission units	N/A
RE	ELEVUNIT	Elevation units	METERS
ME	SURFFILE	Surface met file	C:\Users\jbyrne\Desktop\SACINT~1\2020\724839\INT10-~1.SFC
ME	PROFFILE	Profile met file	C:\Users\jbyrne\Desktop\SACINT~1\2020\724839\INT10-~1.PFL
ME	SURFDATA	Surf met data info.	93225 2010
ME	UAIRDATA	U-Air met data info.	23230 2010
ME	SITEDATA	On-site met data info.	
ME	PROFBASE	Elev. above MSL	0
ME	STARTEND	Start-end met dates	
ME	WDROTATE	Wind dir. rot. adjust.	
ME	WINDCATS	Wind speed cat. max.	
ME	SCIMBYHR	SCIM sample params	
EV	DAYTABLE	Print summary opt.	N/A
OU	EVENTOUT	Output info. level	N/A

OU	DAYTABLE	Print summary opt.	

Source Parameter Tables

All Sources

Source ID / Pollutant ID	Source Type	Description	UTM		Elev.	Emiss. Rate	Emiss. Units	Release Height
			East (m)	North (m)	(m)			(m)
ENBDC0A8	VOLUME	MaceN	613760.0	4268007.1	0	0.02776869	(g/s)	2.3
ENBDC0A9	VOLUME	MaceN	613760.3	4268036.1	0	0.02776869	(g/s)	2.3
ENBDC0AA	VOLUME	MaceN	613760.6	4268065.1	0	0.02776869	(g/s)	2.3
ENBDC0AB	VOLUME	MaceN	613760.9	4268094.1	0	0.02776869	(g/s)	2.3
ENBDC0AC	VOLUME	MaceN	613761.1	4268123.1	0	0.02776869	(g/s)	2.3
ENBDC0AD	VOLUME	MaceN	613763.7	4268152.0	0	0.02776869	(g/s)	2.3
ENBDC0AE	VOLUME	MaceN	613767.0	4268180.8	0	0.02776869	(g/s)	2.3
ENBDC0AF	VOLUME	MaceN	613770.3	4268209.6	0	0.02776869	(g/s)	2.3
ENBDC0AG	VOLUME	MaceN	613773.4	4268238.4	0	0.02776869	(g/s)	2.3
ENBDC0AH	VOLUME	MaceN	613775.2	4268267.3	0	0.02776869	(g/s)	2.3
ENBDC0AI	VOLUME	MaceN	613776.3	4268296.3	0	0.02776869	(g/s)	2.3
ENBDC0AJ	VOLUME	MaceN	613777.0	4268325.3	0	0.02776869	(g/s)	2.3
ENBDC0AK	VOLUME	MaceN	613777.7	4268354.3	0	0.02776869	(g/s)	2.3
ENBDC0B9	VOLUME	MaceS	613756.0	4267974.3	0	0.037128	(g/s)	2.3
ENBDC0BA	VOLUME	MaceS	613755.8	4267945.3	0	0.037128	(g/s)	2.3
ENBDC0BB	VOLUME	MaceS	613755.6	4267916.3	0	0.037128	(g/s)	2.3
ENBDC0BC	VOLUME	MaceS	613755.4	4267887.3	0	0.037128	(g/s)	2.3
ENBDC0BD	VOLUME	MaceS	613755.2	4267858.3	0	0.037128	(g/s)	2.3
ENBDC0BE	VOLUME	MaceS	613755.0	4267829.3	0	0.037128	(g/s)	2.3
ENBDC0BF	VOLUME	MaceS	613754.8	4267800.3	0	0.037128	(g/s)	2.3
ENBDC0BG	VOLUME	MaceS	613754.6	4267771.3	0	0.037128	(g/s)	2.3
ENBDC0BH	VOLUME	MaceS	613754.4	4267742.3	0	0.037128	(g/s)	2.3
ENBDC0FG	VOLUME	80WB1	614118.2	4268104.9	0	0.01507548	(g/s)	2.3
ENBDC0FH	VOLUME	80WB1	614102.0	4268099.6	0	0.01507548	(g/s)	2.3
ENBDC0FI	VOLUME	80WB1	614085.9	4268094.4	0	0.01507548	(g/s)	2.3
ENBDC0FJ	VOLUME	80WB1	614069.7	4268089.1	0	0.01507548	(g/s)	2.3
ENBDC0FK	VOLUME	80WB1	614053.5	4268083.9	0	0.01507548	(g/s)	2.3
ENBDC0FL	VOLUME	80WB1	614037.4	4268078.7	0	0.01507548	(g/s)	2.3
ENBDC0FM	VOLUME	80WB1	614021.2	4268073.4	0	0.01507548	(g/s)	2.3
ENBDC0FN	VOLUME	80WB1	614005.0	4268068.2	0	0.01507548	(g/s)	2.3
ENBDC0FO	VOLUME	80WB1	613988.8	4268062.9	0	0.01507548	(g/s)	2.3
ENBDC0FP	VOLUME	80WB1	613972.7	4268057.7	0	0.01507548	(g/s)	2.3
ENBDC0FQ	VOLUME	80WB1	613956.5	4268052.4	0	0.01507548	(g/s)	2.3
ENBDC0FR	VOLUME	80WB1	613940.3	4268047.2	0	0.01507548	(g/s)	2.3
ENBDC0FS	VOLUME	80WB1	613924.1	4268042.1	0	0.01507548	(g/s)	2.3
ENBDC0FT	VOLUME	80WB1	613907.9	4268037.0	0	0.01507548	(g/s)	2.3
ENBDC0FU	VOLUME	80WB1	613891.7	4268031.9	0	0.01507548	(g/s)	2.3
ENBDC0FV	VOLUME	80WB1	613875.5	4268026.8	0	0.01507548	(g/s)	2.3
ENBDC0FW	VOLUME	80WB1	613859.2	4268021.7	0	0.01507548	(g/s)	2.3

ENBDC0FX	VOLUME	80WB1	613843.0	4268016.7	0	0.01507548	(g/s)	2.3
ENBDC0FY	VOLUME	80WB1	613826.7	4268011.8	0	0.01507548	(g/s)	2.3
ENBDC0FZ	VOLUME	80WB1	613810.4	4268007.1	0	0.01507548	(g/s)	2.3
ENBDC0G0	VOLUME	80WB1	613794.1	4268002.3	0	0.01507548	(g/s)	2.3
ENBDC0G1	VOLUME	80WB1	613777.7	4267997.6	0	0.01507548	(g/s)	2.3
ENBDC0G2	VOLUME	80WB1	613761.4	4267992.8	0	0.01507548	(g/s)	2.3
ENBDC0H3	VOLUME	80WB2	613363.2	4267887.8	0	0.0080239	(g/s)	2.3
ENBDC0H4	VOLUME	80WB2	613376.7	4267891.4	0	0.0080239	(g/s)	2.3
ENBDC0H5	VOLUME	80WB2	613390.2	4267895.0	0	0.0080239	(g/s)	2.3
ENBDC0H6	VOLUME	80WB2	613403.8	4267898.5	0	0.0080239	(g/s)	2.3
ENBDC0H7	VOLUME	80WB2	613417.3	4267902.1	0	0.0080239	(g/s)	2.3
ENBDC0H8	VOLUME	80WB2	613430.8	4267905.7	0	0.0080239	(g/s)	2.3
ENBDC0H9	VOLUME	80WB2	613444.4	4267909.3	0	0.0080239	(g/s)	2.3
ENBDC0HA	VOLUME	80WB2	613457.9	4267912.9	0	0.0080239	(g/s)	2.3
ENBDC0HB	VOLUME	80WB2	613471.4	4267916.5	0	0.0080239	(g/s)	2.3
ENBDC0HC	VOLUME	80WB2	613485.0	4267920.0	0	0.0080239	(g/s)	2.3
ENBDC0HD	VOLUME	80WB2	613498.5	4267923.6	0	0.0080239	(g/s)	2.3
ENBDC0HE	VOLUME	80WB2	613512.0	4267927.2	0	0.0080239	(g/s)	2.3
ENBDC0HF	VOLUME	80WB2	613525.6	4267930.8	0	0.0080239	(g/s)	2.3
ENBDC0HG	VOLUME	80WB2	613539.1	4267934.4	0	0.0080239	(g/s)	2.3
ENBDC0HH	VOLUME	80WB2	613552.6	4267937.9	0	0.0080239	(g/s)	2.3
ENBDC0HI	VOLUME	80WB2	613566.2	4267941.5	0	0.0080239	(g/s)	2.3
ENBDC0HJ	VOLUME	80WB2	613579.7	4267945.1	0	0.0080239	(g/s)	2.3
ENBDC0HK	VOLUME	80WB2	613593.2	4267948.7	0	0.0080239	(g/s)	2.3
ENBDC0HL	VOLUME	80WB2	613606.8	4267952.3	0	0.0080239	(g/s)	2.3
ENBDC0HM	VOLUME	80WB2	613620.3	4267955.9	0	0.0080239	(g/s)	2.3
ENBDC0HN	VOLUME	80WB2	613633.8	4267959.4	0	0.0080239	(g/s)	2.3
ENBDC0HO	VOLUME	80WB2	613647.4	4267963.0	0	0.0080239	(g/s)	2.3
ENBDC0HP	VOLUME	80WB2	613660.9	4267966.6	0	0.0080239	(g/s)	2.3
ENBDC0HQ	VOLUME	80WB2	613674.4	4267970.2	0	0.0080239	(g/s)	2.3
ENBDC0HR	VOLUME	80WB2	613688.0	4267973.8	0	0.0080239	(g/s)	2.3
ENBDC0HS	VOLUME	80WB2	613701.5	4267977.4	0	0.0080239	(g/s)	2.3
ENBDC0HT	VOLUME	80WB2	613715.0	4267980.9	0	0.0080239	(g/s)	2.3
ENBDC0HU	VOLUME	80WB2	613728.6	4267984.5	0	0.0080239	(g/s)	2.3
ENBDC0HV	VOLUME	80WB2	613742.1	4267988.1	0	0.0080239	(g/s)	2.3
ENBDC0HW	VOLUME	80WB2	613755.6	4267991.7	0	0.0080239	(g/s)	2.3
INT13IDLE	VOLUME	Int13Idle	613756.4	4267991.7	0	0.061859	(g/s)	2.3

Volume Sources

Source ID / Pollutant ID	Description	UTM		Elev.	Emiss. Rate	Release Height	Init. Lat. Dim.	Init. Vert. Dim.
		East (m)	North (m)	(m)	(g/s)	(m)	(m)	(m)
ENBDC0A8	MaceN	613760.0	4268007.1	0	0.02776869	2.3	13.48837	2.139535
ENBDC0A9	MaceN	613760.3	4268036.1	0	0.02776869	2.3	13.48837	2.139535
ENBDC0AA	MaceN	613760.6	4268065.1	0	0.02776869	2.3	13.48837	2.139535
ENBDC0AB	MaceN	613760.9	4268094.1	0	0.02776869	2.3	13.48837	2.139535
ENBDC0AC	MaceN	613761.1	4268123.1	0	0.02776869	2.3	13.48837	2.139535
ENBDC0AD	MaceN	613763.7	4268152.0	0	0.02776869	2.3	13.48837	2.139535
ENBDC0AE	MaceN	613767.0	4268180.8	0	0.02776869	2.3	13.48837	2.139535
ENBDC0AF	MaceN	613770.3	4268209.6	0	0.02776869	2.3	13.48837	2.139535
ENBDC0AG	MaceN	613773.4	4268238.4	0	0.02776869	2.3	13.48837	2.139535

ENBDC0AH	MaceN	613775.2	4268267.3	0	0.02776869	2.3	13.48837	2.139535
ENBDC0AI	MaceN	613776.3	4268296.3	0	0.02776869	2.3	13.48837	2.139535
ENBDC0AJ	MaceN	613777.0	4268325.3	0	0.02776869	2.3	13.48837	2.139535
ENBDC0AK	MaceN	613777.7	4268354.3	0	0.02776869	2.3	13.48837	2.139535
ENBDC0B9	MaceS	613756.0	4267974.3	0	0.037128	2.3	13.48837	2.139535
ENBDC0BA	MaceS	613755.8	4267945.3	0	0.037128	2.3	13.48837	2.139535
ENBDC0BB	MaceS	613755.6	4267916.3	0	0.037128	2.3	13.48837	2.139535
ENBDC0BC	MaceS	613755.4	4267887.3	0	0.037128	2.3	13.48837	2.139535
ENBDC0BD	MaceS	613755.2	4267858.3	0	0.037128	2.3	13.48837	2.139535
ENBDC0BE	MaceS	613755.0	4267829.3	0	0.037128	2.3	13.48837	2.139535
ENBDC0BF	MaceS	613754.8	4267800.3	0	0.037128	2.3	13.48837	2.139535
ENBDC0BG	MaceS	613754.6	4267771.3	0	0.037128	2.3	13.48837	2.139535
ENBDC0BH	MaceS	613754.4	4267742.3	0	0.037128	2.3	13.48837	2.139535
ENBDC0FG	80WB1	614118.2	4268104.9	0	0.01507548	2.3	7.906977	2.139535
ENBDC0FH	80WB1	614102.0	4268099.6	0	0.01507548	2.3	7.906977	2.139535
ENBDC0FI	80WB1	614085.9	4268094.4	0	0.01507548	2.3	7.906977	2.139535
ENBDC0FJ	80WB1	614069.7	4268089.1	0	0.01507548	2.3	7.906977	2.139535
ENBDC0FK	80WB1	614053.5	4268083.9	0	0.01507548	2.3	7.906977	2.139535
ENBDC0FL	80WB1	614037.4	4268078.7	0	0.01507548	2.3	7.906977	2.139535
ENBDC0FM	80WB1	614021.2	4268073.4	0	0.01507548	2.3	7.906977	2.139535
ENBDC0FN	80WB1	614005.0	4268068.2	0	0.01507548	2.3	7.906977	2.139535
ENBDC0FO	80WB1	613988.8	4268062.9	0	0.01507548	2.3	7.906977	2.139535
ENBDC0FP	80WB1	613972.7	4268057.7	0	0.01507548	2.3	7.906977	2.139535
ENBDC0FQ	80WB1	613956.5	4268052.4	0	0.01507548	2.3	7.906977	2.139535
ENBDC0FR	80WB1	613940.3	4268047.2	0	0.01507548	2.3	7.906977	2.139535
ENBDC0FS	80WB1	613924.1	4268042.1	0	0.01507548	2.3	7.906977	2.139535
ENBDC0FT	80WB1	613907.9	4268037.0	0	0.01507548	2.3	7.906977	2.139535
ENBDC0FU	80WB1	613891.7	4268031.9	0	0.01507548	2.3	7.906977	2.139535
ENBDC0FV	80WB1	613875.5	4268026.8	0	0.01507548	2.3	7.906977	2.139535
ENBDC0FW	80WB1	613859.2	4268021.7	0	0.01507548	2.3	7.906977	2.139535
ENBDC0FX	80WB1	613843.0	4268016.7	0	0.01507548	2.3	7.906977	2.139535
ENBDC0FY	80WB1	613826.7	4268011.8	0	0.01507548	2.3	7.906977	2.139535
ENBDC0FZ	80WB1	613810.4	4268007.1	0	0.01507548	2.3	7.906977	2.139535
ENBDC0G0	80WB1	613794.1	4268002.3	0	0.01507548	2.3	7.906977	2.139535
ENBDC0G1	80WB1	613777.7	4267997.6	0	0.01507548	2.3	7.906977	2.139535
ENBDC0G2	80WB1	613761.4	4267992.8	0	0.01507548	2.3	7.906977	2.139535
ENBDC0H3	80WB2	613363.2	4267887.8	0	0.0080239	2.3	6.511628	2.139535
ENBDC0H4	80WB2	613376.7	4267891.4	0	0.0080239	2.3	6.511628	2.139535
ENBDC0H5	80WB2	613390.2	4267895.0	0	0.0080239	2.3	6.511628	2.139535
ENBDC0H6	80WB2	613403.8	4267898.5	0	0.0080239	2.3	6.511628	2.139535
ENBDC0H7	80WB2	613417.3	4267902.1	0	0.0080239	2.3	6.511628	2.139535
ENBDC0H8	80WB2	613430.8	4267905.7	0	0.0080239	2.3	6.511628	2.139535
ENBDC0H9	80WB2	613444.4	4267909.3	0	0.0080239	2.3	6.511628	2.139535
ENBDC0HA	80WB2	613457.9	4267912.9	0	0.0080239	2.3	6.511628	2.139535
ENBDC0HB	80WB2	613471.4	4267916.5	0	0.0080239	2.3	6.511628	2.139535
ENBDC0HC	80WB2	613485.0	4267920.0	0	0.0080239	2.3	6.511628	2.139535
ENBDC0HD	80WB2	613498.5	4267923.6	0	0.0080239	2.3	6.511628	2.139535
ENBDC0HE	80WB2	613512.0	4267927.2	0	0.0080239	2.3	6.511628	2.139535
ENBDC0HF	80WB2	613525.6	4267930.8	0	0.0080239	2.3	6.511628	2.139535

ENBDC0HG	80WB2	613539.1	4267934.4	0	0.0080239	2.3	6.511628	2.139535
ENBDC0HH	80WB2	613552.6	4267937.9	0	0.0080239	2.3	6.511628	2.139535
ENBDC0HI	80WB2	613566.2	4267941.5	0	0.0080239	2.3	6.511628	2.139535
ENBDC0HJ	80WB2	613579.7	4267945.1	0	0.0080239	2.3	6.511628	2.139535
ENBDC0HK	80WB2	613593.2	4267948.7	0	0.0080239	2.3	6.511628	2.139535
ENBDC0HL	80WB2	613606.8	4267952.3	0	0.0080239	2.3	6.511628	2.139535
ENBDC0HM	80WB2	613620.3	4267955.9	0	0.0080239	2.3	6.511628	2.139535
ENBDC0HN	80WB2	613633.8	4267959.4	0	0.0080239	2.3	6.511628	2.139535
ENBDC0HO	80WB2	613647.4	4267963.0	0	0.0080239	2.3	6.511628	2.139535
ENBDC0HP	80WB2	613660.9	4267966.6	0	0.0080239	2.3	6.511628	2.139535
ENBDC0HQ	80WB2	613674.4	4267970.2	0	0.0080239	2.3	6.511628	2.139535
ENBDC0HR	80WB2	613688.0	4267973.8	0	0.0080239	2.3	6.511628	2.139535
ENBDC0HS	80WB2	613701.5	4267977.4	0	0.0080239	2.3	6.511628	2.139535
ENBDC0HT	80WB2	613715.0	4267980.9	0	0.0080239	2.3	6.511628	2.139535
ENBDC0HU	80WB2	613728.6	4267984.5	0	0.0080239	2.3	6.511628	2.139535
ENBDC0HV	80WB2	613742.1	4267988.1	0	0.0080239	2.3	6.511628	2.139535
ENBDC0HW	80WB2	613755.6	4267991.7	0	0.0080239	2.3	6.511628	2.139535
INT13IDLE	Int13Idle	613756.4	4267991.7	0	0.061859	2.3	30.5	1

BREEZE AERMOD Model Results

Highest Results of Pollutant: CO

Avg. Per.	Grp ID	High	Type	Val	Units	Date	UTM		Elev.	Hill Ht.	Flag Ht.	Rec. Type	Grid ID
						YYMMDDHH	East (m)	North (m)	(m)	(m)	(m)		
1-HR	ALL	1ST	Avg. Conc.	2830.06130	ug/m**3	14010618	613736.92	4267738.92	0.00	0.00	1.80	DC	
8-HR	ALL	1ST	Avg. Conc.	1393.96395c	ug/m**3	13120424	613771.92	4267738.69	0.00	0.00	1.80	DC	

Summary of Total Messages

#	Message Type
0	Fatal Error Message(s)
1	Warning Message(s)
9526	Informational Message(s)
43824	Hours Were Processed
7881	Calm Hours Identified
1645	Missing Hours Identified (3.75 Percent)

Error & Warning Messages

Msg. Type	Pathway	Ref. #	Description
WARNING	SO	W298	Results reported for source group ALL include BACKGROUND

www.breeze-software.com

SMAQMD Draft Health Screening Tool
ARC Existing Plus Project

Strategic Area Project Health Effects Tool

Strategic Area Location	D. Vacaville	**<-- Step 1: Input the area**
NOx Emissions	328.2957	**<-- Step 2: Input NOx emissions in lbs./day**
ROG Emissions	123.6232	**<-- Step 3: Input ROG emissions in lbs./day**
PM25 Emissions	65.5864	**<-- Step 4: Input PM2.5 emissions in lbs./day**

PM2.5 Health Endpoint	**Age Range[1]**	**Incidences (per year)[2] (Mean)**	**Percent of Background Health Incidence[3] (%)**
Emergency Room Visits, Asthma	0 - 99	1.8013	0.2272%
Mortality, All Cause	30 - 99	3.4129	0.1853%
Hospital Admissions, Asthma	0 - 64	0.0659	0.0745%
Hospital Admissions, All Cardiovascular (less Myocardial Infarctions)	65 - 99	0.2169	0.0206%
Hospital Admissions, All Respiratory	65 - 99	0.5179	0.0573%
Acute Myocardial Infarction, Nonfatal	18 - 24	0.0001	0.0817%
Acute Myocardial Infarction, Nonfatal	25 - 44	0.0068	0.0609%
Acute Myocardial Infarction, Nonfatal	45 - 54	0.0178	0.0620%
Acute Myocardial Infarction, Nonfatal	55 - 64	0.0246	0.0510%
Acute Myocardial Infarction, Nonfatal	65 - 99	0.1176	0.0578%

Ozone Health Endpoint	**Age Range[1]**	**Incidences (per year)[2] (Mean)**	**Percent of Background Health Incidence[3] (%)**
Hospital Admissions, All Respiratory	65 - 99	0.2318	0.0257%
Mortality, Non-Accidental	0 - 99	0.1404	0.0114%
Emergency Room Visits, Asthma	0 - 17	1.2045	0.5014%
Emergency Room Visits, Asthma	18 - 99	1.9967	0.3614%

1. Affected age ranges are shown. Other age ranges are available, but the endpoints and age ranges shown here are the ones used by the USEPA in their health assessments. The age ranges are consistent with the epidemiological study that is the basis of the health function.

2. Health effects are shown in terms of incidences of each health endpoint and how it compares to the base (2035 base year health effect incidences, or "background health incidence") values. Health effects and background health incidences are across the Northern California model domain.

3. The percent of background health incidence uses the mean incidence. The background health incidence is an estimate of the average number of people that are affected by the health endpoint in a given population over a given period of time. In this case, these background incidence rates cover the modeled domain. Health incidence rates and other health data are typically collected by the government as well as the World Health Organization. The background incidence rates used here are obtained from BenMAP.

Sac Metro Air District Strategic Area Project Health Effects Tool, version 1, published January 2020

SMAQMD Draft Health Screening Tool
ARC Cumulative

Strategic Area Project Health Effects Tool

Strategic Area Location	D. Vacaville	**<-- Step 1: Input the area**
NOx Emissions	304.9208	**<-- Step 2: Input NOx emissions in lbs./day**
ROG Emissions	120.7671	**<-- Step 3: Input ROG emissions in lbs./day**
PM25 Emissions	53.8622	**<-- Step 4: Input PM2.5 emissions in lbs./day**

PM2.5 Health Endpoint	Age Range[1]	Incidences (per year)[2] (Mean)	Percent of Background Health Incidence[3] (%)
Emergency Room Visits, Asthma	0 - 99	1.8013	0.2272%
Mortality, All Cause	30 - 99	3.4129	0.1853%
Hospital Admissions, Asthma	0 - 64	0.0659	0.0745%
Hospital Admissions, All Cardiovascular (less Myocardial Infarctions)	65 - 99	0.2169	0.0206%
Hospital Admissions, All Respiratory	65 - 99	0.5179	0.0573%
Acute Myocardial Infarction, Nonfatal	18 - 24	0.0001	0.0817%
Acute Myocardial Infarction, Nonfatal	25 - 44	0.0068	0.0609%
Acute Myocardial Infarction, Nonfatal	45 - 54	0.0178	0.0620%
Acute Myocardial Infarction, Nonfatal	55 - 64	0.0246	0.0510%
Acute Myocardial Infarction, Nonfatal	65 - 99	0.1176	0.0578%

Ozone Health Endpoint	Age Range[1]	Incidences (per year)[2] (Mean)	Percent of Background Health Incidence[3] (%)
Hospital Admissions, All Respiratory	65 - 99	0.2318	0.0257%
Mortality, Non-Accidental	0 - 99	0.1404	0.0114%
Emergency Room Visits, Asthma	0 - 17	1.2045	0.5014%
Emergency Room Visits, Asthma	18 - 99	1.9967	0.3614%

1. Affected age ranges are shown. Other age ranges are available, but the endpoints and age ranges shown here are the ones used by the USEPA in their health assessments. The age ranges are consistent with the epidemiological study that is the basis of the health function.

2. Health effects are shown in terms of incidences of each health endpoint and how it compares to the base (2035 base year health effect incidences, or “background health incidence”) values. Health effects and background health incidences are across the Northern California model domain.

3. The percent of background health incidence uses the mean incidence. The background health incidence is an estimate of the average number of people that are affected by the health endpoint in a given population over a given period of time. In this case, these background incidence rates cover the modeled domain. Health incidence rates and other health data are typically collected by the government as well as the World Health Organization. The background incidence rates used here are obtained from BenMAP.

Sac Metro Air District Strategic Area Project Health Effects Tool, version 1, published January 2020

APPENDIX C

Biological Resources Evaluation
for the
Aggie Research Campus Project

Yolo County, CA

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4 February 2020

Biological Resources Evaluation
for the
Aggie Research Campus Project

Yolo County, CA

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I. SUMMARY OF FINDINGS AND CONCLUSIONS

This biological resources evaluation report documents baseline biological conditions for the Aggie Research Campus (ARC) Project. The 815-ac biological study area (BSA) includes the 185-ac ARC site and several off-site areas, including non-project parcels proposed to annexed by the City, two sewer alignment alternatives, and parcels east of the ARC project where stormwater capacity improvements are contemplated. The BSA for the ARC Project is similar to the area studied for the Mace Ranch Innovation Center (MRIC) Project. This report incorporates and updates the results of an earlier biological resources evaluation and accompanying technical studies conducted for the MRIC Project in 2015.

Surveys conducted in support of the ARC Project include general biological surveys, protocol botanical surveys, a wetland and hydrologic monitoring surveys, an arborist survey, targeted burrowing owl surveys, and CDFW (2012) guideline surveys for burrowing owl (ongoing). Surveys conducted 2014 through 2020 document the following biological resources that could be affected by the ARC Project:

- Five elderberry shrubs, the host plant for the federally threatened valley elderberry longhorn beetle (VELB), are present in the Campus BSA and areas within 200 ft. The shrubs are isolated, in non-riparian contexts. No potential VELB exit holes were observed on the elderberry shrubs.
- Suitable aquatic habitat for federally threatened giant garter snake (GGS) is present in the southernmost portion of an irrigation ditch on the parcels where stormwater capacity improvements are proposed, and in the following features within 200 ft: the Railroad Channel to the south, created wetlands to the north, a detention basin located to the northwest, and the Yolo Bypass located to east of these parcels. GGS was not observed during surveys. There is no suitable aquatic habitat for GGS on the proposed ARC site or within 200 ft.
- A few trees in the BSA and trees in two eucalyptus groves located off-site to the east and north of the ARC site provide potential nesting habitat for State-threatened Swainson's hawk and other tree-nesting raptors. Mature trees located within 1,320 feet of the BSA provide suitable nesting habitat. No nesting raptors have been observed in the BSA. Agricultural and ruderal areas in the BSA provide foraging habitat for Swainson's hawk and other birds of prey.
- The Mace Drainage Channel (MDC) and the southernmost portion of an irrigation ditch on the parcels where stormwater capacity improvements are proposed provide marginal nesting habitat for State-threatened tricolored blackbird. Suitable nesting habitat also occurs in off-site aquatic habitat bordering the parcels where stormwater capacity improvements are proposed.
- The BSA provides marginal to suitable foraging and/or nesting habitat for the following wildlife species of special concern: burrowing owl, mountain plover, northern harrier, white-tailed kite (Fully Protected), song sparrow –Modesto population, birds of prey, protected migratory birds, and protected and locally important bats.
- Burrowing owl (State Species of Special Concern) occupies six sites within 500 ft of the BSA. These sites are located along existing roads in the western and northern portion of the BSA.
- An estimated 93 individuals of Parry's rough tarplant, a CNPS California Rare Plant Rank 4.2 plant species, were found in the BSA, mostly near Ikeda's Market.
- The portion of the MDC immediately east of Mace Blvd contains managed freshwater marsh vegetation. This is a sensitive natural community under the Yolo HCP/NCCP.
- Eight young trees occur in the portion of the BSA proposed for development. Seven of these trees are protected under City of Davis Municipal Code.

II. INTRODUCTION

A. Purpose of Report

The purpose of this report is to document baseline biological resources in the Aggie Research Campus Project (Project) Biological Study Area (BSA). The approximately 815-ac BSA includes the 185-ac ARC site, and off-site areas, as provided in Section II.D (Project Description). For the purpose of biological analysis, the BSA is split into the 'Campus BSA' (a 265.09-ac study area that includes the 185-ac ARC site), and the off-site 'Stormwater BSA' (a 550.25-ac study area consisting of the parcels where stormwater capacity improvements are contemplated).

This report incorporates and updates the results of previously conducted biological studies, including a biological resources evaluation report prepared for the Mace Ranch Innovation Center Project (Sycamore Environmental 2015e), an aquatic resource delineation (Sycamore Environmental 2015b), letters transmitting the results of spring and fall protocol botanical survey (Sycamore Environmental 2015d,f), a letter evaluating potential biological resources for off-site storm water capacity work (Sycamore Environmental 2015c), a certified arborist survey (Sycamore Environmental 2015a), and a biological survey update letter (Sycamore Environmental 2019). This report documents the results of additional biological surveys conducted in 2019 and 2020 (see Section III.B for a comprehensive list of surveys conducted).

B. Project Location

The 265.09-ac Campus BSA is located east of Mace Blvd., north of Interstate 80, east of the City of Davis, CA, in the Central Valley. The BSA is on the Davis USGS topographic quad (T8N, R2E, Sections 1 & 12 and T8N, R3E, Sections 6 & 7, Mt. Diablo Base & Meridian; Figure 1) and is in the Lower Sacramento Hydrologic Unit (Hydrologic Unit Code 18020163). The geographic coordinates of the Campus BSA are 38.564285° north, 121.684761° west (WGS84), and the UTM coordinates are 614,585 meters east, 4,269,245 meters north, Zone 10N (WGS84).

The 550.25-ac off-site Stormwater BSA is located east of the City of Davis, CA, north of Interstate 80, immediately west of the Yolo Bypass in the Central Valley. The Stormwater BSA is on the Davis USGS topographic quad.

Figure 2 is a 13 August 2018 aerial photo of the BSA and surrounding area.

C. Project Applicant

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D. Project Description

The proposed Aggie Research Campus (ARC) Project is an innovation center that offers a live/work environment through a comprehensive sustainable site design and broad array of complementary land uses. The Campus features office, research & development, laboratory, prototyping, advanced manufacturing, recreation, open space, and housing, all in one compact location. This mix of uses will serve to attract new economy incubators, entice UCD-spawned businesses seeking a growth location, and provide large-scale locational opportunities for well established companies, particularly those with research ties to the University. The objective is to fulfill a clear City need for economic development space and allow existing and new companies to grow and remain in Davis.

The 185-ac ARC project site is located immediately east of the City of Davis city limits, near the "Mace Curve," in unincorporated Yolo County.

At build-out, the ARC would include up to 2,654,000 sq ft of innovation center/business uses and 850 residential units of varied sizes and affordability. More specifically, the Project would include space for office, research & development, laboratory, advance manufacturing, prototyping, limited supportive retail, a hotel and a conference center, and include 850 residential units to provide a jobs/housing balance. The Campus has identified land uses within an urban framework that are designed to:

- Deliver office and corporate spaces that are highly flexible and technologically advanced. The spaces would include collaborative spaces, flex spaces, as well as dry and wet labs.
- Develop space for research/incubator start-ups that may be small, independent entrepreneurs or subsidiaries of larger, more established companies in Davis, Sacramento, and/or the Bay Area.
- Include programs that are scientific, technical and research-focused. The programs are anticipated to be University of California, Davis (UC Davis) spin-off research labs and internships.
- Be suitable for private research programs in the fields of ag tech, med/bio tech, and clean tech.
- Integrate spaces for prototyping and manufacturing with research facilities to allow for greater ease of advanced product development.
- Permit advanced manufacturing facilities on-site to allow for the establishment of "research-to-market" companies.
- Include a variety of workforce housing units, diverse in both size and affordability, designed to meet the needs of the innovation center employees, further spur collaboration and technology start-ups, create a hive of activity with people living and working on-site, and thereby reduce project-related vehicular trips.
- Accommodate corporate travelers and educational conferences.

In furtherance of this vision, the ARC applicants are seeking the following entitlements from the City of Davis:

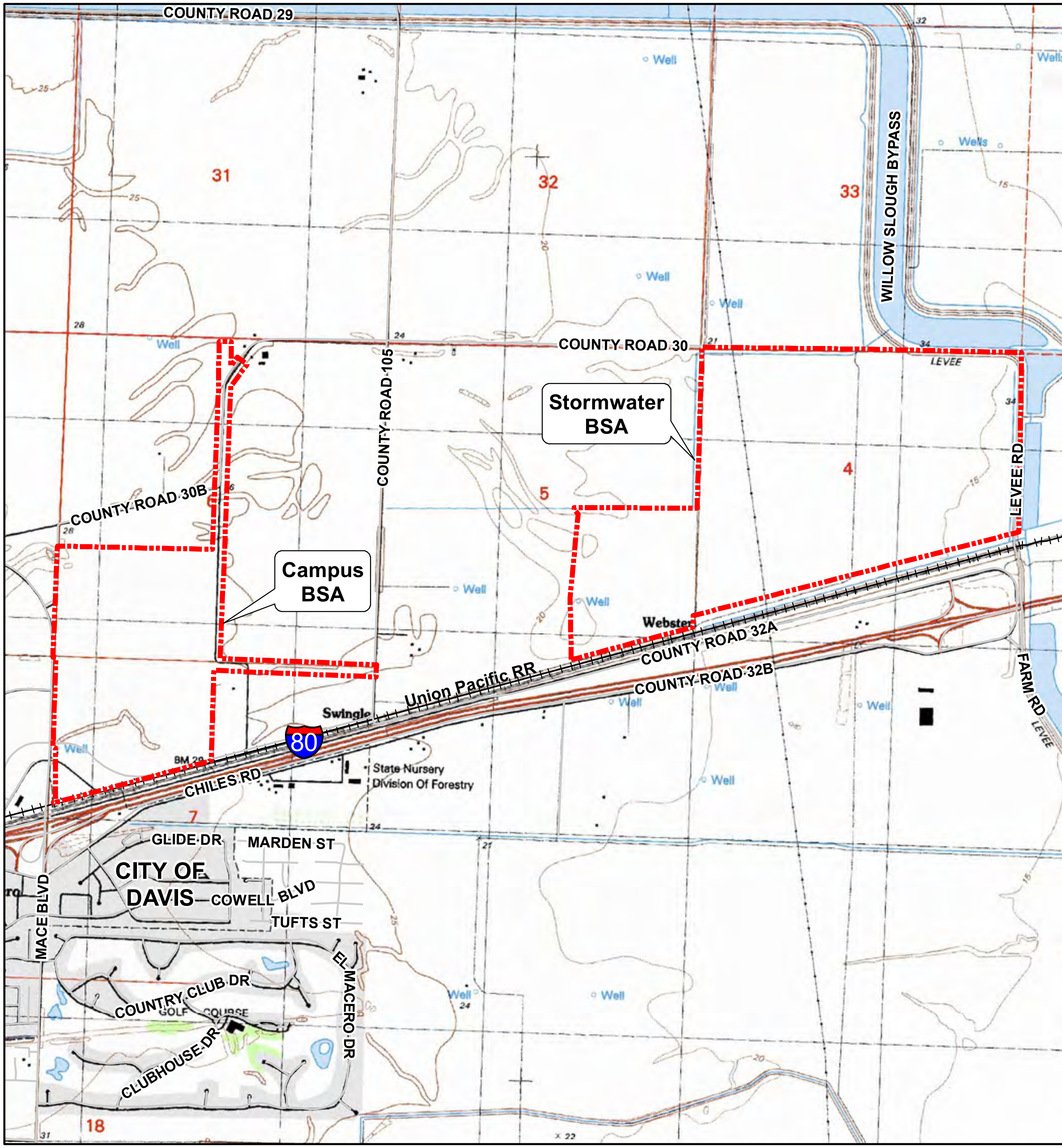
1. General Plan Amendment converting the project site from Agriculture to Innovation Center
2. Prezone to Preliminary Planned Development
3. Annexation into the City of Davis
4. Development Agreement
5. Municipal Service Review
6. Detachment from the East Davis County Fire Protection District

Off-site, two alternative sewer line connections are being evaluated: one which extends from the northeast side of the ARC site, northward approximately 0.6 mi, along Road 104, and another which extends from the east side of the ARC site, eastward approximately 0.5 mi, along a farm road, to Road 105. Off-site stormwater capacity improvements are proposed approximately one mile to the east of the ARC site, in the open agricultural fields adjacent to the Yolo Bypass.

The 265.09-ac 'Campus' Biological Study Area (BSA) is larger than the 185-ac ARC Project site because it includes the off-site sewer line connection alternatives and a City-owned parcel at the northwest corner of the ARC project site. The Campus BSA consists of:

- The ARC site (185 ac), identified by Assessor's Parcel Numbers (APNs) 033-630-009 and 033-650-009, north of CR 32A, currently in row crop agriculture.
- City-owned APN 033-650-26, currently in row crop agriculture.
- The Annexation Area (16 ac), south of CR 32A, consisting of APNs 033-630-011 (Ikeda's Market), 033-630-006 (a City-owned water tank and Caltrans District 3 Park-and-Ride lot), and 033-630-012 (agricultural uses, currently fallow). The Annexation Area is included in the Project to avoid creation of County "Island" property.
- A buffer around two proposed off-site sewer line connection alternatives located north and east of the MRIC site respectively. The eastern sewer line alternative crosses APN 033-290-04 (deciduous fruit/nut orchards). The northern sewer line alternative crosses APN 033-290-02, -04, -82, and -83; 033-650-027; and 042-130-03 (all in row crop agriculture or planted with deciduous fruit/nut orchards).

The 550.25-ac 'Stormwater' BSA consists of APN 033-300-01, 033-300-15, and 033-650-88. These parcels are currently in row crop agriculture.



Aggie Research Campus
Yolo County, CA
30 January 2020

Figure 1. Location Map

Campus Biological Study Area (Campus BSA)

Stormwater Capacity Biological Study Area (Stormwater BSA)

2,500 1,250 0 2,500 Feet

N

Scale: 1 inch = 2,500 feet

SYCAMORE Environmental Consultants, Inc.

Davis, CA (1992)
USGS 7.5' Quadrangle Topographic DRG
7.5 Minute (C) Series, Albers Nad83 Mosaics (MrSID)
CA Spatial Library (CASIL)
o_nw0201.sid

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Aggie Research Campus
Yolo County, CA
30 January 2020

Figure 2. Aerial Photograph

Campus Biological Study Area (Campus BSA)

Stormwater Capacity Biological Study Area (Stormwater BSA)

1,500 1,000 500 0 1,500 Feet

N

Scale: 1 inch = 1,500 feet

SYCAMORE Environmental Consultants, Inc.

Aerial Photograph: 13 August 2018
2018 Yolo County Orthos Imagery
ESRI World Imagery Arcmap Service Layer

14087AggieResearchCampus_Fig2AerialMap(11X17).mxd

III. STUDY METHODS

A. Studies Conducted

The Project has completed baseline biological field surveys; a CDFW protocol botanical survey, a formal aquatic resource delineation, and surveys targeting burrowing owl. Breeding season surveys for burrowing owl, consistent with the requirements of the Yolo HCP/NCCP and the CDFW (2012) guidelines are in progress, with an anticipated completion date in June/July 2020. Biological resource data from state and federal agencies, maps, aerial photographs, and relevant published literature were reviewed. An evaluation of biological resources was conducted to determine if any state or federal-listed special-status plant or wildlife species or their habitat occur in the BSA.

B. Survey Dates, Personnel, and Coverage

Biological and botanical surveys conducted for this project are summarized in Table 1 below.

Table 1. Survey Dates and Personnel

Date(s)	Personnel	Area(s) Surveyed	Surveys Conducted
7 October 2014	Mike Bower, M.S.	Campus BSA	Reconnaissance survey
10 December 2014	Mike Bower, M.S. Noosheen Pouya, B.S.	Campus BSA	General biological survey Botanical survey Wetland delineation fieldwork
18 December 2014	Mike Bower, M.S.	Mace Drainage Channel (outfall to Bypass)	Hydrologic observations
23 December 2014	Chuck Hughes, M.S.	Campus BSA	Arborist survey
26 January 2015 -through- 30 November 2015 (sixteen site visits)	Mike Bower, M.S. Noosheen Pouya, B.S. Juan Mejia, B.S. Carly Rich, B.S. Andy Loveall, B.S.	Mace Drainage Channel (on-site & accessible parts downstream)	Hydrologic observations
19 May 2015	Mike Bower, M.S. Juan Mejia, B.S.	Campus BSA	Protocol botanical survey
11 June 2015	Mike Bower, M.S.	Stormwater BSA	General biological Botanical survey
11 September 2015	Mike Bower, M.S. Juan Mejia, B.S.	Campus BSA	Protocol botanical survey
7 January 2016	Juan Mejia, B.S.	Campus BSA	Targeted burrowing owl survey
7 August 2019	Mike Bower, M.S. Juan Mejia, B.S.	Campus BSA	General biological survey update Protocol botanical survey update Targeted burrowing owl survey Yolo HCP Land Cover Type mapping
8 October 2019	Mike Bower, M.S.	Stormwater BSA	Reconnaissance survey Yolo HCP Land Cover Type mapping
24 January 2020	Mike Bower, M.S. Elliot Maldonado, B.S. Juan Mejia, B.S.	Entire BSA	Burrowing owl survey in accordance with CDFW (2012) guidelines (Ongoing)

C. Literature Search

Information on the biology, distribution, taxonomy, legal status, and other aspects of the special-status species was obtained from documents on file in the library of Sycamore Environmental. Standard references used for the biology and taxonomy of plants included Abrams (1923-1960); Baldwin et al. (2012); Hickman, ed. (1993); Mason (1957); and Munz (1959). References pertaining to biological communities include California Department of Fish and Wildlife (CDFW 2019c); Holland (1986); and Sawyer et al. (2009). Standard references used for the biology and taxonomy of wildlife included Behler and King (1979); Ehrlich et al. (1988); Jameson and Peeters (2004); Jennings and Hayes (1994); Mayer and Laudenslayer, eds. (1988); McGinnis (1984); Peterson (1990); Sibley (2003); Stebbins (2003); Udvardy (1977); Verner and Boss (1980); Whitaker (1980); and Zeiner et al. (1988; 1990a,b). On-line references used include, the Jepson eFlora (2020), California Native Plant Society (2020), and Consortium of California Herbaria (CCH 2020).

Lists of CDFW special-status species reviewed included *Special Animals List* (CDFW 2019a), *State and Federally Listed Endangered and Threatened Animals of California* (CDFW 2019b), *Special Vascular Plants, Bryophytes, and Lichens List* (CDFW 2020a), and *State and Federally Listed Endangered, Threatened, and Rare Plants of California* (CDFW 2020b).

A search of the California Natural Diversity Database (CNDDB, dated 3 January 2020; CDFW 2020c) was conducted for the Davis and 8 adjacent USGS quads to determine known records of special-status species in or near the BSA. A CNDDB summary report for the nine quads is in Appendix B. Table 2 lists the USGS quads evaluated.

Table 2. USGS Quads Evaluated for the Aggie Research Campus Project

Woodland	Grays Bend	Taylor Monument
Merritt	**Davis**	Sacramento West
Dixon	Saxon	Clarksburg

Sycamore Environmental obtained a list from the U.S. Fish and Wildlife Service Sacramento Field Office that identifies federal-listed species that potentially occur in or could be affected by projects on the Davis USGS quad or by projects in Yolo County (USFWS 2020; Appendix C).

D. Field Survey Methods

General Biological Surveys

The general biological surveys consisted of biologists walking through the BSA while looking for special-status wildlife species, their sign, and their habitat. Areas adjacent to the BSA were also inspected for important habitat features such as elderberry shrubs, vernal pools, burrows, and other wetlands/waters. Plants and wildlife species were identified and recorded (Attachment E). Areas within 200 ft of the BSA were searched for elderberry (*Sambucus* sp.) shrubs. Areas within 500 ft of the BSA were searched for burrowing owl (*Athene cunicularia*) and potentially suitable burrows. Areas within 1,320 ft of the BSA were searched for potential Swainson's hawk (*Buteo swainsoni*) nest trees, and other sensitive habitats as required under the Yolo HCP. The location of protected biological resources and important habitat features were recorded on field maps and/or with a sub-meter accurate GPS units. Wildlife species observed are listed in Appendix A.

Protocol Botanical Survey
The protocol botanical survey followed the guidelines set forth by USFWS (2000) and CDFW (2018). The survey was timed to occur in May and September, during the evident and identifiable period (the published blooming period) for all special-status plant taxa with potential to occur. The BSA was surveyed by botanists familiar with the flora of the region, including the special-status species with potential to occur. The botanists walked meandering transects through the BSA while searching for special-status plants. Emphasis was placed on areas outside of active agriculture, such as the edges of fields, the detention basin, and the bed and banks of the Mace Drainage Channel (MDC). Natural communities were classified and mapped. Plant species were either identified on-site or collected and identified later using dichotomous keys in the Jepson Manual, 2nd ed. (Baldwin et al., eds. 2012). Nomenclature and taxonomy follow Baldwin et al. (2012). Plants species observed in the BSA are listed in Appendix A.

Aquatic Resource Survey
A formal aquatic resource (wetland) delineation was conducted in accordance with standard U.S. Army Corps of Engineers Wetland Delineation Manual methods (Corps 1987). The aquatic resource delineation report was prepared separately (Sycamore Environmental 2015b). The results of the delineation are incorporated in this biological resources evaluation report.

Hydrologic Observations
Five long-term study sites were established along the Mace Drainage Channel (MDC) from Mace Blvd downstream, to a location just east of Road 105, spanning approximately 1.1 mi. The five sites were visited a total of 16 times, approximately once every 1 to 4 weeks, between 26 January and 30 November 2015 (full list of survey dates and study sites provided in the Discussion of Giant Garter Snake presented in Section V.C.2). During each site visit, the MDC was photographed and water present was noted at each study site. Dominant plant species were identified and recorded at each study site. The primary purpose of the hydrologic observations was to evaluate suitability of habitat in the MDC for giant garter snake.

2019-2020 Surveys
Sycamore Environmental biologists Mike Bower, M.S., and Juan Mejia, B.S., conducted a general biological survey and botanical survey on 7 August 2019, covering the Campus BSA. Mr. Bower conducted a reconnaissance survey of the off-site Stormwater BSA on 8 October 2019.

Within the last three years, Sycamore Environmental biologists have conducted numerous burrowing owl surveys and monitoring events covering the areas within 500 ft of the BSA. Surveys targeting burrowing owl, conducted in accordance with the CDFW (2012) *Staff Report on Burrowing Owl Mitigation*, were commenced on 24 January 2020. The burrowing owl survey covered areas within 500 ft of the Campus BSA, and areas within 500 ft of the preferred location of stormwater capacity work (100 ac on APN 033-300-15) in the Stormwater BSA (see map in Appendix G). The survey was conducted by qualified biologists familiar with burrowing owl, and approved to conduct burrowing owl surveys under the Yolo HCP. The occupancy status of potential burrowing owl burrows was determined based on the presence of owls, or sign of burrowing owl consisting of whitewash, feathers, pellets, etc. The *Staff Report on Burrowing Owl Mitigation* (CDFW 2012) considers burrow sites to be occupied if a burrowing owl has been observed occupying a burrow, or burrowing owl sign has been observed at a burrow, within the last three years. The results of all burrowing owl surveys conducted within the last three years are incorporated in the preliminary survey results letter included in Appendix G.

E. Mapping

Biological resources observed by Sycamore Environmental were mapped using sub-meter accurate GPS units (Trimble GeoXT, Geo7X, and TDC100 equipped with R-1 receiver). The 13 August 2018 aerial photo in Figures 2 and 4 was downloaded from ESRI World Imagery. GPS data were exported to AutoCAD® and aligned with the aerial photo to create Figure 4. Biological communities were mapped based on GPS data, field observations, and interpretation of the aerial photographs available on Google Earth. Yolo HCP/NCCP Land Cover Types were mapped using land cover type definitions from the current Yolo HCP/NCCP Permitting Guide (November 2019).

F. Problems Encountered and Limitations That May Influence Results

The general biological survey was not a focused or agency protocol wildlife survey. The general biological survey may not necessarily have detected cryptic, fossorial, migratory, nocturnal, or seasonally apparent species. The general biological survey is intended to gather information on habitat suitability and the potential for any given species to occur. A set of burrowing owl protocol surveys conducted in accordance with the CDFW (2012) guidelines is currently underway. While the final results of these surveys will not be available until the summer of 2020, initial survey results are included in this report, along with the results of numerous previously conducted biological surveys, and surveys specifically targeting burrowing owl. No other problems or limitations were encountered.

IV. ENVIRONMENTAL SETTING

The Campus BSA is located at an urban/rural interface, on the east side of the City of Davis, CA, within the unincorporated area of Yolo County, in an agricultural area in California's Central Valley. Upland row crops and fruit/nut tree orchards are common in the area. The Campus BSA is bordered to the west by Mace Blvd, existing commercial uses, and residences. The Union Pacific Railroad, Interstate-80 and various automotive dealerships are located to the south. Agricultural lands protected by a permanent conservation easement border the Campus BSA to the north and east. Elevation in the Campus BSA ranges from approximately 20 to 30 ft above sea level. The Campus BSA is generally flat. The Mace Drainage Channel (MDC) delivers City of Davis storm water through the Campus BSA, east to railroad channel and ultimately the Yolo Bypass. The Stormwater BSA occurs in agricultural fields approximately two miles east of the Campus BSA. The Stormwater BSA abuts created wetlands and the Willow Slough Bypass to the north, the Yolo Bypass to the east, the railroad channel (into which the MDC drains), Union Pacific Railroad and Interstate-80 to the south, and agricultural lands to the west and northwest. Excluding the Yolo Bypass levee at the eastern edge of the Stormwater BSA, the elevation of agricultural fields in the Stormwater BSA ranges from approximately 10 to 15 ft above sea level.

A. Soils

Mapped soil units in the BSA are Capay Silty Clay Loam, 0 to 1 Percent Slopes; Clear Lake Clay, 0 to 1 Percent Slopes; Marvin Silty Clay Loam, 0 to 1 Percent Slopes; Sacramento Clay, Drained; Sycamore Silt Loam, Drained, 0 to 1 Percent Slopes; Sycamore Complex, Drained, 0 to 1 Percent Slopes; Tyndall Very Fine Sandy Loam, Drained, 0 to 1 Percent Slopes; Willows Clay, 0 to 1 Percent Slopes; and Willows Clay, Alkali, Drained, 0 to 1 Percent Slopes (Figure 3; NRCS 2020). Figure 3 is a soils map. The following descriptions are summarized from NRCS (1972, 2020).

Capay Silty Clay Loam, 0 to 1 Percent Slopes:
These soils occur on alluvial fans, alluvial flats, interfan basins, and basin rims. They formed in moderately fine and fine textured alluvium from mostly sandstone and shale. A typical profile is very hard, very firm, sticky, very plastic very dark grayish brown clay from 0 to 21 inches; very hard, very firm, sticky, very plastic dark brown clay from 21 to 32 inches; and hard, firm, sticky, very plastic yellowish brown clay from 32 to 62 inches. This soil is slightly acid from 0 to 5 inches, neutral from 5 to 21 inches, and moderately alkaline from 21 to 62 inches. Permeability is slow to very slow. Runoff is negligible to high. Capay series soils are classified as Fine, Smectitic, Thermic Typic Haploxererts.

Clear Lake Clay, 0 to 1 Percent Slopes:
These soils occur in flood basins, flood plains and in swales of drainageways. They formed in fine textured alluvium derived from mixed rock sources. A typical profile is massive when wet, very hard, firm, very sticky and very plastic from 0 to 13 inches; massive when wet, extremely hard, very firm, very sticky and very plastic from 10 to 45 inches; and massive, very hard, very firm, very sticky and very plastic from 45 to 60 inches. The typical profile is neutral from 0 to 13 inches and moderately alkaline from 13 to 60 inches. Permeability is slow to very slow. Runoff is negligible to high. Clear Lake series soils are classified as Fine, Smectitic, Thermic Xeric Endoaquerts.

Marvin Silty Clay Loam, 0 to 1 Percent Slopes:
These soils occur on nearly level flood plains at elevations of 10 to 100 ft under annual grasses and forbs. They formed in fine textured alluvium from mixed sources. A typical profile is hard, friable, slightly

sticky, plastic, very dark grayish brown silty clay loam from 0 to 13 inches; very hard, fium, sticky, plastic dark to very dark grayish brown heavy silty clay loam or silty clay from 13 to 42 inches; and hard, friable, sticky, plastic, dark brown silty clay loam from 42 to 60 inches. This soil is neutral to slightly acidic from 0 to 13 inches, and mildly alkaline from 13 to 60 inches. Permeability is slow. Runoff is slow. Marvin series soils are classified as Fine, Smectitic, Thermic Aquic Haploxeralfs.

Sacramento Clay, Drained
These soils occur on basin floors in flood basins. They formed in alluvium from mixed rocks. A typical profile is hard, firm sticky and very plastic from 0 to 7 inches; massive, hard, very firm, sticky, and very plastic from 7 to 16 inches; hard, firm, sticky, and very plastic from 16 to 31 inches; hard, very firm, sticky and very plastic from 31 to 53; massive, hard, firm, sticky, and very plastic from 53 to 69 inches; and massive, hard, firm, slightly sticky and very plastic from 69 to 77 inches. The soil is moderately acid from 0 to 7 inches, neutral from 7 to 16 inches, slightly alkaline from 16 to 31 inches, moderately alkaline from 31 to 53 inches, slightly alkaline from 53 to 69 inches and moderately alkaline from 69 to 77 inches. Permeability is slow. Runoff is very slow to slow. Sacramento series soils are classified as Very-Fine, Smectitic, Thermic Cumulic Vertic Endoaquolls.

Sycamore Silt Loam and Sycamore Complex, Drained, 0 to 1 Percent Slopes:
These soils occur on nearly level flood plains at elevations of 10 to 100 ft. They formed in in mixed sedimentary alluvium. A typical profile is hard, friable, sticky, plastic very dark grayish brown silty clay loam from 0 to 14 inches; slightly hard, friable, slightly sticky, slightly plastic dark grayish brown silt loam from 14 to 42 inches; and slightly hard, friable, slightly sticky, slightly plastic pale brown loam from 42 to 60 inches. This soil is slightly acid from 0 to 14 inches, and mildly to moderately alkaline from 14-60 inches. Permeability is moderate to moderately slow. Runoff is slow to very slow. Sycamore series soils are classified as Fine-Silty, Mixed, Superactive, Nonacid, Thermic Molic Endoaquepts.

Tyndall Very Fine Sandy Loam, Drained, 0 to 1 Percent Slopes:
These soils occur on nearly level alluvial fans at elevations of 0 to 70 ft. They formed in sedimentary alluvium low in clay. A typical profile is soft, very friable, slightly sticky, slightly plastic dark to very dark grayish brown heavy very fine sandy loam to very fine sandy loam from 0 to 24 inches; soft, very friable, slightly sticky, slightly plastic light brownish gray to olive fine to very fine sandy loam from 24 to 46 inches; soft, friable, slightly sticky, slightly plastic dark grayish brown to pale olive sandy loam to very fine sandy loam from 46 to 52 inches. This soil is slightly to moderately alkaline from 0 to 41 inches, and strongly alkaline from 41-52 inches. Permeability is moderately rapid. Runoff is slow. The use of levees and other artificial means have improved natural drainage. Tyndall series soils are classified as Coarse-Loamy, Mixed, Superactive, Calcareous, Thermic Fluvaquentic Endoaquepts.

Willows Clay, and Willows Clay, Alkali, Drained, 0 to 1 Percent Slopes:
These soils occur on nearly level basins in intermountain valleys and large valleys at elevations of 20 ft to as much as 1,700ft. They formed in fine-textured mixed alluvium. A typical profile is extremely to very hard, very firm, sticky, very plastic very dark gray clay from 0 to 38 inches; and hard to very hard, very firm, sticky and very plastic olive gray clay from 38 to 72 inches. This soil is neutral from 0 to 4 inches, slightly alkaline from 4 to 13 inches, and strongly alkaline from 13 to 72 inches. Permeability is very slow. Runoff is slow. Willows series soils are classified as Fine, Smectitic, Thermic Sodic Endoaquerts.

Aggie Research Campus
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Figure 3. Soils Map

Campus Biological Study Area (Campus BSA)

Stormwater Capacity Biological Study Area (Stormwater BSA)

Soil Boundary

Soil Types (In the BSA):

Ca	Capay silty clay, 0 to 1 percent slopes
Ck	Clear Lake clay
Mf	Marvin silty clay loam, 0 to 1 percent slopes
Sd	Sacramento clay, drained
Sp	Sycamore silt loam, drained, 0 to 1 percent slopes
Sv	Sycamore complex, drained, 0 to 1 percent slopes
Tc	Tyndall very fine sandy loam, drained 0 to 1 percent slopes
Wb	Willows clay 0 to 1 percent slopes
Wd	Willows clay, alkali, drained 0 to 1 percent slopes

1,500 1,000 500 0 1,500 Feet

N

Scale: 1 inch = 1,500 feet

SYCAMORE Environmental Consultants, Inc.

Aerial Photograph: 13 August 2018
2018 Yolo County Orthos Imagery
ESRI World Imagery Arcmap Service Layer

Soil Survey Geographic (SSURGO) Yolo County, California (27 February 2007)
Hydric Soils National List (March 2014), USDA NRCS

14087AggieResearchCampus_Fig3SoilsMap(11X17).mxd

B. Weather and Climate Conditions

Accumulated precipitation was above 124% of normal preceding the biological, botanical, and wetland surveys on 10 December 2014 (Sycamore Environmental 2015e); 71% of normal preceding the 19 May 2015 botanical survey (Sycamore Environmental 2015d); and 84% of normal preceding the 11 September 2015 botanical survey (Sycamore Environmental 2015f). Accumulated precipitation was 176% of normal preceding the 7 August 2019 biological and botanical survey (based on precipitation data from the Davis 2WSW gauge, calculated for the period of 1 October through 7 August; CDEC 2020). Vegetation in the BSA appeared typical for the time of year during each of the surveys. Biological surveys were conducted during weather with good visibility. No surveys were conducted in dense fog or during precipitation events.

C. Biological Communities

Biological communities are defined by species composition and relative abundance. Biological communities described below correlate where applicable with *A Manual of California Vegetation, 2nd Edition* (Sawyer et al. 2009), and the most recent *California Natural Communities List* (CDFW 2019c). Biological communities are mapped in Figure 4 and their acreages are in Table 3. Photographs of the BSA are in Appendix D. Mapping of biological communities in this report matches the land cover type mapping required by the Yolo HCP/NCCP.

Table 3. Biological Communities and Other Features in the BSA

Land Cover Type	**Vegetation Alliances and CDFW Alliance Codes [1]**	**Rarity Rank [2]**	**Campus BSA Acreage [3]**	**Stormwater BSA Acreage [3]**	**Total BSA Acreage [3]**
Field Crops	--	--	210.86	523.00	733.86
Deciduous Fruit/Nut	--	--	13.51	0	13.51
Semiagricultural/Incidental to Agriculture	*Brassica nigra* and other mustards (Upland mustards) Semi-natural Stands (CDFW 42.011.00 *Lepidium latifolium* (Perennial pepper weed patches) Semi-natural Stands (CDFW 52.205.00)	--	19.56	12.23	31.79
Mace Drainage Channel [4]	*Typha* (*angustifolia*, *domingensis*, *latifolia*) Herbaceous Alliance (CDFW 52.050.00) *Lepidium latifolium* (Perennial pepper weed patches) Semi-natural Alliance (CDFW 52.205.00)	G5 S5 --	1.66	0.13	1.79
Urban or Built Up	--	--	9.00	2.55	11.55
Urban Ruderal	*Brassica nigra* and other mustards (Upland mustards) Semi-natural Stands (CDFW 42.011.00 *Centaurea solstitialis* (Yellow star-thistle fields) Semi-natural Alliance (CDFW 42.042.00)	--	10.50	12.34	22.84
		Total:	**265.09**	**550.25**	**815.34**

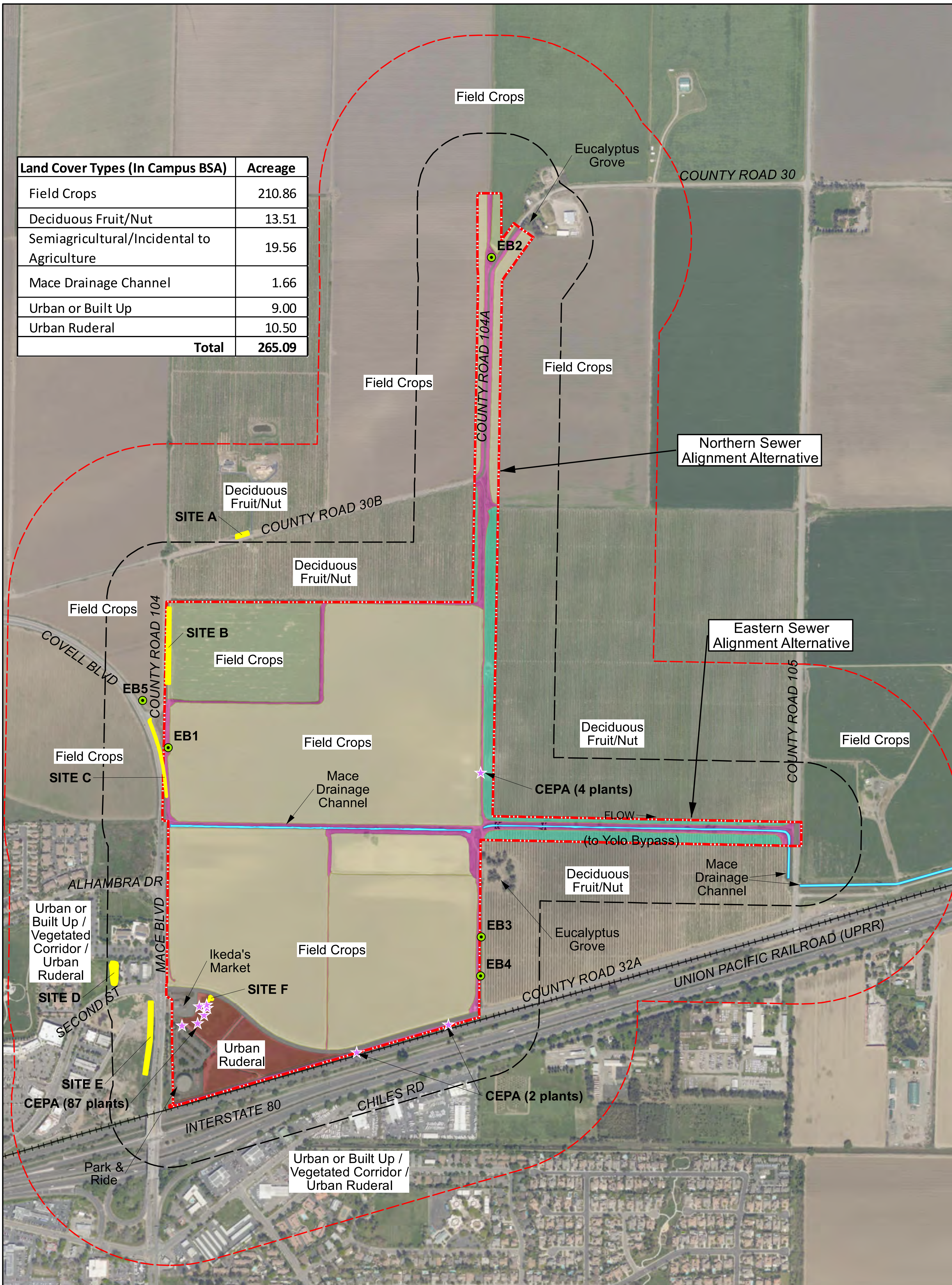
[1] Vegetation alliances based on descriptions and classification methods in Sawyer et al. (2009). Alliance codes from CDFW (2019c). Some communities may lack recognized vegetation alliances or contain multiple alliances.

[2] Rarity ranking follows NatureServe's Heritage Methodology and is based on degree of imperilment as measured by rarity, trends, and threats. State (S) ranks of 1-3 are considered highly imperiled by CDFW (2019d). Nonnative vegetation has no rarity rank.

[3] Acreages were calculated using ArcMap functions.

[4] A portion of the Mace Drainage Channel in the Campus BSA may be classified as bulrush cattail wetland when vegetation is present. The City of Davis regularly removes vegetation from the Mace Drainage Channel for stormwater management pursuant to an existing agreement with CDFW. The bulrush cattail wetland present in the Stormwater BSA occurs in the southernmost portion of an irrigation drainage ditch that drains to the Railroad Channel. See discussion of the Mace Drainage Channel.

Land Cover Types (In Campus BSA)	Acreage
Field Crops	210.86
Deciduous Fruit/Nut	13.51
Semiagricultural/Incidental to Agriculture	19.56
Mace Drainage Channel	1.66
Urban or Built Up	9.00
Urban Ruderal	10.50
Total	**265.09**



Aggie Research Campus
Yolo County, CA
3 February 2020

Campus Biological Study Area (Campus BSA)
500 ft Buffer
1,320 ft Buffer
Elderberry Shrub Location (EB)
Burrowing Owl Occupied Site (SITE A to F)
Parry's rough tarplant (*Centromadia parryi* ssp. *rudis* CNPS Rank 4.2)(CEPA)

Field Crops
Deciduous Fruit/Nut
Mace Drainage Channel
Semiagricultural/Incidental to Agriculture
Urban or Built Up
Urban Ruderal

800 400 0 800 Feet
Scale: 1 inch = 800 feet
N

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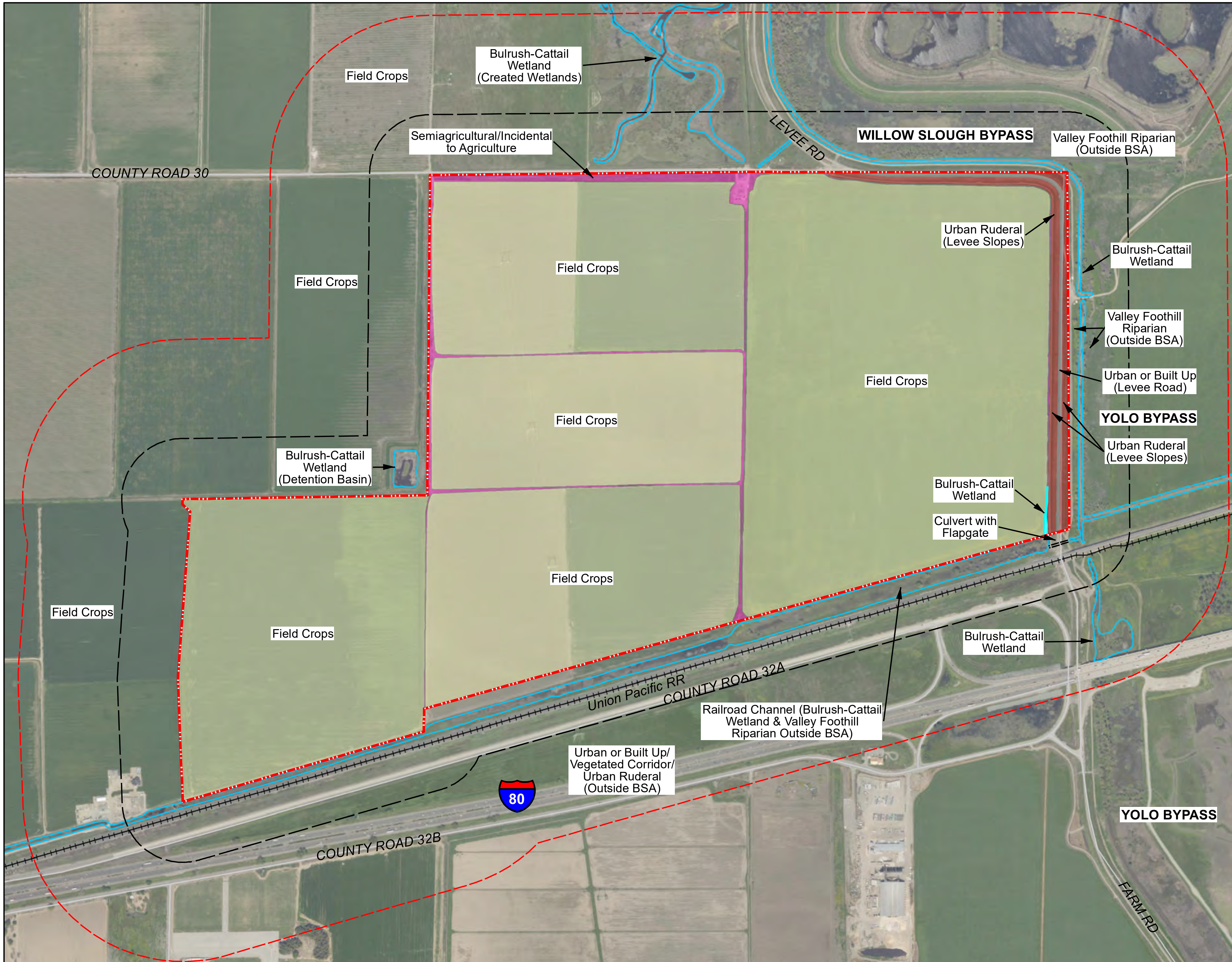
Figure 4.
Biological Resources Map
Sheet 1 of 2

Notes:
1) Occupied burrowing owl sites reflect survey results through 24 January 2020.
2) Parry's rough tarplant mapped on 11 September 2015 and verified on 7 August 2020.

Aerial Photograph: 13 August 2018
2018 Yolo County Orthos Imagery
ESRI World Imagery Arcmap Service Layer

14087AggieResearchCampus_Fig4BioresMap(11x17)_Sht1of2.mxd



Aggie Research Campus
Yolo County, CA
31 January 2020

Figure 4.
Biological Resources Map
Sheet 2 of 2, Off-site
Stormwater Capacity Area

Stormwater Capacity Biological Study Area (Stormwater BSA)
500 ft Buffer
1,320 ft Buffer
Bulrush-Cattail Wetland
Field Crops
Semiagricultural/Incidental to Agriculture
Urban Ruderal
Urban or Built Up
Bulrush-Cattail Wetland (Outside Stormwater BSA)

Land Cover Types (In Stormwater BSA)	Acreage
Field Crops	523.00
Semiagricultural/Incidental to Agriculture	12.23
Bulrush-Cattail Wetland	0.13
Urban or Built Up (Levee Road)	2.55
Urban Ruderal (Levee Slopes)	12.34
Total	550.25

800 400 0 800 Feet
N
Scale: 1 inch = 800 feet

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Aerial Photograph: 13 April 2018
2018 Yolo County Orthos Imagery
ESRI World Imagery Arcmap Service Layer

14087AggieResearchCampus_Fig4BioresMap(11x17)_Sht2of2.mxd

1. Field Crops

A total of 210.86 ac of field crop agriculture occurs in the Campus BSA (see photos in Appendix D). A total of 523.00 ac of field crop agriculture occurs in the Stormwater BSA. The agricultural fields had recently been tilled during fieldwork and appear to be in active use. Fields are flat. Recent crops have included tomato, sunflower, alfalfa, and grain. The agricultural fields have been used for agriculture since at least 1937 (Ramcon 2003).

A 1200 x 330 ft detention basin occurs adjacent and south of the MDC near the eastern boundary of the Campus BSA. A concrete spillway allows water from MDC to flow into the detention basin during extreme high water events. Two one-way metal flap gates in the spillway allow water to flow back into the MDC as water drains out of the MDC. The basin was constructed in approximately 1993. This feature is visible on aerial photographs dating back to 1993 in Google Earth. None of the aerial photographs available in Google Earth show standing water in this feature. Prior to 2014, the detention basin had never held standing water (pers. comm., D. Ramos). On 10 December 2014 wrack deposition consistent with recent inundation was observed in this feature. The location of wrack deposition on the sides of the detention basin indicated that approximately 2-3 ft of water had been present in the detention basin sometime between 7 October and 10 December 2014. No water was observed in the detention basin on 10 December 2014. Soil pits dug throughout the basin as part of the concurrently prepared wetland delineation showed that soils in the detention basin are composed mostly of silt and sand. The detention basin was cultivated and planted with sunflower in 2019. It was thus classified as the field crops land cover type.

A few Fremont cottonwood (*Populus fremontii* ssp. *fremontii*) trees occur in the detention basin, in the area mapped as field crops. The trees in the BSA are discussed in Section V.G.

2. Deciduous Fruit/Nut

A total of 13.51 ac of deciduous fruit/nut orchard occurs in the Campus BSA. The orchards are planted with almonds or peaches. The orchards occur east and north of the ARC site, and along both sewer line alternatives. The orchards were installed in 2015 or 2016.

3. Semiagricultural/Incidental to Agriculture

A total of 19.56 ac was mapped as semiagricultural/incidental to agriculture in the Campus BSA (see photos in Appendix D). A total of 12.23 acres was mapped in the Stormwater BSA. This community consists mainly of fallow farm field edges and farm roads. Dirt farm roads occur north of and adjacent to the MDC on the ARC site, on both sides of the MDC along the eastern sewer alignment alternative, and along most of the agricultural fields. Where present, vegetation in this community is dominated by nonnative weed species including mustard (*Brassica nigra* and other mustards), perennial pepperweed (*Lepidium latifolium*), Russian thistle (*Salsola tragus*), yellow-star thistle (*Centaurea solstitialis*), field bindweed (*Convolvulus arvensis*), poison hemlock, (*Conium maculatum*), prickly lettuce (*Lactuca serriola*), filaree (*Erodium* sp.), and nonnative annual grasses (*Bromus*, *Avena*, *Hordeum*, etc.). This community occurs predominantly along untilled field edges, along roadsides, along the MDC, in roadside and irrigation ditches. The vegetation in this community has no special status.

4. Mace Drainage Channel

The MDC is a manmade storm drainage ditch that transports urban runoff from the Mace Ranch Drainage Basin in the City of Davis east through the center of BSA, to the Railroad Channel, and ultimately the Yolo Bypass approximately 2.5 air miles to the east (City of Davis 2007; see photos in Attachment D). Vegetation in the MDC is periodically removed by the City of Davis (City of Davis 2006; pers. comm., D. Ramos). Vegetation clearing had occurred in much of the ditch in approximately 2014.

A total of 1.66 ac of the Mace Drainage Channel (MDC) occurs in the Campus BSA. The portion of the MDC bisecting the ARC site (i.e. the portion between Mace Blvd and a farm road crossing at the eastern edge of the ARC site) occupies approximately 0.81 ac and is dominated by cattail (*Typha* sp.), bulrush (*Schoenoplectus acutus* var. *occidentalis*), annual saltmarsh aster (*Symphyotrichum subulatum*), nutsedge (*Cyperus eragrostis*), and smartweed (*Persicaria* sp.). A few young nonnative sycamores (*Platanus* sp.) one nonnative Chinese tallow tree (*Triadica sebifera*) sapling, one young native Goodding's black willow (*Salix gooddingii*), and one young Fremont's cottonwood (*Populus fremontii*) occur along this portion of the MDC (see Evaluation of Trees in Section V.G). Vegetation in this portion of the MDC is generally may be classified as *Typha* (*angustifolia*, *domingensis*, *latifolia*) herbaceous alliance (CDFW 52.050.00; rarity rank G5 S5), and would meet the definition of bulrush cattail wetland under the Yolo HCP/NCCP.

The portion of the MDC along the eastern sewer alignment (0.85 ac) does not contain cattails, bulrushes, or marsh vegetation, and is instead dominated by perennial pepperweed (*Lepidium latifolium*) and other nonnative ruderal plants typical of uplands, or infrequently inundated floodplains. The vegetation in this portion of the MDC may be classified as *Lepidium latifolium* Semi-natural Stand (CDFW 52.205.00, no rarity rank). A few cottonwoods and willows occur along the MDC along the eastern sewer alignment alternative.

The hydrology of the MDC was studied as part of an evaluation of giant garter snake habitat (see discussion of giant garter snake in Section V.C.2). The MDC appears to contain flowing water only immediately following winter storms. The fields bordering the MDC may be irrigated with temporary irrigation ditches, but no irrigation runoff has been observed flowing into the portion of the MDC on the ARC site. The MDC likely also receives landscape runoff from within the City of Davis, however no flow due to landscape runoff was observed in the MDC during any surveys.

The MDC drains to the east, turning south along County Road 105, before turning east again, draining to the east-northeast along the north side of the railroad berm (at which point it becomes the Railroad Channel). The Railroad Channel passes immediately south of the Stormwater BSA, and drains through a concrete culvert and flapgate into the Yolo Bypass. The portion of the Railroad Channel located south of the Stormwater BSA contains marsh vegetation and Valley foothill riparian vegetation. In the Stormwater BSA, the southernmost portion of an irrigation ditch at the southeast corner of the Stormwater BSA joins with the Railroad Channel near the culvert beneath the Yolo Bypass levee. The southernmost portion of this irrigation ditch contains approximately 0.13 ac of bulrush cattail wetland located within the Stormwater BSA. Bulrush cattail wetland is also abundant a detention basin located immediately northwest of the Stormwater BSA, in created wetlands located immediately north of the Stormwater BSA, and in the Yolo Bypass.

5. Urban or Built Up

A total of 9.00 ac was mapped as urban or built up in the Campus BSA. A total of 2.55 ac was mapped as urban or built up in the Stormwater BSA. In the Campus BSA, this land cover type consists of developed lots, paved roads, structures, etc, including a portion of Road 32A, Road 104, Road 105, the Park and Ride driveway, the Park and Ride facility, Ikeda's Market, and associated parking lots. In the Stormwater BSA, this land cover type consists of the gravel road situated on top Yolo Bypass levee.

6. Urban Ruderal

A total of 10.50 ac was mapped as urban ruderal in the Campus BSA. A total of 12.34 ac was mapped as urban ruderal in the Stormwater BSA. In the Campus BSA, this land cover type consists of the ruderal areas located between the Park & Ride, Ikeda's Market, County Road 32A, and the railroad berm / I-80. In the Stormwater BSA, this land cover type was mapped on the levee slope. Vegetation is dominated by nonnative weed species including mainly mustards (*Brassica nigra* and other mustards), yellow star-thistle (*Centaurea solstitialis*), and nonnative annual brome grasses (*Bromus* spp.).

D. The Existing Level of Disturbance

The vast majority of the BSA has experienced recent soil disturbance due to typical agricultural operations, including tilling. Other recent or ongoing disturbance includes the Ikeda's Market, a water storage tank, and the Davis Park and Ride, associated parking lots and traffic, paved and unpaved roads, levee maintenance, and vegetation removal in the MDC.

V. BIOLOGICAL RESOURCES IN THE BIOLOGICAL STUDY AREA

A. Determination of Special-Status Species in the Biological Study Area

Special-status species are those listed (or candidate or proposed) under the federal or state endangered species acts, under the California Native Plant Protection Act, as a California species of special concern or fully protected by the California Department of Fish and Wildlife (CDFW), or that are Rank 1 or 2 in the California Native Plant Society's Inventory of Rare and Endangered Plants of California (CNPS 2014). CNPS Rank 3 and Rank 4 plants may also be considered special-status when they meet the definition of Rare or Endangered under CEQA Guidelines §15125 (c) or §15380. Special-status natural communities are waters, wetlands, riparian communities, and any natural community or vegetation alliance ranked S1, S2, or S3 by CDFW (2019c). Special-status species and communities may also include those considered locally important or sensitive.

File data from USFWS, CNDDB, and CNPS were used to determine the special-status species that could occur in the BSA. A CNDDB summary report and CNPS Inventory query for the Davis and eight surrounding USGS quads are in Appendix B. The USFWS list of special-status species that could occur in or be affected by the project is in Appendix C.

Biological field surveys were conducted by Sycamore Environmental biologists to determine if individuals or habitat for special-status species identified in the file data were present in the BSA. Special-status species for which suitable habitat is present are listed in Table 4.

Special status wildlife, plants, natural communities, and other biological resources that have potential to occur in the BSA are discussed in the sections that follow. The analysis of nearest known records presented for each species in Sections V.C and V.D was conducted using the Campus BSA. All known records overlapping or bordering any portion of the Campus BSA or the Stormwater BSA are discussed.

Table 4. Special-Status Species with the Potential to Occur in the BSA

Special-Status Species	Common Name	Federal Status [a]	State Status [a] & other codes [b]	Source [c]	Habitat Present?/ Species Observed?
Invertebrates					
Desmocerus californicus dimorphus	Valley elderberry longhorn beetle	T, CH	--	1,2,4	Yes/ No
Reptiles					
Thamnophis gigas	Giant garter snake	T	T	1,2,4	Yes/ No
Birds					
Agelaius tricolor	Tricolored blackbird	--	T, SC	2,4	Yes/ No
Athene cunicularia	Burrowing owl	--	SC	2,4	Yes/ No
Buteo swainsoni	Swainson's hawk	--	T	2,4	Yes/ No
Charadrius montanus	Mountain plover	--	SC	2	Yes/ No
Circus hudsonius	Northern harrier	--	SC	2	Yes/ **Yes**
Elanus leucurus	White-tailed kite	--	FP	2,4	Yes/ **Yes**
Melospiza melodia	Song sparrow ("Modesto" population)	--	SC	2	Yes/ No
Migratory Birds & Birds of Prey	--	--	--	5	Yes/ **Yes**
Mammals					
Protected & Locally Important Bats	--	--	--	5	Yes/ No
Plants			**/CNPS Rank [b]**		
Astragalus tener var. *ferrisiae*	Ferris' milk vetch	--	--/ 1B.1	2,3	Yes/ No
Astragalus tener var. *tener*	Alkali milk-vetch	--	--/ 1B.2	2,3	Yes/ No
Atriplex cordulata var. *cordulata*	Heartscale	--	--/ 1B.2	2,3	Yes/ No
Atriplex depressa	Brittlescale	--	--/ 1B.2	2,3	Yes/ No
Carex comosa	Bristly sedge	--	--/ 2B.1	2,3	Yes/ No
Centromadia parryi ssp. *parryi*	Pappose tarplant	--	--/ 1B.2	2, 3	Yes/ No
Centromadia parryi ssp. *rudis*	Parry's rough tarplant	--	--/ 4.2	3	Yes/ **Yes**
Eryngium jepsonii	Jepson's coyote thistle	--	--/ 1B.2	2, 3	Yes/ No
Etriplex joaquiniana	San Joaquin spearscale	--	--/ 1B.2	2, 3	Yes/ No
Hesperevax caulescens	Hogwallow starfish	--	--/ 4.2	2, 3	Yes/ No
Hibiscus lasiocarpos var. *occidentalis*	Woolly rose-mallow	--	--/1B.2	2,3	Yes/ No
Lepidium latipes var. *heckardii*	Heckard's pepper-grass	--	--/ 1B.2	2,3	Yes/ No
Symphyotrichum lentum	Suisun Marsh aster	--	--/ 1B.2	2	Yes/ No
Trifolium hydrophilum	Saline clover	--	--/ 1B.2	2,3	Yes/ No

[a] **Listing Status** Federal status determined from USFWS (2020) letter . State status determined from CDFW (2019a; 2020a). Codes used: **E** = Endangered; **T** = Threatened; **P** = Proposed; **C** = Candidate; **CH** = Critical habitat designated; **R** = California Rare;

[b] **Other Codes** Other codes determined from CDFW (2019a; 2020a) and CNPS (2020). Codes used in table are:
SC = CDFW Species of Special Concern; **FP** = CDFW Fully Protected;
CNPS CA Rare Plant Rank: **1A** = Presumed extirpated in CA and either rare or extinct elsewhere; **1B** = Rare, threatened, or endangered in CA and elsewhere; **2A** = Presumed extirpated in CA but common elsewhere; **2B** = Rare, threatened, or endangered in CA but more common elsewhere; **3** = Review List: plants about which more information is needed; **4** = Watch List: plants of limited distribution.
CNPS CA Rare Plant Rank Decimal Extensions: **.1** = Seriously threatened in CA (over 80% of occurrences threatened / high degree and immediacy of threat); **.2** = Moderately threatened in CA (20-80% of occurrences threatened / moderate degree and immediacy of threat); **.3** = Not very threatened in CA (< 20% of occurrences threatened / low degree and immediacy of threat or no threats known).

[c] **Sources** **1** = USFWS (2020) letter. **2** = CNDDB query (CDFW 2020c). **3** = CNPS (2020). **4** = Yolo HCP/NCCP Covered Species. **5** = Included by Sycamore Environmental.

B. Special-Status Species not in the Biological Study Area

Special-status species for which suitable habitat is not present, or whose distributional limits preclude the possibility of their occurrence in the BSA, are not discussed in Section V.C of this report. An evaluation of these species is in Appendix E.

C. Evaluation of Special-Status Wildlife Species

1. Invertebrates

Valley elderberry longhorn beetle (VELB; *Desmocerus californicus dimorphus*)

HABITAT AND BIOLOGY: VELB is a 2-cm long beetle found only in association with its host plant, elderberry (*Sambucus mexicana* and *S. racemosa* var. *microbotrys*). Adults emerge from mid-March through June. During this period, adults feed on foliage, perhaps also the flowers, and mate. Eggs are deposited on living elderberry plants. The first larval instar bores through the center of an elderberry stem and develops for one to two years while feeding on the pith. Prior to pupation, the larva chews a hole through the bark and plugs it with wood shavings. The larva crawls back into its pupal chamber, metamorphoses, and emerges as an adult (USFWS 2006).

The elderberry host plant for VELB occurs in a variety of habitats, most commonly in riparian forests and margins and adjacent grassy savannas. Elderberries also occur in oak woodland and mixed chaparral-foothill woodland. VELB is found in population clusters that are unevenly distributed across available host plants. Host plants are typically large mature plants. Exit holes are circular or slightly oval and between 7 and 10 mm in diameter (USFWS 1991). VELB does not disperse long distances, which led Collinge (2001) to conclude that unoccupied drainages tend to remain unoccupied. Talley et al. (2007) describes aggregations of occupied shrubs on the order of about 0.5 miles, which is consistent with limited dispersal ability. Isolated elderberry shrubs separated from contiguous habitat by extensive development are not typically considered viable habitat for VELB (Yolo Natural Heritage Program 2009). The Yolo Natural Heritage Program (2009) defines potential VELB habitat as stands of elderberry shrubs adjacent to or contiguous with riparian forest, floodplains, or relict elderberry savannah. On 17 September 2014, the USFWS determined that proposed delisting of VELB was not warranted (USFWS 2014c). VELB will remain a federally threatened species for the foreseeable future.

RANGE: VELB is endemic to the Central Valley and occurs from southern Shasta County south to Fresno County, and from the east side of the Coast Range to the foothills of the Sierra Nevada.

KNOWN RECORDS: There are 16 CNDDB records in the nine-quad area centered on the BSA. The closest record is approximately 2.1 mi west of the BSA. The record is for one adult collected in 1934 between Dixon and Sacramento. The exact collection location is unknown.

HABITAT PRESENT IN THE BSA: Blue elderberry (*Sambucus nigra* ssp. *caerulea*; formerly, *Sambucus mexicana*) shrubs in the Campus BSA provide marginal habitat for VELB. Habitat is considered marginal due to the non-riparian/agricultural context and the degree of shrub isolation.

DISCUSSION: A total of five elderberry shrubs occur either in the Campus BSA or within 200 ft (EB shrubs #1-5 shown on Figure 4). No elderberry shrubs were observed in the Stormwater BSA or within 200 ft. No VELB or potential VELB exit holes were observed on the shrubs during VELB exit hole inspections conducted on 10 December 2014, 23 December 2014, and 7 August 2019. Off-site, several elderberry shrubs occur along the shoulder of I-80 south of the Project, but these individuals are over 100 ft from the BSA, and separated from the BSA by the railroad prism.

EB Shrub #1 occurs along the western edge of the Campus BSA. EB Shrub #2 occurs in a clump of roadside vegetation along the northern sewer alignment alternative. EB shrubs #3 and #4 occur along the eastern edge of the Campus BSA. EB Shrub # 5 occurs off-site, approximately 180 ft west of the Campus BSA along the north side of Mace Blvd. The elderberry shrubs in the BSA are isolated from other shrubs, and are growing in agricultural contexts. The elderberry shrubs in the BSA are not growing with or near riparian vegetation or in riparian contexts. Talley et al. (2007) modeled potentially suitable areas adjacent to the riparian zone as areas within 250 ft of potentially suitable riparian habitat. The nearest riparian habitat that may have elderberry shrubs appears to be over one mi north of the BSA along the Willow Slough Bypass, well beyond the dispersal capabilities of VELB.

There is no evidence that VELB occupy the elderberry shrubs in the BSA. VELB is unlikely to occur in the BSA.

2. Reptiles

Giant garter snake (GGS: *Thamnophis gigas*)

HABITAT AND BIOLOGY: GGS historically inhabited natural wetlands, but now mostly inhabit agricultural wetlands and other waterways, such as irrigation and drainage canals, riceland, marshes, sloughs, ponds, small lakes, low gradient streams, and adjacent uplands. Essential habitat components consist of:

1) adequate water during the snake's active season (early spring through mid-fall) to provide adequate permanent water to maintain dense populations of food organisms;
2) emergent, herbaceous wetland vegetation, such as cattails and bulrushes, for escape cover and foraging habitat during the active season;
3) upland habitat with grassy banks and openings in waterside vegetation for basking; and
4) higher elevation upland habitats for cover and refuge from flood waters during the snake's inactive season in the winter.

GGS are most active from spring to mid-fall (approximately April through the end of October). The breeding season begins after emergence from overwintering sites, approximately March through May, and resumes briefly in September. Females brood young internally and give birth to live young from late July through early September. Young scatter immediately into dense cover and absorb their yolk sacs and begin feeding on their own (USFWS 1999a).

GGS feed primarily on aquatic prey, such as fish and amphibians. They appear to take advantage of pools that trap and concentrate prey items. GGS are known to bask in openings in vegetation created by rip-rap placed around water control structures. Small mammal burrows and other soil crevices above the flood elevation are used during the winter. Burrows are typically located in sunny exposures along south and west facing slopes (USFWS 1999a).

Ideal marsh habitat contains shallow water, deep water, and high ground. This habitat is often found in rice fields where GGS appear to be the most numerous. GGS are generally absent from larger rivers and from wetlands with sand, gravel or rock substrates. Riparian woodlands do not typically provide suitable habitat because of excessive shade, lack of basking sites, and lack of aquatic prey (USFWS 1999a).

RANGE: GGS is endemic to wetlands in the Central Valley of CA, from Red Bluff to Bakersfield. Once common throughout the Central Valley, GGS is currently found in the Sacramento Valley and isolated populations in San Joaquin Valley. The GGS Recovery Plan (USFWS 1999a) recognizes 13 separate populations of GGS that coincide with riverine flood basins and tributary streams: Butte Basin, Colusa Basin, Sutter Basin, American Basin, Yolo Basin/Willow Slough, Yolo Basin/Liberty Farms, Sacramento Basin, Badger Creek/Willow Creek, Caldoni Marsh, East Stockton – Diverting Canal and Duck Creek, North and South Grasslands, Mendota, and Burrel/Lanare. These populations occur in Butte, Colusa, Glenn, Fresno, Merced, Sacramento, San Joaquin, Solano, Stanislaus, Sutter, and Yolo counties. Studies conducted by Hansen (1988) in Sacramento, Sutter, Butte, Colusa, and Glenn counties, showed that GGS populations were distributed in areas where rice was grown.

KNOWN RECORDS: There are 80 CNDDB records of GGS in the nine-quad area centered on the BSA. The nearest record (Occurrence #80) is located 1.3 mi northwest of the BSA in an irrigation ditch north of Willow Slough and west of the Yolo County Central Landfill. Several other GGS records occur in or north/east of the Willow Slough Bypass within approximately 3 mi of the BSA. None of the records occur on the Project side of the Willow Slough Bypass. A cluster of GGS records also occurs southeast of the BSA in the Yolo Bypass (Occurrence #311) and in rice field ditches immediately west of the Yolo Bypass and south of I-80 (Occurrence #185; the closest of which is 2.3 miles southeast of the Campus BSA).

HABITAT PRESENT IN THE BSA: No habitat for GGS occurs in the Campus BSA or within 200 ft. The MDC is not habitat for GGS (see GGS Habitat evaluation in Appendix I). In the Stormwater BSA, potentially suitable aquatic habitat occurs in the southern portion of an irrigation ditch at the southeast corner of the Stormwater BSA. Within 200 ft of the Stormwater BSA, potentially suitable aquatic habitat occurs in the Railroad channel located immediately to the south, the detention basin located immediately to the northwest, the created wetlands located immediately to the north, and in ditches and canals present within the Yolo Bypass. Upland areas within 200 ft of aquatic habitat for GGS are typically considered suitable upland basking and refuge habitat for GGS. Suitable upland habitat for GGS occurs in the Stormwater BSA around the abovementioned aquatic habitat.

DISCUSSION: GGS were not observed during biological surveys. The closest known populations of GGS occur in the Willow Slough Bypass and the Yolo Bypass (see map of recent records and modeled GGS habitat in Appendix F; Yolo County Natural Heritage Program 2013). The Campus BSA and Stormwater BSA do not occur in an area of rice production. No rice production occurs in the region between I-80 and Willow Slough, west of the Yolo Bypass. Agricultural fields in the BSA and on all agricultural parcels located north of I-80 and south of Willow Slough consist of upland row crops and deciduous not/fruit orchards. No rice production occurs along the MDC or in the fields between the BSA and either the Willow Slough Bypass or the Yolo Bypass. The following discussion covers findings for the Campus BSA and Stormwater BSA separately.

<u>Campus BSA:</u> GGS habitat does not occur in the Campus BSA. There is no aquatic habitat connectivity between the Campus BSA and the GGS populations in the Yolo Bypass and in Willow Slough Bypass. The MDC does not provide suitable aquatic habitat for GGS. See GGS Habitat Evaluation in Appendix I.

<u>Stormwater BSA:</u> The southernmost portion of an irrigation ditch at the southeast corner of the Stormwater BSA contains cattails and bulrush vegetation, and may provide suitable aquatic habitat for GGS. Marginal aquatic habitat for GGS occurs in the following features, which may provide adequate water for GGS during the GGS active season, at least in some years: the Railroad Channel located

immediately south, the detention basin located immediately northwest, the created wetlands located immediately north, and canals and ditches with suitable hydrology within the Yolo Bypass located to the east of the Stormwater BSA. Upland areas within 200 ft of the aforementioned GGS aquatic habitat occur within the Stormwater BSA as shown on Figure 4, and on the map of Yolo HCP/NCCP biological resource avoidance buffers in Appendix H. GGS could occupy these features and surrounding uplands when adequate water is present. GGS known to occur in the Yolo Bypass may enter the Railroad Channel by traveling over the Yolo Bypass Levee.

3. Birds

Tricolored blackbird (*Agelaius tricolor*)

HABITAT AND BIOLOGY: Tricolored blackbirds form the largest breeding colonies of any North American inland bird species (Shuford and Gardali 2008). Colonies vary in size from a minimum of about 50 nests to over 20,000 in an area of 10 ac or less (CWHR 2020). Tricolored blackbird was formally listed as Threatened under CESA on 18 March 2019 (California Fish and Game Commission 2019).

Basic breeding site requirements are open, accessible water; a protected nesting substrate, including either flooded or thorny or spiny vegetation; and a suitable foraging space providing adequate insect prey within a few kilometers of the nesting colony. Historically, most colonies nested in freshwater marshes dominated by cattails or tules, while some colonies nested in nettles, thistles, and willows. However, the use of freshwater marshes as breeding colony sites has decreased. An increasing percentage of colonies since the 1970s have been reported in Himalayan blackberry and thistles, and some of the largest recent colonies were in silage and grain fields near dairies in the San Joaquin Valley. Other less commonly used substrates include safflower, tamarisk, elderberry, western poison oak, giant reed, riparian scrublands, and riparian forests.

Ideal foraging conditions for this species are created when shallow flood irrigation, mowing, or grazing keeps the vegetation less than 6 inches tall. Preferred foraging habitats include crops such as rice, alfalfa, irrigated pastures, and ripening or cut grain fields, as well as annual grasslands, cattle feedlots, and dairies. Tricolored blackbirds also forage in native habitats, including wet and dry vernal pools and other seasonal wetlands, riparian scrub habitats, and open marsh borders. Proximity to suitable foraging habitat appears important for the establishment of colony sites (Shuford and Gardali 2008).

RANGE: In California, tricolored blackbird breeding occurs in the Sacramento and San Joaquin valleys, the foothills of the Sierra Nevada south to Kern County, the coastal slope from Sonoma County south to the Mexican border, and sporadically, the Modoc Plateau. Tricolored blackbirds are a permanent resident in California, but make extensive migrations and movements within their range, both in the breeding season and in winter. Individuals usually move north after first nesting efforts (March-April) in the San Joaquin Valley and Sacramento County to new breeding locations in the Sacramento Valley, northeastern CA, and rarely Oregon, Nevada, and Washington (Shuford and Gardali 2008).

KNOWN RECORDS: There are 18 CNDDB records of this species in the nine-quad area centered on the BSA. The closest record (Occurrence #488) is located approximately 2.1 mi west of the BSA. The record is for approximately 28,000 nests recorded in 1932. CNDDB considers this colony possibly extirpated. A second nearby record (Occurrence #489) is located approximately 2.1 mi northwest of the BSA. This second record is for an estimated 690 to 880 tricolored blackbirds observed on 15 April 2011, some of which were carrying nesting material. No birds were observed at the location of this second record on 18 April 2014. There are numerous eBird (2020) sightings of foraging and migrating tricolored blackbirds along the edge of the Campus BSA, and in the Yolo Bypass east of the Stormwater BSA.

HABITAT PRESENT IN THE BSA: Marginal nesting habitat for this species occurs in the portion of the MDC within the Campus BSA. Nesting habitat is considered marginal due to frequent vegetation removal and the relatively small width of the MDC, which may not provide sufficient protection for a colony nesting species. Suitable nesting habitat occurs in the marsh vegetation in the Railroad Channel located south of the Stormwater BSA, in the Yolo Bypass east of the Stormwater BSA, in created wetlands north of the Stormwater BSA, and in the detention basin northwest of the Stormwater BSA. Agricultural and ruderal areas in the BSA provide suitable foraging habitat.

DISCUSSION: Tricolored blackbirds were not observed during biological surveys of the BSA. There are no known records of nesting tricolored blackbird in the BSA or within 1,300 ft (CDFW 2020c; eBird 2020). Although unlikely, tricolored blackbirds could nest in the MDC. Nesting could also occur in suitable nesting habitat within 1,300 feet of the Stormwater BSA. The agricultural fields in the BSA provide suitable foraging habitat.

Burrowing owl (*Athene cunicularia*)

HABITAT AND BIOLOGY: Burrowing owls primarily inhabit open, dry grassland and desert habitats, such as grasses, forbs, and open shrub stages of pinyon-juniper and ponderosa pine habitats (CWHR 2020, Shuford and Gardali 2008). Main habitat components include burrows for roosting and nesting, and relatively short vegetation with sparse shrubs and taller vegetation (Shuford and Gardali 2008). Burrowing owls most commonly use ground squirrel burrows, but they may also use badger, coyote, and fox holes or dens; or human-made structures such as culverts, piles of concrete rubble, pipes and nest boxes (CWHR 2020; Shuford and Gardali 2008). An active nest chamber is often lined with excrement, pellets, debris, grass and feathers (CWHR 2020). This species also thrives in highly altered human landscapes. In agricultural areas, owls nest along roadsides, under water conveyance structures, and near and under runways and similar structures. In urban areas, burrowing owls persist in low numbers in highly developed parcels, busy urban parks, and adjacent to roads with heavy traffic. In the Imperial Valley, owls are able to excavate their own burrows in soft earthen banks of ditches and canals (Shuford and Gardali 2008).

Burrowing owls are a semi-colonial species that breed in CA from March through August, though breeding can begin as early as February and extend into December (Shuford and Gardali 2008; CWHR 2020). A large proportion of adults show strong nest site fidelity. Burrowing owls typically feed on a broad range of insects, but also on small rodents, birds, amphibians, reptiles, and carrion. Foraging usually occurs close to their burrow (Shuford and Gardali 2008).

RANGE: Burrowing owls are a year-round resident in most of CA, particularly in the Central Valley, San Francisco Bay region, Carrizo Plain, and Imperial Valley (Shuford and Gardali 2008). This species is generally absent from the humid coastal counties north of Marin and mountainous areas above 5,300 ft (Shuford and Gardali 2008; CWHR 2020).

KNOWN RECORDS: There are 79 CNDDB records of burrowing owl in the nine-quad area centered on the BSA. The two closest records (Occurrence #614 and #695) are mapped partially overlapping the BSA, along Mace Blvd. A third record (Occurrence #734) occurs approximately 500 ft east of the eastern sewer line alternative. A fourth record (Occurrence #994) occurs approximately 500 ft north of the Campus BSA, along County Road 30B.

Occurrence #614 occurs near the intersection of Mace Blvd and Road 104 and consists of several burrowing owls that were observed nesting in a disturbed dirt area surrounded by cultivated land and development in 2003 and 2004. The nests were located about 10 ft from the edge of Mace Road. According to the CNDDB, the last sighting of owls at this location was on 29 July 2004. eBird.org sightings indicate owls have been using burrows at this location within the last year (eBird 2020).

Occurrence #695 occurs at the southwest corner of the Campus BSA and includes areas east and west of Mace Blvd. This record consists of at least eight owls and two active burrows observed in 2004, and six owls and four burrows observed in 2005. CNDDB reports the location as "corner of frontage road (adjacent to I-80) and Mace Blvd, near Ikeda's Market," and the detailed location as "near road, between the two Park and Ride signs. Wintering burrow along the County Road 32A right-of-way." Habitat is described as "mowed nonnative grassland, surrounded by a frontage road, a park and ride lot, and Ikeda's Market. According to CNDDB, the last sighting of owls at this location was on 10 October 2005. eBird.org sightings indicate owls have been using burrows at this location within the last year (eBird 2020).

Occurrence #734 occurs on the north side of I-80, approximately 500 ft east of County Road 105. The record consists of two adult owls observed at their burrow (presumably breeding), at a mostly barren site with some ruderal vegetation on 2 March 2005. According to CNDDB, the 2 March 2005 sighting is the last known observation. eBird.org sightings indicate owls have been using burrows at this location within the last year (eBird 2020).

Occurrence #994 occurs along 0.25 to 0.40 mi west of the intersection of County Road 104A and County Road 30B. The record is for two occupied burrows, one with a pair, the other with a single individual, along County Road 30B. One pair and one single adult were observed in August and September 2007; two adults and five juveniles were observed on 13 July 2008. According to CNDDB, the 13 July 2008 sighting is the last known observation. eBird.org sightings indicate owls have been using burrows at this location within the last year (eBird 2020).

There are no CNDDB records of burrowing owl in the Stormwater BSA or within 500 ft. There are eBird.org sightings of burrowing owl with marker locations north of the Stormwater BSA, however it is not clear if these sightings correspond to nesting owls at the eBird marker locations. (Many of the sightings are part of eBird Traveling Protocol Surveys over 2+ miles, and include photos of burrowing owls from the known occurrences listed above).

HABITAT PRESENT IN THE BSA: Nesting habitat for burrowing owl occurs in the BSA. California ground squirrel burrows were observed along Mace Blvd, along the ruderal eastern edge of the Campus BSA, along the MDC, along the railroad berm located south of the BSA, and in the ruderal lot located east of Ikeda's Market. Agricultural and ruderal areas in the BSA provide foraging habitat.

DISCUSSION: Six burrow complexes occupied by burrowing owl occur in the BSA or within 500 ft (Figure 4). Burrowing owls and/or their sign (e.g., feathers, whitewash, pellets) have been observed at these burrows within the last three years. Sycamore Environmental has completed numerous surveys covering the BSA, as described in Table 1. Within the last year, surveys specifically targeting burrowing owl in the BSA and within 500 ft were completed on 7 August 2019 and 24 January 2020. The 24 January 2020 survey is the first of approximately nine CDFW (2012) guideline burrowing owl surveys planned to be conducted ahead of and during the burrowing owl breeding season in 2020. Appendix G contains the preliminary results of this survey effort, including a map of the survey areas, potentially suitable burrows, and the six known occupied sites (Sites A-F). Sites A-F are shown in Figure 4. Sites A-F are associated with known records as follows:

- **Site A** is part of CNDDB Occurrence #994. The most recent sighting of burrowing owl at Site A during surveys occurred on 24 January 2020 (two owls observed at a burrow). Breeding has occurred at this location within the last three years based on eBird.org sightings of pairs and/or juveniles (eBird 2020).
- **Site B** does not appear to be part of a CNDDB record. The most recent sighting of burrowing owl at Site B during surveys occurred on 7 August 2019 (one owl observed at a burrow). Breeding has occurred at this location within the last three years based on eBird.org sightings of pairs and/or juveniles (eBird 2020).
- **Site C** is part of CNDDB Occurrence #614. The most recent sighting of burrowing owl at Site C during surveys occurred on 8 October 2019 (one owl observed at a burrow). There is no indication from eBird.org sightings that breeding has occurred in this location within last three years (eBird 2020).
- **Site D** may be part of CNDDB Occurrence #695. The most recent sighting of burrowing owl at Site D during surveys occurred on 7 August 2019 (one owl observed at a burrow). There are no eBird.org sightings at this location within the last three years (eBird 2020).
- **Site E** is part of CNDDB Occurrence #695. The most recent sighting of burrowing owl at Site E during surveys occurred on 7 August 2019 (three owls observed at burrows). Breeding has occurred at this location within the last three years based on eBird.org sightings of pairs and/or juveniles (eBird 2020).
- **Site F** is part of CNDDB Occurrence #695. Burrowing owl has not been observed at Site F during surveys. Burrowing owl sign (whitewash and potential prey item remains) was observed at one burrow at Site F during the survey on 24 January 2020. Site F may be the "wintering burrow along the County Road 32A right-of-way" noted in CNDDB. There is no indication of breeding at this location within the last three years based on eBird.org sightings (eBird 2020).

Burrowing owls show high site fidelity. The location of occupied sites within 500 ft of the BSA are well known based on numerous surveys and eBird.org sightings. The distribution and abundance of occupied sites is not expected to change substantially as the results of additional surveys for burrowing owl become available. Regardless the final result of surveys, burrowing owl may become established in any potentially suitable burrow, including the large number of potentially suitable burrows that have so far been mapped in the BSA and within 500 ft (Appendix G). Nesting and foraging habitat occurs onsite in the BSA.

Swainson's hawk (*Buteo swainsoni*)

HABITAT AND BIOLOGY: Swainson's hawks nest in open riparian habitat, in scattered trees or in small groves in sparsely vegetated flatlands. Nesting areas are usually located near water, but are occasionally found in arid regions. Typical habitat includes open desert, grassland, or cropland containing scattered, large trees or small groves (CWHR 2020). Swainson's hawk breeds from late March to late October (CWHR 2020). They forage in adjacent grasslands, suitable grain or alfalfa fields, or in livestock pastures, feeding on rodents, small mammals, small birds, reptiles, large arthropods, amphibians, and, rarely, fish (Bloom 1980; CWHR 2020).

RANGE: Uncommon breeding resident and migrant in the Central Valley, Klamath Basin, Northeastern Plateau, Lassen County, and Mojave Desert (CWHR 2020). Swainson's hawks breed and forage in the California Central Valley in spring and summer. California populations of this species are believed to overwinter in Mexico.

KNOWN RECORDS: There are 500 CNDDB records for this species in the nine-quad area centered on the BSA. Two records (Occurrence #409 and #465) are mapped partially overlapping the Campus BSA, and one record (Occurrence #1466) is mapped partially overlapping the Stormwater BSA. A fourth record (Occurrence #111) occurs within 1,320 ft of the Campus BSA.

Occurrence #409 is in a eucalyptus grove located east of the Campus BSA and south of the MDC and eastern sewer alignment alternative. The record is for two Swainson's hawks observed nesting in 1987 and 1988 in a eucalyptus tree surrounded by farm houses. The nest site was inactive in 1994.

Occurrence #465 is in a eucalyptus grove located north of the Campus BSA, at the northern end of the northern sewer alignment alternative. The record is for Swainson's hawk nesting activity in a farmyard eucalyptus from 1992 to 2002, with successful young last detected in 1992, and hawks last detected in 2002. The nest tree was reported as being in poor condition, and the nest site was reported as inactive in 2004 and 2005.

Occurrence #1466 represents two separate nest trees, the closest of which occurs in riparian vegetation along the Railroad Channel immediately south of the Stormwater BSA. This nearby nest tree is described as a cottonwood with an active Swainson's hawk nest in 2005. The second nest tree occurs approximately 0.2 mi south of the Stormwater BSA, in a eucalyptus on the south side of I-80. An active nest was observed in the eucalyptus tree in 2010.

Occurrence #111 represents at four separate nest tree polygons, all located along I-80. The closest nest polygon is located approximately 0.2 miles south of the eastern end of the eastern sewer alignment, on the south side of I-80. A second polygon is located a similar distance southeast of the eastern end of the sewer alignment, in riparian vegetation in the Railroad Channel. Occurrence #111 includes pine, willow, walnut, and Chinese elm nest trees with active nests reported most years between 1987-2009.

HABITAT PRESENT IN THE BSA: Within the Campus BSA, the Fremont cottonwood trees in the detention basin and willows and cottonwoods along the MDC provide marginal nesting habitat. Nesting habitat is considered marginal because the trees are young. Within 1,320 ft of the Campus BSA, potential nesting habitat occurs in the groves of eucalyptus trees located east and north of the Campus BSA (and have in the past, as noted above for CNDDB Occurrence #409 and #465). Suitable off-site nesting habitat also occurs in landscaping corridors with large trees located along I-80, Mace Blvd, and Chiles Rd; and large willows and cottonwoods present along portions of the MDC and Railroad Channel. No potential nest trees occur in the Stormwater BSA. Within 1,320 ft of the Stormwater BSA, suitable off-site nesting habitat occurs in landscaping corridors with large trees located along I-80 and in large willows and cottonwoods present along portions of the off-site Railroad Channel, detention basin, created wetlands, and Yolo Bypass. Agricultural and ruderal areas in the Campus BSA and Stormwater BSA provide foraging habitat.

DISCUSSION: Swainson's hawks were observed soaring over the Campus BSA on 11 September 2015 and 7 August 2019. No potential Swainson's hawk nests were detected in the Campus BSA or Stormwater BSA during biological surveys. No potential Swainson's hawk nests were detected in the areas located within 1,320 ft of the Campus BSA and Stormwater BSA. Active nests could become established in the Fremont cottonwoods present in the Campus BSA, or in any of the suitable nest trees known to occur within 1,320 ft (see discussion of Habitat Present in the BSA, above), especially in eucalyptus groves located immediately east and north of the Campus BSA, which previously contained active Swainson's hawk nests. Agricultural and ruderal areas in the Campus BSA and Stormwater BSA provide foraging habitat.

Mountain Plover (*Charadrius montanus*)

HABITAT AND BIOLOGY: Mountain plover is a winter resident from September through March. Mountain plover occurs in open grasslands, plowed fields with little vegetation, and open sagebrush areas. Areas with high and dense cover are avoided. Foraging occurs in short grasslands and plowed fields, and their diet consists of large insects, especially grasshoppers. This species is not known to nest in California. Mountain plover winters below 3,200 ft (CWHR 2020).

RANGE: In California, known from the Central Valley from Sutter and Yuba counties southward (CWHR 2020). Also found in foothill valleys west of the San Joaquin Valley, Imperial Valley, in plowed fields of Los Angeles and western San Bernardino counties, and along the central Colorado River valley.

KNOWN RECORDS: There are four CNDDB records for this species in the nine-quad area centered on the BSA. The closest record is from 1970, approximately 7.5 mi northwest of the BSA. Ten mountain plovers were observed in an area with basins and ponds surrounded by cultivated fields. The record states that the ponds are no longer found in the area and no plovers were observed during a 2009 survey.

HABITAT PRESENT IN THE BSA: Agricultural and ruderal areas in the BSA provide foraging habitat.

DISCUSSION: Mountain plover was not observed during biological surveys. This species does not nest in California. Nonbreeding/wintering sites are of concern to CDFW (2019a). Ample foraging and wintering habitat similar to that in the BSA occurs in the agricultural areas surrounding the City of Davis.

Northern harrier (*Circus hudsonius*)

HABITAT AND BIOLOGY: Northern harriers breed and forage in a variety of open (treeless) habitats that provide adequate vegetative cover, an abundance of suitable prey, and scattered hunting, plucking, and lookout perches such as shrubs and fence posts. In California, such habitats include freshwater marshes, brackish and saltwater marshes, wet meadows, weedy borders of lakes, rivers and streams, annual and perennial grasslands, vernal pool complexes, weed fields, ungrazed or lightly grazed pastures, low-growing crop fields, sagebrush flats, and desert sinks (Shuford and Gardali 2008). Northern harriers feed mostly on voles and other small mammals, birds, frogs, small reptiles, crustaceans, insects, and rarely on fish (CWHR 2020).

Northern harriers nest on the ground, mostly at marsh edge of emergent wetlands or along rivers or lakes (CWHR 2020), and generally within patches of dense vegetation in undisturbed areas (Shuford and Gardali 2008). They may also nest in grasslands, grain fields, or on sagebrush flats several miles from water. Nests are built of large mounds of sticks on wet areas, and a smaller cup of grasses on dry sites. Breeding occurs from April to September, with peak activity occurring June through July. Single clutches are produced annually. The nestling period lasts about 53 days (CWHR 2020).

RANGE: Northern harriers occur from sea level up to lodgepole pine and alpine meadow habitats. They can occur at elevations as high as 10,000 ft in the eastern Sierra Nevada mountains. Northern harriers breed from sea level to 5,700 ft in the Central Valley and southern Sierra Nevada, and up to 3,600 ft in northeastern California. Northern harriers are a permanent resident of the northeastern Modoc plateau and coastal areas and a less common resident of the Central Valley (Shuford and Gardali 2008, CWHR 2020).

KNOWN RECORDS: There is one CNDDB record for this species in the nine-quad area centered on the BSA. The record is approximately 4 mi northwest of the BSA. The record is based on an observation of an adult nesting pair and one nestling in a wheat field on 25 June 2015.

HABITAT PRESENT IN THE BSA: One northern harrier was observed foraging over the MDC and perching in trees located in the detention basin on 24 January 2020. The BSA does not provide suitable nesting habitat for Northern harrier. There are no marshes, rivers, or lakes present in the BSA. The MDC is narrow, deep, and regularly maintained, and does not provide suitable nesting habitat. The agricultural fields in the BSA are regularly disked and have been planted primarily with tomatoes, corn, and sunflower. The agricultural fields are not suitable for nesting. Agricultural and ruderal areas in the BSA provide suitable foraging habitat.

White-tailed kite (*Elanus leucurus*)

HABITAT AND BIOLOGY: White-tailed kite is a CDFW Fully Protected species. White-tailed kites occur in herbaceous and open stages of most habitats in cismontane CA. Areas with substantial groves of dense, broad-leafed deciduous trees are used for nesting and roosting. They also roost in saltgrass and Bermuda grass in southern CA. White-tailed kites breed from February to October, with peak activity from May to August. Nests are typically located near the top of dense oak, willow, or other tree stands from 20 to 100 ft above the ground, and are often located near an open foraging area with a dense population of voles (CWHR 2020).

RANGE: White-tailed kites are a year-round resident of coastal and valley lowlands in cismontane CA; they are absent from higher elevations in the Sierra Nevada, the Modoc Plateau, and from most desert regions (CWHR 2020).

KNOWN RECORDS: There are ten CNDDB records for this species in the nine-quad area centered on the BSA. The closest record is approximately 0.1 mi north of the BSA. The record is for two nesting trees (a cedar and an olive) in habitat consisting of agricultural fields of wheat, alfalfa, and safflower. The CNDDB indicates that in 1999 all of the trees at the site were removed.

HABITAT PRESENT IN THE BSA: Fremont cottonwood trees in the detention basin and along the MDC provide marginal nesting habitat. Nesting habitat is considered marginal because the trees are young and isolated. Just north of the BSA and east of the BSA are groves of eucalyptus trees that could serve as nesting habitat. Riparian willows and cottonwoods present in the Railroad Channel south of the Stormwater BSA, and in the Yolo Bypass east of the Stormwater BSA, provide suitable nesting habitat. Agricultural and ruderal areas in the BSA provide foraging habitat.

DISCUSSION: White-tailed kites were observed perched in the cottonwoods in the detention basin or flying over in the BSA on both 7 October and 10 December 2014. Nesting sites are of concern to CDFW (2019a). During their breeding season, white-tailed kites could nest in the Fremont cottonwood trees in the BSA, in the eucalyptus groves located east and north of the site, or in the riparian willows and cottonwoods located to the south and east of the Stormwater BSA. Trees in the BSA are unlikely to be used because they are young and isolated and because there are larger trees nearby.

Song Sparrow--Modesto Population (*Melospiza melodia*)

HABITAT AND BIOLOGY: The Modesto song sparrow is a year-round resident that prefers emergent freshwater marshes dominated by tules and cattails as well as riparian willow thickets. Modesto song sparrows also nest in riparian forests of valley oak with sufficient understory of blackberry, along vegetated irrigation canals and levees (Shuford and Gardali 2008). Seeds are the most important foods in annual diet, but insects, spiders, other small invertebrates, make up almost half of diet in nesting season. Berries and other small fruits are minor foods. Usually forages on ground or in low vegetation, under cover of dense thickets or wetland vegetation. Sometimes forages a short distance from cover (CWHR 2020).

RANGE: The Modesto song sparrow is restricted to California where it is locally numerous in the Sacramento Valley, Sacramento-San Joaquin River Delta, and the northern San Joaquin Valley. The Modesto song sparrow remains locally numerous in areas where extensive wetlands remain. The highest densities occur in the Butte Sink area of the Sacramento Valley and in the Sacramento-San Joaquin River Delta. Immediately adjacent to the Butte Sink, song sparrows breed in sparsely vegetated irrigation canals, yet are almost entirely absent from the main stem and tributaries of the Sacramento River above Sacramento (Shuford and Gardali 2008).

KNOWN RECORDS: There are nine CNDDB records of this species in the nine-quad area centered on the BSA. The closest record is approximately 5 mi east of the BSA. A nest was observed in 1877. Eggs were collected in 1900 from "wheat at edge of field, a few feet from brush and willows along a canal."

HABITAT PRESENT IN THE BSA: Marginal nesting habitat for this species occurs in the MDC. Nesting habitat is considered marginal due to regular vegetation removal and the relatively small width of the MDC. Agricultural and ruderal areas in the BSA provide marginal foraging habitat. Foraging habitat is considered marginal because there is little vegetation cover.

DISCUSSION: Modesto song sparrow was not observed during biological surveys. Nesting is not expected in the BSA since the only potential nesting habitat, the MDC, is regularly cleared of emergent wetland vegetation and may not provide sufficient cover for nesting.

Migratory Birds and Birds of Prey

Fish and Game Code 3503.5 protects all birds in the orders Falconiformes and Strigiformes (collectively known as birds of prey). Birds of prey include raptors, falcons, and owls. Migratory birds are protected under the federal Migratory Bird Treaty Act (MBTA) of 1918 (16 U.S.C. 703-711). The MBTA makes it unlawful to take, possess, buy, sell, purchase, or barter any migratory bird listed in 50 CFR Part 10 including feathers or other parts, nests, eggs, or products, except as allowed by implementing regulations (50 CFR 21). All migratory bird species are protected by the MBTA. Any disturbance that causes direct injury, death, nest abandonment, or forced fledging of migratory birds, is restricted under the MBTA. Any removal of active nests during the breeding season or any disturbance that results in the abandonment of nestlings is considered a 'take' of the species under federal law.

HABITAT PRESENT IN THE BSA: The BSA provides nesting and foraging habitat for birds of prey and other protected migratory birds.

DISCUSSION: No potential raptor nests were observed in the BSA during biological surveys. It is unlikely that raptors would nest in the isolated, young trees in the BSA. Groves of mature eucalyptus trees occur adjacent to the Project to the east and north and provide potential nesting habitat for raptors. Migratory birds could nest in the trees, the MDC, ruderal vegetation, and on disturbed ground in or adjacent to the BSA. One small, inactive cup nest was observed in the MDC on 10 December 2014, most likely that of a red-winged blackbird (*Agelaius phoeniceus*). Occupied burrowing owl burrows are discussed separately in the burrowing owl discussion. Bird species observed in or soaring above the BSA are listed in Appendix A.

4. Mammals

Protected and Locally Important Bats

Documented occurrences of bat species within the nine quads surrounding the BSA include hoary bat (*Lasiurus cinereus*), silver-haired bat (*Lasionycteris noctivagans*), pallid bat (*Antrozous pallidus*), and Mexican free-tailed bat (*Tadarida brasiliensis*) (CDFW 2020; Ding 2019; STE 2018). None of the bats known from the region are listed under the state or federal endangered species acts. Of the four bat species mentioned above, only the pallid bat is designated as a Species of Special Concern by the CDFW (2019a). A large local population of Mexican free-tailed bats with an estimated 250,000 individuals is known to roost in the I-80 freeway overpass in the Yolo Bypass.

HABITAT PRESENT IN THE BSA: The BSA provides suitable foraging habitat for pallid bat and other locally important bats. Due to the lack of caves, crevices, mines, buildings, and large and/or hollow trees, the BSA does not provide suitable roosting habitat for any bat species (see also the evaluation of pallid bat in Appendix E).

DISCUSSION: No bats or potential bat roosts were observed in the BSA. Bats known to occur in the region would be expected to forage in and over the BSA during summer evenings, when conditions are appropriate (i.e., warm and calm). The foraging habitat in the BSA is marginal and of minor extent when compared to the quality and extent of foraging habitat available in the greater region in and surrounding the Yolo Bypass. The area surrounding the Project provides several hundred thousand acres of similar bat foraging habitat over agricultural fields.

Based on the foraging ranges of bats known from the region (e.g., 1 to 6 mi for pallid bat, CWHR 2020, Gervais 2016; and 25 to 30 mi for Mexican free-tailed and hoary bats, CWHR 2020, Bassett 1982, BCI 2020), and the availability of foraging habitat in the surrounding landscape, the Project will not significantly reduce available foraging habitat or food resources for protected or locally important bats.

D. Evaluation of Special-Status Plant Species

No State or federal listed special-status plant species were observed in the BSA during protocol botanical surveys conducted in 2015 and 2019. One CNPS California Rare Plant Rank 4.2 plant species was observed in the BSA (Parry's rough tarplant, *Centromadia parryi* ssp. *rudis*, near Ikeda's Market). Parry's rough tarplant and other special-status plant species with potential to occur are discussed below. The location of the Parry's rough tarplants observed in the BSA are shown on Figure 4.

Ferris' milk vetch (*Astragalus tener* var. *ferrisiae*)

HABITAT AND BIOLOGY: Annual herb found in vernally mesic meadows and seeps and subalkaline flats in Valley and foothill grassland from 7 to 250 ft (CNPS 2020). Blooms March through June (Jepson eFlora 2020; CNPS 2020).
RANGE: Endemic to California. Known from Butte, Colusa, Glenn, Sutter, and Yolo counties. Presumed extirpated from Solano County (CNPS 2020).
KNOWN RECORDS: There are four CNDDB records for this species in the nine-quad area centered on the BSA. The closest record is from 1954 and is located approximately 2.5 mi east of the BSA.
HABITAT PRESENT IN THE BSA: Marginal habitat for this species occurs in the detention basin. Habitat is considered marginal because of previous soil disturbance and because the detention basin may not be sufficiently mesic/alkaline.
DISCUSSION: Ferris' milk vetch was not observed in the BSA during botanical surveys conducted during the evident and identifiable period.

Alkali milk vetch (*Astragalus tener* var. *tener*)

HABITAT AND BIOLOGY: Annual herb found in alkaline conditions of playas, adobe clay Valley and foothill grassland, and vernal pools from 3 to 200 ft. Blooms March through June (Jepson eFlora 2020; CNPS 2020).
RANGE: Endemic to California. Known from Alameda, Merced, Napa, Solano, and Yolo counties (CNPS 2020).
KNOWN RECORDS: There are ten CNDDB records for this species in the nine-quad area centered on the BSA. The closest record is from 1951 and is located approximately 1.8 mi west of the BSA. The exact location of this record is unknown. The location is described as "1.1 mi north of Davis." Surveys in 2002 and 2006 found no plants and no natural habitat. CNDDB considers this occurrence probably extirpated.
HABITAT PRESENT IN THE BSA: Marginal habitat for this species occurs in the detention basin. Habitat is considered marginal because of previous soil disturbance and because the detention basin may not be sufficiently mesic/alkaline.
DISCUSSION: Alkali milk vetch was not observed in the BSA during botanical surveys conducted during the evident and identifiable period.

Heartscale (*Atriplex cordulata* var. *cordulata*)

HABITAT AND BIOLOGY: Annual herb found in saline or alkaline conditions of chenopod scrub, meadows and seeps, and sandy Valley and foothill grassland from 3 to 1,850 ft. Blooms April through October (CNPS 2020); June through July (Jepson eFlora 2020).
RANGE: Endemic to California. Known from Alameda, Butte, Contra Costa, Colusa, Fresno, Glenn, Kern, Madera, Merced, Solano, and Tulare counties. Presumed extirpated from San Joaquin, Stanislaus, and Yolo counties (CNPS 2020).
KNOWN RECORDS: There is one CNDDB record for this species in the nine-quad area centered on the BSA. This record is from 1952 and is located approximately 1.7 mi west of the BSA. CNDDB considers this occurrence extirpated.
HABITAT PRESENT IN THE BSA: Marginal habitat for this species occurs in the detention basin and along the fallow margins of agricultural fields. Habitat is considered marginal because of previous soil disturbance and because the detention basin may not be sufficiently mesic/alkaline.

DISCUSSION: Heartscale was not observed in the BSA during botanical surveys conducted during the evident and identifiable period.

Brittlescale (*Atriplex depressa*)

HABITAT AND BIOLOGY: Annual herb found in alkaline and clay soils of chenopod scrub, meadows and seeps, playas, Valley and foothill grassland, and vernal pools from 3 to 1,050 ft. Blooms April through October (CNPS 2020); June through October (Jepson eFlora 2020).
RANGE: Endemic to California. Known from Alameda, Contra Costa, Colusa, Fresno, Glenn, Kern, Merced, Solano, Stanislaus, Tulare, and Yolo counties (CNPS 2020).
KNOWN RECORDS: There are five CNDDB records for this species in the nine-quad area centered on the BSA. The closest record is from 1996 and is located approximately 2.4 mi west of the BSA. An estimated 70 plants were observed in 1996, in habitat described as highly disturbed (plowed) alkali sink with *Hemizonia pungens*, *Atriplex argentea* ssp. *mohavensis*, *A. joaquinana*, *Spergularia* sp., and *Hordeum depressum*.
HABITAT PRESENT IN THE BSA: Marginal habitat for this species occurs in the detention basin and along the fallow margins of agricultural fields. Habitat is considered marginal because of previous soil disturbance and because the detention basin may not be sufficiently mesic/alkaline.
DISCUSSION: Brittlescale was not observed in the BSA during botanical surveys conducted during the evident and identifiable period.

Bristly sedge (*Carex comosa*)

HABITAT AND BIOLOGY: Perennial rhizomatous herb found in coastal prairie, Valley and foothill grassland, and in marshes and swamps along lake margins from 0 to 2,051 ft. Blooms May through September (CNPS 2020); July through September (Jepson eFlora 2020).
RANGE: Known from Contra Costa, Lake, Mendocino, Sacramento, Santa Cruz, Shasta, San Joaquin, and Sonoma counties (CNPS 2020).
KNOWN RECORDS: There is one CNDDB record for this species in the nine-quad area centered on the BSA. The record is from 2009, approximately 15.7 mi southeast of the BSA. The record is for 54 plants observed in riparian habitat.
HABITAT PRESENT IN THE BSA: The MDC provides marginal habitat for this species. Habitat is considered marginal due to vegetation maintenance.
DISCUSSION: Bristly sedge was not observed in the BSA during botanical surveys conducted during the evident and identifiable period.

Pappose tarplant (*Centromadia parryi* ssp. *parryi*)

HABITAT AND BIOLOGY: Annual herb found in chaparral, coastal prairie, meadows and seeps, coastal salt marshes and swamps, and vernally mesic valley and foothill grassland from 7 to 1,380 ft. Often found in alkaline conditions (CNPS 2020). Blooms from May through November (CNPS 2020); June through October (Jepson eFlora 2020).
RANGE: Endemic to California. Known from Butte, Colusa, Glenn, Lake, Napa, San Mateo, Solano, Sonoma, and Yolo counties (CNPS 2020).
KNOWN RECORDS: There are two CNDDB records for this species in the nine-quad area centered on the BSA. The closest record is from 2011, approximately 2.3 mi east of the BSA.

HABITAT PRESENT IN THE BSA: Marginal habitat for this species occurs in the detention basin and along the fallow margins of agricultural fields. Habitat is considered marginal because of previous and ongoing soil disturbance.
DISCUSSION: Pappose tarplant was not observed in the BSA during botanical surveys conducted during the evident and identifiable period.

Parry's rough tarplant (*Centromadia parryi* ssp. *rudis*)

HABITAT AND BIOLOGY: Annual herb found in alkaline, vernally mesic seeps in Valley and foothill grassland, vernal pools, and sometimes along roadsides from 0 to 328 ft (CNPS 2020). Blooms May through October (CNPS 2020); June through October (Jepson eFlora 2020).
RANGE: Endemic to California. Known from Butte, Colusa, Glenn, Lake, Merced, Sacramento, San Joaquin, Solano, Sutter and Yolo counties. (CNPS 2020).
KNOWN RECORDS: CNDDB has no geographical record information available for this species. The Consortium of California Herbaria has specimen records for 11 Parry's rough tarplant specimens collected within 5 mi of the BSA; 25 specimens collected in the Davis-Vacaville-Woodland area; and approximately 105 specimens from the Central Valley from Chico to Merced (CCH 2020).
HABITAT PRESENT IN THE BSA: Marginal habitat for this species occurs in the detention basin and in areas with ruderal vegetation outside tilled fields. Habitat is considered marginal because of previous and ongoing soil disturbance.
DISCUSSION: A total of 93 Parry's rough tarplant (*Centromadia parryi* ssp. *rudis*) plants were documented in the BSA during the 11 September 2015 botanical survey (Sycamore Environmental 2015f; plant locations shown on Figure 4). These plants were verified as still present in approximately the same abundance during the botanical survey conducted on 7 August 2019. Eighty-seven (87) of the Parry's rough tarplant plants were found near the parking area of Ikeda's market. Two (2) of the plants were found along the south side of County Road 32. Four (4) of the plants were found on the east side of the irrigation ditch along the eastern edge of the site, approximately 700 ft north of the Eucalyptus grove. Parry's rough tarplant is a CNPS California Rare Plant Rank 4.2 species (a watch list species of limited distribution; CNPS 2020). CNPS Rank 4.2 species may be considered under CEQA at the Lead Agency's discretion. Based on herbarium specimen records (see known records discussion above), this species is not especially uncommon locally or regionally (CCH 2020). The Parry's rough tarplant individuals observed in the BSA are not at the periphery of the taxon's range. Sycamore Environmental botanists have encountered this taxon on many disturbed/agricultural sites in the Central Valley within the last 10 years. The Parry's rough tarplant individuals observed in the BSA did not exhibit unusual morphology and they were not observed on unusual substrate. The Parry's rough tarplant observed in the BSA does not meet the definition of Rare or Endangered under CEQA Guidelines §15125 (c) or §15380.

Jepson's coyote thistle *(Eryngium jepsonii)*

HABITAT AND BIOLOGY: Perennial herb found on clay soils in Valley and foothill grasslands and vernal pools from 9 to 985 ft. Blooms April through August (Jepson eFlora 2020; CNPS 2020).
RANGE: Endemic to California. Known from Alameda, Amador, Calaveras, Contra Costa, Fresno, Napa, San Mateo, Solano, Stanislaus, Tuolumne, and Yolo counties (CNPS 2020).
KNOWN RECORDS: There are two CNDDB records for this species in the nine-quad area centered on the BSA. The closest record is from 2007 and is located approximately 8 mi south of the BSA.

HABITAT PRESENT IN THE BSA: Marginal habitat for this species occurs in the detention basin and along the fallow margins of agricultural fields. Habitat is considered marginal because of previous soil disturbance and because the detention basin may not be sufficiently mesic/alkaline.
DISCUSSION: Jepson's coyote thistle was not observed in the BSA during botanical surveys conducted during the evident and identifiable period.

San Joaquin spearscale (*Extriplex joaquinana)*

HABITAT AND BIOLOGY: Annual herb found in alkaline soils in chenopod scrub, meadows and seeps, playas, and Valley and foothill grassland from 3 to 2,750 ft. Blooms April through September (Jepson eFlora 2019); April through October (CNPS 2020).
RANGE: Endemic to California. Known from Alameda, Contra Costa, Colusa, Fresno, Glenn, Merced, Monterey, Napa, San Benito, Solano, Yolo and possibly San Luis Obispo counties. (CNPS 2020).
KNOWN RECORDS: There are nine CNDDB records for this species in the nine-quad area centered on the BSA. The closest record is from 1996 and is located approximately 2.4 mi west of the BSA. The record is for an estimated 85 plants observed in disturbed (plowed) alkali sink habitat with *Hemizonia pungens*, *Atriplex argentea* ssp. *mohavensis*, *A. joaquiniana*, *Spergularia* sp., and *Hordeum depressum*.
HABITAT PRESENT IN THE BSA: Marginal habitat for this species occurs in the detention basin and along the fallow margins of agricultural fields. Habitat is considered marginal because of previous soil disturbance and because the detention basin may not be sufficiently mesic/alkaline.
DISCUSSION: San Joaquin spearscale was not observed in the BSA during botanical surveys conducted during the evident and identifiable period.

Hogwallow starfish (*Hesperevax caulescens*)

HABITAT AND BIOLOGY: Annual herb found in Valley and foothill grassland in mesic and clay soils and in shallow vernal pools from 0 to 1,650 ft. Blooms March through June (Jepson eFlora 2020; CNPS 2020).
RANGE: Endemic to California. Known from Alameda, Amador, Butte, Contra Costa, Colusa, Fresno, Glenn, Kern, Merced, Monterey, Sacramento, San Joaquin, San Luis Obispo, Solano, Stanislaus, Sutter, Tehama, and Yolo counties. (CNPS 2020).
KNOWN RECORDS: CNDDB has no geographical record information available for this species. The Consortium of California Herbaria shows approximately 12 hogwallow starfish specimens collected in the Davis-Vacaville-Woodland area (CCH 2020). The closest herbarium record is from 1962, approximately 7 mi southwest of the BSA. The plants were collected from a vernal pool in a valley grassland barley field.
HABITAT PRESENT IN THE BSA: Marginal habitat for this species occurs in the detention basin and along the fallow margins of agricultural fields. Habitat is considered marginal because of previous soil disturbance and because the detention basin may not be sufficiently mesic/alkaline.
DISCUSSION: Hogwallow starfish was not observed in the BSA during botanical surveys conducted during the evident and identifiable period.

Woolly rose-mallow (*Hibiscus lasiocarpos* var. *occidentalis*)

HABITAT AND BIOLOGY: Perennial rhizomatous herb found in freshwater marshes and swamps from 0 to 394 ft. Often found on river banks, low peat islands in sloughs, or in riprap on sides of levees. Blooms June through September (CNPS 2020); July through November (Jepson eFlora 2020).

RANGE: Endemic to California. Known from Butte, Contra Costa, Colusa, Glenn, Sacramento, San Joaquin, Solano, Sutter, and Yolo counties. (CNPS 2020).
KNOWN RECORDS: There are seven CNDDB records for this species in the nine-quad area centered on the BSA. The closest record is from 1996 and is located approximately 7.2 mi northeast of the BSA. The record is for a single shrub observed on the bank of a canal, along the edge of the water.
HABITAT PRESENT IN THE BSA: The MDC provides marginal habitat for this species. Habitat is considered marginal due to vegetation maintenance.
DISCUSSION: Wooly rose-mallow was not observed in the BSA during botanical surveys conducted during the evident and identifiable period.

Heckard's pepper-grass (*Lepidium latipes* var. *heckardii*)

HABITAT AND BIOLOGY: Annual herb found in alkaline flats of valley and foothill grassland from 6 to 660 ft. Blooms March through May (CNPS 2020); March through June (Jepson eFlora 2020). *Lepidium latipes* var. *heckardii* is no longer recognized as distinct from the common *Lepidium latipes* var. *latipes* in the *The Jepson manual: Vascular plants of California, 2nd edition* (Al-Shehbaz 2012).
RANGE: Endemic to California. Known from Glenn, Merced, Sacramento, Solano, and Yolo counties. (CNPS 2020).
KNOWN RECORDS: There are six CNDDB records for this species in the nine-quad area centered on the BSA. The closest record is from 1957 and is located approximately 1.3 mi northwest of the BSA. The exact location of this record is unknown, and mapped as a best guess by CNDDB 3 mi northeast of Davis. The habitat is described as alkaline flats.
HABITAT PRESENT IN THE BSA: Marginal habitat for this species occurs in the detention basin and along the fallow margins of agricultural fields. Habitat is considered marginal because of previous soil disturbance and because the detention basin may not be sufficiently mesic/alkaline.
DISCUSSION: Heckard's pepper-grass was not observed in the BSA during botanical surveys conducted during the evident and identifiable period.

Suisun Marsh aster (*Symphyotrichum lentum*)

HABITAT AND BIOLOGY: Perennial rhizomatous herb found in brackish and freshwater marshes and swamps from 0 to 10 ft. Blooms April through November (CNPS 2020); May through November (Jepson eFlora 2020).
RANGE: Endemic to California. Known from Contra Costa, Napa, Sacramento, San Joaquin, Solano, and Yolo counties. (CNPS 2020).
KNOWN RECORDS: There is one CNDDB record for this species in the nine-quad area centered on the BSA. The record is from 2013 and is located approximately 4.5 mi east of the BSA.
HABITAT PRESENT IN THE BSA: The MDC provides marginal habitat for this species. Habitat is considered marginal due to vegetation maintenance.
DISCUSSION: Suisun marsh aster was not observed in the BSA during botanical surveys conducted during the evident and identifiable period.

Saline clover (*Trifolium hydrophilum*)

HABITAT AND BIOLOGY: Annual herb found in marshes, mesic and alkaline soils of Valley and foothill grassland, and vernal pools from 0 to 985 ft. Blooms April through June (Jepson eFlora 2020; CNPS 2020).

RANGE: Endemic to California. Known from Alameda, Contra Costa, Lake, Monterey, Napa, Sacramento, San Benito, Santa Clara, Santa Cruz, San Joaquin, San Luis Obispo, San Mateo, Solano, Sonoma, and Yolo counties, and potentially from Colusa County. (CNPS 2020).
KNOWN RECORDS: There are three CNDDB records for this species in the nine-quad area centered on the BSA. The closest record is from 2011, approximately 5.1 mi northwest of the BSA. The record is for five plants observed growing in hydric alkaline grassland on the edge of vernal pool habitat with *Plagiobothrys stipitatus, Hordeum brachyantherum*, *H. marinum*, and *Festuca perennis*.
HABITAT PRESENT IN THE BSA: Marginal habitat for this species occurs in the detention basin and along the fallow margins of agricultural fields. Habitat is considered marginal because of previous soil disturbance and because the detention basin may not be sufficiently mesic/alkaline.
DISCUSSION: Saline clover was not observed in the BSA during botanical surveys conducted during the evident and identifiable period.

E. Evaluation of Special-Status Natural Communities

Special-status natural communities are waters, wetlands, riparian communities, and any natural community or vegetation alliance ranked S1, S2, or S3 by CDFW (2019c). Special-status communities may also include those considered locally important or sensitive. The MDC contains freshwater marsh vegetation (bulrush cattail wetland with *Typha* alliance), a special-status natural community. Freshwater marsh vegetation does not occur in the portion of the MDC located between the MRIC site and Road 105. Vegetation in the MDC is regularly removed by the City. The MDC is discussed in Section IV.C. In the southeast corner of the Stormwater BSA, the southernmost portion of an irrigation ditch contains bulrush cattail wetland.

F. Potentially Jurisdictional Waters

Fieldwork for a wetland delineation was conducted on 10 December 2014 and a wetland delineation report has been prepared. Based on the wetland delineation report, no Clean Water Act jurisdictional wetlands or waters are present in the BSA. The detention basin is not a wetland. The MDC is not a Clean Water Act jurisdictional water. Roadside ditches roughly 1-2 ft wide occur along Mace Blvd, along Road 32A, along the Davis Park and Ride driveway, and a dirt road between the Davis Park and Ride and Ikeda's Market. Irrigation ditches roughly 1-2 ft wide occur along the east side of the MRIC site, north of the MDC, and along both sides of Road 105. The roadside and irrigation ditches are man-made features excavated in uplands and draining only uplands. They are not jurisdictional waters. Vegetation in the roadside and irrigation ditches is ruderal (described in Section IV.C.2).

In the Stormwater BSA, the southernmost portion of an irrigation ditch contains bulrush cattail wetland vegetation. This portion of the irrigation ditch may become inundated for extended periods if water backs up in the Railroad Channel located south of the Stormwater BSA. The portion of the irrigation ditch with wetland vegetation is shown on Figure 4 (sheet 2), and is potentially jurisdictional under the Clean Water Act.

G. Evaluation of Trees

An arborist survey and tree appraisal consistent with City of Davis Municipal Code was conducted by certified arborist Chuck Hughes, M.S. (ISA WE-6885A; ISA Tree Risk Assessment Qualified) on 23

December 2014 (Sycamore Environmental 2015a). The City of Davis requires permits for the removal of some species and sizes of trees pursuant to Chapter 37 of Davis Municipal Code. The term "protected tree" (§37.01) includes City trees and street trees on City land, easements, or right-of-way, as well as some trees that may occur outside of public easements on private land including trees of significance and landmark trees. The Code contains a list of trees which are considered "trees of significance." Table 5 identifies the potentially affected protected trees that occur on the ARC site based on the certified arborist report (Sycamore Environmental 2015a). Trees in the parking lot of the park-and-ride near Mace Blvd are not included.

Table 5. Summary of Potentially Affected Trees.

Tree	Species	Location	Diameter at breast height (DBH) in inches [1]	City Status
1	London plane (*Platanus* x *acerifolia*)	Adjacent to Mace Drainage Channel	7	Tree of Significance
2	London plane (*Platanus* x *acerifolia*)	Adjacent to Mace Drainage Channel	4.6	--
3	Fremont cottonwood (*Populus fremontii* ssp. *fremontii*)	Detention Basin	15.3, 23.5, 8.6	Tree of Significance
4	Fremont cottonwood (*Populus fremontii* ssp. *fremontii*)	Detention Basin	24.8	Tree of Significance
5	Fremont cottonwood (*Populus fremontii* ssp. *fremontii*)	Detention Basin	8.4, 9.5, 9.7, 16.2	Tree of Significance
6	Goodding's black willow (*Salix gooddingii*)	Adjacent to Mace Drainage Channel	9.2, 5.7	Tree of Significance
7	Fremont cottonwood (*Populus fremontii* ssp. *fremontii*)	Adjacent to Mace Drainage Channel	16.2	Tree of Significance
8	Chinese elm (*Ulmus parvifolia*)	Along Mace Blvd	6, 6.3, 7	Tree of Significance Street Tree

[1] The DBH for each trunk of a multi-trunk tree are listed.

As a discretionary project, this project requires a permit for the removal of the trees of significance pursuant to Davis Municipal Code (§37.03.070). There are no landmark trees on the ARC site.

VI. LITERATURE CITED & PERSONAL COMMUNICATIONS

A. Literature Cited

Abrams, L. 1923, 1944, 1951, 1960. Illustrated flora of the Pacific states. Stanford University Press, Stanford, CA.

Airola, D. A. and J. Grantham. 12 December 2003. Purple martin population status, nesting habitat characteristics, and management in Sacramento, California. Western Birds 34:235-251. http://elibrary.unm.edu/sora/wb/v34n04/p0235-p0251.pdf

Al-Shehbaz, Ihsan A. 2012. Accessed 1 February 2020. *Lepidium latipes*, in Jepson Flora Project (eds.) Jepson eFlora. http://ucjeps.berkeley.edu/cgi-bin/get_IJM.pl?tid=30545

Baldwin, B. G., D. H. Goldman, D. J. Keil, R. Patterson, T. J. Rosatti, and D. H. Wilken, eds. 2012. The Jepson manual: Vascular plants of California, 2nd ed. University of California Press, Berkeley, CA.

Bassett, JE. 1982. Habitat aridity and intraspecific differences in the urine concentrating ability of insectivorous bats. Comparative Biochemistry and Physiology. 72(4): 703–708.

Bat Conservation International (BCI). Accessed 31 January 2020. Species Profile: *Lasiurus cinereus*. Media & education species profiles. http://www.batcon.org/resources/media-education/species-profiles/detail/2457

Behler, J. L. and W. King. 1979. The Audubon Society field guide to North American reptiles and amphibians. Alfred Knopf, New York, NY.

Bloom, P. H. 1980. The status of the Swainson's hawk in California, 1979. The Resources Agency, California Department of Fish and Game, Sacramento, CA.

Bolster, B.C., ed. 1998. Terrestrial mammal species of special concern in California. Draft Final Report prepared by P.W. Collins. Report submitted to California Department of Fish and Game Wildlife Management Division, Nongame Bird and Mammal Conservation Program for Contract No.FG3146WM.

Busby, P. J., T. C Wainwright, and G. J. Bryant. 1996. Status review of West Coast steelhead from Washington, Oregon and California. NOAA Technical Memorandum NMFS-NWFSC-27. National Marine Fisheries Service, Seattle, WA.

California Fish and Game Commission. 18 March 2019. Notice of filing to amend Title 14, California Code of Regulation Section 670.5 adding the tricolored blackbird to the list of threatened birds. California Fish and Game Commission, Sacramento, CA. https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=166089&inline

California Department of Fish and Wildlife (CDFW). 7 March 2012. Staff report on burrowing owl mitigation. California Department of Fish and Game, Sacramento, CA.

California Department of Fish and Wildlife (CDFW). 20 March 2018. Protocols for surveying and evaluating impacts to special status native plant populations and natural communities. California Natural Resources Agency, California Department of Fish and Wildlife, Sacramento, CA. https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=18959&inline

California Department of Fish and Wildlife (CDFW). August 2019 (2019a). Special animals list. Habitat Conservation Division, CNDDB, Sacramento, CA. https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=109406&inline

California Department of Fish and Wildlife (CDFW). August 2019 (2019b). State and federally listed endangered and threatened animals of California. Habitat Conservation Division, CNDDB, Sacramento, CA. https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=109405&inline

California Department of Fish and Wildlife (CDFW). Accessed 8 November 2019(c). California Natural Communities List. California Department of Fish and Wildlife, Sacramento, CA. https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=153398&inline

California Department of Fish and Wildlife (CDFW). Accessed 11 November 2019(d). Natural Communities – Addressing Sensitive Natural Communities in Environmental Review. California Department of Fish and Wildlife, Sacramento, CA. https://www.wildlife.ca.gov/Data/VegCAMP/Natural-Communities

California Department of Fish and Wildlife (CDFW). January 2020 (2020a). Special vascular plants, bryophytes, and lichens list. Habitat Conservation Division, CNDDB, Sacramento, CA. https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=109383&inline

California Department of Fish and Wildlife (CDFW). January 2020 (2020b). State and federally listed endangered, threatened, and rare plants of California. Habitat Conservation Division, CNDDB, Sacramento, CA. https://nrm.dfg.ca.gov/FileHandler.ashx?DocumentID=109390&inline

California Department of Fish and Wildlife (CDFW). Data dated 3 January 2020 (2020c). CNDDB/ RareFind: Davis and the 8 adjacent quadrangles. Natural Heritage Division, CNDDB, Sacramento, CA.

California Department of Water Resources Data Exchange Center (CDEC). Accessed 3 February 2020. Monthly climate report for the Davis 2WSW Gauge. http://cdec.water.ca.gov/cdecstation2/

California Native Plant Society (CNPS). Accessed 1 August 2019 through 1 February 2020. Inventory of rare and endangered plants (online edition; v.8-02). California Native Plant Society, Sacramento, CA. http://www.rareplants.cnps.org/simple.html

California Wildlife Habitat Relationships (CWHR) Program. Accessed October 2019 through February 2020. California Wildlife Habitat Relationships System, Life history account and range map. Updated from Zeiner, D.C. et al 1988-1990. CWHR Program, California Department of Fish and Game, Sacramento, CA. http://www.dfg.ca.gov/biogeodata/cwhr/cawildlife.aspx

City of Davis. 2007. City of Davis Drainage Map. City of Davis, CA. http://stormwater.cityofdavis.org/media/default/documents/pdf/stormwater/stormwater-drainage-basins-map.pdf

Consortium of California Herbaria (CCH). Accessed January 2020. Accession results for plant species evaluated in this document. http://ucjeps.berkeley.edu/consortium/

Ding, Jaimie. 12 July 2019. These Nighttime Insect Eaters Will Keep You from Going Bats. The Sacramento Bee. https://www.sacbee.com/news/local/environment/article232524617.html

eBird. Accessed October 2019 through February 2020. eBird: An online database of bird distribution and abundance [web application]. Database queries for protected birds evaluated in this report. eBird, Ithaca, NY. http://www.ebird.org.

Ehrlich, P., D. Dobkin, and D. Wheye. 1988. The birder's handbook. Simon and Schuster, New York, NY.

Gervais, Jennifer. June 2016. Conservation Assessment for the Pallid Bat (Antrozous pallidus) in Oregon and Washington. Oregon Wildlife Institute. https://www.fs.fed.us/r6/sfpnw/issssp/documents4/ca-ma-antrozous-pallidus-201606-508.pdf

Hansen, G. E. 1988. Review of the status of the giant garter snake (*Thamnophis couchi gigas*) and it's supporting habitat during 1986-1987. Final report for California Department of Fish and Game, Contract C-2060. Unpublished. Sacramento, CA. In Draft Recovery Plan for the Giant Garter Snake (*Thamnophis gigas*), U.S. Fish and Wildlife Service, Portland, OR.

Hatfield, R., S. Colla, S. Jepsen, L. Richardson, R. Thorp, and S. Foltz Jordan. 2014. Draft IUCN assessments for North American *Bombus* spp. for the North American IUCN Bumble Bee Specialist Group. The Xerces Society for Invertebrate Conservation, Portland, OR.

Hickman, J., ed. 1993. The Jepson manual: Higher plants of California. University of California Press, Berkeley, CA.

Helm, Brent P. "Biogeography of Eight Large Branchiopods Endemic to California". 1998. C.W. Witham, E.T. Bauder, D. Belk, W.R. Ferren Jr., and R. Ornduff (Editors) Ecology, Conservation and Management of Vernal Pool Ecosystems-Proceedings from a 1996 Conference. California Native Plant Society. Sacramento, California.124-139

Holland, R. 1986. Preliminary descriptions of the terrestrial natural communities of California. California Department of Fish and Game, Sacramento, CA.

Jameson, E. W. Jr. and H. J. Peeters. 2004. Mammals of California. Revised Edition. University of California Press, Berkeley, CA.

Jepson Flora Project (Jepson eFlora). Accessed 1 August 2019 through 2 February 2020. Online version of Baldwin, B. G., D. H. Goldman, D. J. Keil, R. Patterson, T. J. Rosatti, and D. H. Wilken, eds. 2012. The Jepson manual: Vascular plants of California, 2nd ed. University of California Press, Berkeley, CA. http://ucjeps.berkeley.edu/eflora/

Jennings, M. R. and M. P. Hayes. 1994. Amphibian and reptile species of special concern in California. California Department of Fish and Game, Rancho Cordova, CA.

Mason, H. L. 1957. A flora of the marshes of California. University of California Press, Berkeley, CA.

Mayer, K. E. and W. F. Laudenslayer, Jr., eds. 1988. A guide to wildlife habitats of California. California Department of Forestry and Fire Protection, Sacramento, CA.

McGinnis, S. M. 1984. Freshwater fishes of California. University of California Press, Berkeley, CA.

Moyle, P. B. 2002. Inland fishes of California. University of California Press, Berkeley, CA.

Munz, P. 1959. A California flora. University of California Press, Berkeley, CA.

National Marine Fisheries Service (NMFS). February 1998. Status review of Chinook salmon from Washington, Idaho, Oregon, and California. NOAA Technical Memorandum NMFS-NWFSC-35.

National Marine Fisheries Service (NMFS). 2 September 2005. Endangered and threatened species; designation of critical habitat for seven evolutionarily significant units of Pacific salmon and steelhead in California. Final Rule; Federal Register 70(170):52488-52627; 50 CFR Part 226. National Oceanic and Atmospheric Administration.

Natural Resources Conservation Service (NRCS). August 1972. Soil survey of Yolo County, California. USDA – Soil Conservation Service, Davis, CA.

Natural Resources Conservation Service (NRCS). Accessed February 2020. Web Soil Survey. USDA National Resources Conservation Service. http://websoilsurvey.nrcs.usda.gov/app/HomePage.htm.

Peterson, R. T. 1990. A field guide to western birds. Houghton Mifflin Company, Boston, MA.

Richmond, O.M.W, S.K. Chen, B.B. Risk, J. Tecklin, and S.R. Beissinger. April-June 2010. California black rails depend on irrigation-fed wetlands in the Sierra Nevada foothills. California Agriculture University of California, Vol. 64, No. 2. The Regents of the University of California.

Sawyer, J. O., T. Keeler-Wolf, and J. M. Evens. 2009. A manual of California vegetation, 2nd ed. California Native Plant Society, Sacramento, CA.

Shuford, W. D. and T. Gardali, eds. 2008. California bird species of special concern: A ranked assessment of species, subspecies, and distinct populations of birds of immediate conservation concern in California. Studies of Western Birds 1. Western Field Ornithologists, Camarillo, CA and California Department of Fish and Game, Sacramento, CA.

Sibley, D. A. 2003. The Sibley field guide to birds of Western North America. Alfred A. Knopf, New York, NY.

Special to The Enterprise (STE). 18 May 2018. See Bats at the Causeway. Enterprise Yolo County News. https://www.davisenterprise.com/community/see-bats-at-the-causeway/

Stebbins, R. C. 2003. A field guide to western reptiles and amphibians. Houghton Mifflin Company, Boston, MA.

Sycamore Environmental Consultants, Inc. (Sycamore Environmental). 6 January 2015 (2015a). Draft letter report documenting 23 December 2014 arborist survey and tree appraisal for the Mace Ranch Innovation Center Project. Prepared for the Buzz Oates Group of Companies. Sycamore Environmental, Sacramento, CA.

Sycamore Environmental Consultants, Inc. (Sycamore Environmental). 3 February 2015 (2015b). Jurisdictional Delineation Report for the Mace Ranch Innovation Center Project. Prepared for the Buzz Oates Group of Companies. Sycamore Environmental, Sacramento, CA.

Sycamore Environmental Consultants, Inc. (Sycamore Environmental). 22 June 2015 (2015c). Letter report documenting 11 June 2015 biological survey results for APNs 033-300-011, -015, and Portion of 033-650-

088 for the Mace Ranch Innovation Center Project, Yolo County, CA. Prepared for the Buzz Oates Group of Companies. Sycamore Environmental, Sacramento, CA.

Sycamore Environmental Consultants, Inc. (Sycamore Environmental). 22 June 2015 (2015d). Letter from Sycamore Environmental to Alisha Olson, Buzz Oates Group of Companies, Subject: Spring 2015 Botanical Survey Results for the Mace Ranch Innovation Center Project, Yolo County, CA.

Sycamore Environmental Consultants, Inc. (Sycamore Environmental). August 2015 (2015e). Biological resources evaluation for the Mace Ranch Innovation Center Project. Prepared for the Buzz Oates Group of Companies. Sycamore Environmental, Sacramento, CA.

Sycamore Environmental Consultants, Inc. (Sycamore Environmental). 30 October 2015 (2015f). Letter report documenting fall 2015 botanical survey results for the Mace Ranch Innovation Center Project, Yolo County, CA. Prepared for the Buzz Oates Group of Companies. Sycamore Environmental, Sacramento, CA.

Sycamore Environmental Consultants, Inc. (Sycamore Environmental). 25 November 2019. 2019 Biological Survey Update Letter Report for the Aggie Research Campus, Yolo County, CA. Prepared for Raney Planning & Management, Inc.. Sycamore Environmental, Sacramento, CA.

Talley, T. S., D. Wright, M. Holyoak. 14 February 2007. Assistance with the 5-year review of the Valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*). Prepared for U.S. Fish and Wildlife Service, Sacramento Office, Sacramento, California

Udvardy, M. 1977. The Audubon Society field guide to North American birds. Alfred Knopf, New York, NY.

U.S. Fish and Wildlife Service (USFWS). 19 September 1994. Endangered and threatened wildlife and plants; Determination of endangered status for the conservancy fairy shrimp, longhorn fairy shrimp, and the vernal pool tadpole shrimp; and threatened status for the vernal pool fairy shrimp. Federal Register 59:48136.

U.S. Fish and Wildlife Service (USFWS). 1999 (1999a). Draft recovery plan for the giant garter snake (*Thamnophis gigas*). U.S. Fish and Wildlife Service, Portland, OR.

U.S. Fish and Wildlife Service (USFWS). 9 July 1999 (1999b). Conservation guidelines for the Valley elderberry longhorn beetle. U.S. Fish and Wildlife Service, Sacramento, CA.

U.S. Fish and Wildlife Service (USFWS). 2000. Guidelines for conducting and reporting botanical inventories for federally listed, proposed and candidate plants. Ventura Fish and Wildlife Office, Ventura, CA. https://www.fws.gov/ventura/docs/species/protocols/botanicalinventories.pdf

U.S. Fish and Wildlife Service (USFWS). 2002. Recovery plan for the California red-legged frog (*Rana aurora draytonii*). U.S. Fish and Wildlife Service, Portland, OR.

U.S. Fish & Wildlife Service (USFWS). 15 December 2005. Recovery plan for vernal pool ecosystems of California and southern Oregon. http://ecos.fws.gov/docs/recovery_plan/060614.pdf

U.S. Fish & Wildlife Service (USFWS). 2007 (2007a). Recovery Plan for the Pacific Coast Population of the Western Snowy Plover Volume 1: Recovery Plan. California/Nevada Operations Office. U.S. Fish and Wildlife Service. Sacramento, CA.

U.S. Fish & Wildlife Service (USFWS). 15 October 2007 (2007b). Species account: Conservancy fairy shrimp (*Branchinecta conservatio*). Sacramento Fish and Wildlife Office. http://www.fws.gov/sacramento/es/animal_spp_acct/vp_tadpole.rtf.

U.S. Fish & Wildlife Service (USFWS). Accessed 2 February 2020. Official USFWS IPaC species list for the Aggie Research Campus Project, Yolo County. U.S. Fish and Wildlife Service, Sacramento, CA. https://ecos.fws.gov/ipac/

Verner, J. and A. Boss. 1980. California wildlife and their habitats: Western Sierra Nevada. General Technical Report PSW-37. Pacific Southwest Forest and Range Exp. Station, Forest Service, USDA, Berkeley, CA.

Whitaker, Jr. J. 1980. The Audubon Society field guide to North American mammals. Alfred Knopf, New York, NY.

Xerces Society for Invertebrate Conservation (Xerces). October 2018. A petition to the state of California Fish and Game Commission to list the Crotch bumble bee (*Bombus crotchii*), Franklin's bumble bee (*Bombus franklini*), Suckley cuckoo bumble bee (*Bombus suckleyi*), and western blumble bee (*Bombus occidentalis*

occidentalis) as Endangered under the California Endangered Species Act. Submitted by Xerces Society for Invertebrate Conservation, Defenders of Wildlife, and Center for Food Safety. https://xerces.org/wp-content/uploads/2018/10/CESA-petition-Bombus-Oct2018.pdf

Yolo Natural Heritage Program. 2009. Draft Species Account for the Valley Elderberry Longhorn Beetle. Prepared by Technology Associates International Corporation, Carlsbad, CA.

Zeiner, D., K. Mayer, and W. Laudenslayer, Jr., eds. 1988. California's wildlife, Volume I, Amphibians and Reptiles. California Department of Fish and Game, Sacramento, CA.

Zeiner, D., K. Mayer, M. White, and W. Laudenslayer, Jr., eds. 1990a. California's wildlife, Volume II, Birds. California Department of Fish and Game, Sacramento, CA.

Zeiner, D., K. Mayer, M. White, and W. Laudenslayer, Jr., eds. 1990b. California's wildlife, Volume III, Mammals. California Department of Fish and Game, Sacramento, CA.

B. Personal Communications

Dan Ramos, Vice President, Ramco Enterprises, Inc. 7 October 2014. Onsite interview regarding off-site improvements, agricultural history, detention basin history and use, and drainage feature.

VII. PREPARERS

Jeffery Little, Vice President. Principal with over 27 years experience working with environmental review, permitting, biological, and cultural issues. Mr. Little serves as project manager during all phases of project development. He evaluates environmental and regulatory constraints to assist his clients determine realistic schedules of permits and entitlements. He prepares and manages CEQA/ NEPA documents and identifies the necessary technical studies during project evaluation. He develops project design recommendations to achieve regulatory compliance with the numerous applicable local, state, and federal environmental laws and regulations.
Responsibilities: Principal-in-Charge

Michael Bower, M.S., Ecology, University of California, Davis, CA. Over 10 years of experience as a biologist/ botanist with Sycamore Environmental. Mr. Bower serves as both field biologist and technical report writer. He conducts wetland delineations and surveys for special-status plants and wildlife. He prepares reports used in CEQA/NEPA that quantify resources, identify impacts, and recommend mitigation measures. He prepares restoration, weed management, and monitoring plans. He is a certified Ecologist and Professional Wetland Scientist (#2230).
Responsibilities: Biological, botanical, wetland, burrowing owl survey fieldwork, report preparation, and plant identification.

Juan Mejia, B.S., Environmental Science and Management (emphasis Ecology, Conservation and Biodiversity), University of California, Davis, CA. Over 6 years of experience as a biologist. Mr. Mejia serves as both field biologist and technical report writer. He conducts plant and wildlife surveys, performs preconstruction and construction monitoring, and prepares biological resource evaluations and permit applications.
Responsibilities: Biological, botanical, wetland, burrowing owl survey fieldwork.

Monica Coll, B.A., Environmental Science and Conservation Biology, Clark University, Worcester, MA. Two years experience as a biologist. Her background is in conservation biology and a range of experience from project management assistance to wildlife biology fieldwork. Ms. Coll serves as both field biologist and technical report writer. She conducts preconstruction and construction monitoring, assists with plant and wildlife surveys, and assists with wetland delineations and biological resource evaluations.
Responsibilities: Report preparation

Aramis Respall, GIS Analyst/ CAD Operator. Over 20 years experience in drafting and spatial analysis using AutoCAD map and ArcGIS for public and private projects. He prepares figures for biological and permitting documents. Mr. Respall provides geospatial analysis and support for projects involving geodesy, hydrology, watershed studies, project impact and mitigation analyses, listed species, and designated critical habitat.
Responsibilities: Figure preparation, spatial analysis

Cynthia Little, Principal, Sycamore Environmental.
Responsibilities: Senior editor, quality control.

APPENDIX A.

Plant and Wildlife Species Observed

Plant and Wildlife Species Observed

***Note**: This list of species is cumulative. It includes species observed on the Project site during all biological and botanical surveys conducted by Sycamore Environmental 2015-2020)*

Plant Species Observed. Taxonomy follows Baldwin et al. (2012).

Family	Scientific Name	Common Name	N/I[1]	Cal-IPC[2]
FERNS				
Azollaceae	*Azolla filiculoides*	Mosquito fern	N	
EUDICOTS				
Adoxaceae	*Sambucus nigra* ssp. *caerulea*	Blue elderberry	N	
Amaranthaceae	*Amaranthus albus*	Tumbleweed	I	
	Amaranthus blitoides	Procumbent pigweed	N	
	Amaranthus retroflexus	Redroot pigweed	I	
Anacardiaceae	*Pistacia chinensis* [3]	Chinese pistache	I	
Apiaceae	*Ammi visnaga*	Bisnaga	I	
	Anethum graveolens	Dill	I	
	Conium maculatum	Poison hemlock	I	Moderate
	Daucus carota	Carrot, Queen Anne's lace	I	
	Torilis arvensis	Tall sock-destroyer	I	Moderate
Apocynaceae	*Asclepias fascicularis*	Narrow-leaf milkweed	N	
	Nerium oleander [3]	Common oleander	I	
Asteraceae	*Anthemis cotula*	Mayweed	I	
	Baccharis pilularis	Coyote brush	N	
	Carduus pycnocephalus ssp. *pycnocephalus*	Italian thistle	I	Moderate
	Carthamnus tinctorium [3]	Safflower	I	
	Centaurea solstitialis	Yellow star-thistle	I	High
	Centromadia parryi ssp. *rudis*	Parry's rough tarplant	N	
	Centromadia pungens ssp. *pungens*	Common spikeweed	N	
	Cichorium intybus	Chicory	I	
	Cirsium vulgare	Bull thistle	I	Moderate
	Dittrichia graveolens	Stinkwort	I	Moderate
	Erigeron bonariensis	Flax-leaved horseweed	I	
	Erigeron canadensis	Horseweed	N	
	Grindelia sp.	Gumplant	--	
	Helianthus sp. (crop)	Sunflower	--	
	Helianthus annuus	Sunflower	N	
	Heterotheca grandiflora	Telegraph weed	N	
	Helminthotheca echioides	Bristly ox-tongue	I	Limited
	Hypochaeris glabra	Smooth cat's-ear	I	Limited
	Lactuca saligna	Lettuce	I	
	Lactuca serriola	Prickly lettuce	I	
	Leontodon saxatilis	Hairy hawkbit	I	
	Matricaria discoidea	Pineapple weed, rayless chamomile	I	
	Senecio vulgaris	Common groundsel	I	
	Silybum marianum	Milk thistle	I	Limited
	Sonchus asper ssp. *asper*	Prickly sow thistle	I	

	Sonchus oleraceus	Common sow thistle	I	
	Symphyotrichum subulatum	Annual saltmarsh aster	--	
	Tragopogon porrifolius	Salsify, oyster plant	I	
	Xanthium strumarium	Cocklebur	N	
Bignoniaceae	*Catalpa bignonioides*	Southern catalpa	I	
Boraginaceae	*Heliotropium curassavicum* var. *oculatum*	Seaside heliotrope, alkali heliotrope	N	
	Amsinckia menziesii	Common fiddleneck, small-flowered fiddleneck	N	
	Plagiobothrys sp.	Popcornflower	N	
Brassicaceae	*Brassica nigra*	Black mustard	I	Moderate
	Capsella bursa-pastoris	Shepherd's purse	I	
	Cardamine oligosperma	Bitter-cress	N	
	Hirschfeldia incana	Perennial, shortpod, or summer mustard	I	Moderate
	Raphanus sativus	Radish	I	Limited
	Lepidium latifolium	Perennial pepperweed	I	High
Cannabaceae	*Celtis* sp. [3]	Hackberry	I	
Caryophyllaceae	*Spergularia rubra*	Red sand-spurrey	I	
Chenopodiaceae	*Atriplex prostrata*	Fat-hen	I	
	Atriplex sp. [4]	Saltbush, orach	--	
	Chenopodium album	Lamb's quarters	I	
	Salsola tragus	Russion thistle, tumbleweed	I	Limited
Convolvulaceae	*Convolvulus arvensis*	Bindweed, orchard morning-glory	I	
	Cressa truxillensis	Alkali weed	N	
Ericaceae	*Arctostaphylos* sp. [3]	Manzanita	N	
Euphorbiaceae	*Chamaesyce maculata*	Spotted spurge	I	
	Chamaesyce serpens	Prostrate spurge	I	
	Croton setigerus	Turkey-mullein	N	
	Triadica sebifera	Chinese tallowtree	I	Moderate
Fabaceae	*Acmispon americanus* var. *americanus*	Deervetch, deerweed	N	
	Medicago polymorpha	California burclover	I	Limited
	Medicago sativa	Alfalfa	I	
	Melilotus albus	White sweetclover	I	
	Melilotus indicus	Sourclover	I	
	Prosopis sp.	Mesquite	--	
	Trifolium sp. (growing in disturbed upland; likely *T. subterraneum*)	Clover	--	
	Trifolium hirtum	Rose clover	I	Limited
	Vicia sativa	Vetch	I	
	Vicia villosa ssp. *villosa*	Hairy vetch, winter vetch	I	
Fagaceae	*Quercus agrifolia* [3]	Coast live oak, encina	N	
	Quercus lobata	Valley oak, roble	N	
	Quercus suber [3]	Cork oak	I	
Frankeniaceae	*Frankenia salina*	Alkali heath	N	
Geraniaceae	*Erodium cicutarium*	Redstem filaree	I	Limited
	Erodium botrys	Storksbill, filaree	I	
	Erodium moschatum	Greenstem filaree	I	
	Geranium dissectum	Cranesbill, geranium	I	Limited

	Geranium molle	Cranesbill, geranium	I	
Lamiaceae	*Lavandula* sp. [3]	Lavender	I	
	Rosmarinus sp. [3]	Rosemary	I	
Lythraceae	*Lythrum hyssopifolia*	Loosestrife	I	Limited
	Lagerstroemia sp.	Crapemyrtle	I	
Malvaceae	*Abutilon theophrasti*	Velvet-leaf	I	
	Malva nicaeensis	Bull mallow	I	
	Malva parviflora	Cheeseweed, little mallow	I	
	Malvella leprosa	Alkali-mallow, white-weed	N	
Martyniaceae	*Proboscidea lutea*	Unicorn-plant	I	
Oleaceae	*Fraxinus latifolia*	Oregon ash	N	
Onagraceae	*Epilobium ciliatum*	Willowherb	N	
Papaveraceae	*Eschscholzia californica*	California poppy	N	
Plantaginaceae	*Kickxia elatine*	Kickxia	I	
Platanaceae	*Platanus* x *acerifolia*	London plane tree	I	
	Veronica sp.	Speedwell, brooklime	--	
Polygonaceae	*Persicaria* sp.	Smartweed	--	
	Polygonum aviculare ssp. *depressum*	Knotweed, knotgrass	I	
	Rumex crispus	Curly dock	I	Limited
Portulacaceae	*Portulaca oleracea*	Purslane	I	
Rosaceae	*Malus* sp. (seedling)	Apple	I	
	Heteromeles arbutifolia [3]	Christmas berry, toyon	N	
	Prunus sp. [3]	Prunus	--	
	Pyrus communis	Common pear	I	
	Rubus armeniacus	Himalayan blackberry	I	High
Rubiaceae	*Galium aparine*	Goose grass	N	
Salicaceae	*Populus fremontii* ssp. *fremontii*	Freemont cottonwood	N	
	Salix gooddingii	Goodding's black willow	N	
Solanaceae	*Datura wrightii*	Jimson weed	N	
	Lycopersicon sp. [3]	Tomato	I	
	Solanum nigrum	Black nightshade	I	
	Solanum sp.	Nightshade	--	
Tamaricaceae	*Tamarix* sp. (likely *parviflora* or *ramosissima*)	Tamarisk, saltcedar	I	High
Ulmaceae	*Ulmus parvifolia*	Chinese elm	I	
	Zelkova sp. [3]	Zelkova	I	
Zygophyllaceae	*Tribulus terrestris*	Puncture vine, caltrop	I	
MONOCOTS				
Araceae	*Lemna* sp.	Duckweed	N	
Arecaceae	*Phoenix* sp. (fan palm seedlings)	Palm	I	
Asparagaceae	*Asparagus* sp.	Asparagus	I	
Cyperaceae	*Cyperus eragrostis*	Nutsedge	N	
	Schoenoplectus acutus var. *occidentalis*	Common tule	N	
Poaceae	*Avena fatua*	Wild oat	I	Moderate
	Avena barbata	Slender wild oat	I	Moderate
	Bromus diandrus	Ripgut grass	I	Moderate
	Bromus hordeaceus	Soft chess	I	Moderate
	Crypsis sp.	Prickle grass	I	
	Cynodon dactylon	Bermuda grass	I	Moderate
	Distichlis spicata	Salt grass	N	
	Elymus caput-medusae	Medusa head	I	High

	Elymus glaucus	Blue or western wild-rye	N	
	Elymus triticoides	Beardless wild rye	N	
	Festuca perennis	Rye grass	I	Moderate
	Festuca myuros	Rattail sixweeks grass	I	Moderate
	Hordeum marinum ssp. *gussoneanum*	Mediterranean barley	I	Moderate
	Hordeum murinum ssp. *leporinum*	Hare barley	I	Moderate
	Muhlenbergia rigens [3]	Deer grass	N	
	Phalaris sp.	Canary grass	--	
	Pennisetum sp.	Fountain grass	I	
	Polypogon monspeliensis	Annual beard grass, rabbitfoot grass	I	Limited
	Setaria sp.	Bristle grass	--	
	Sorghum halepense	Johnson grass	I	
	Stipa pulchra	Purple needle grass	N	
	Triticum aestivum	Wheat, goat grass	I	
	Zea mays [3]	Corn	I	
Typhaceae	*Typha domingensis*	Southern cattail	N	

[1] N = Native to CA; I = Introduced.

[2] Degree of negative ecological impact (Cal-IPC 2019).

[3] Observed only as a horticultural planting or agricultural crop.

[4] Specimen could not be identified to species. Specimen was not *A. cordulata* ssp. *cordulata*, *A. depressa,* or *A. joaquinana* based on plant height, inflorescence, and fruit bract characteristics. Specimen observed in a recently tilled agricultural field and most likely a nonnative agricultural weed.

Wildlife Species Observed

COMMON NAME	SCIENTIFIC NAME
BIRDS	
American crow	*Corvus brachyrhynchos*
American goldfinch	*Spinus tristis*
American kestrel	*Falco sparverius*
Anna's hummingbird	*Calypte anna*
Black phoebe	*Sayornis nigricans*
Brewer's blackbird	*Euphagus cyanocephalus*
Burrowing owl [1]	*Athene cunicularia*
Cattle egret	*Bubulcus ibis*
Cliff swallow	*Petrochelidon pyrrhonota*
Common raven	*Corvus corax*
Cooper's hawk	*Accipiter cooperii*
Eurasian collared dove	*Streptopelia decaocto*
European starling	*Sturnus vulgaris*
Great horned owl	*Bubo virginianus*
House finch	*Carpodacus mexicanus*
Killdeer	*Charadrius vociferus*
Mourning dove	*Zenaida macroura*
Northern flicker	*Colaptes auratus*
Northern harrier	*Circus hudsonius*
Northern mockingbird	*Mimus polyglottos*
Red-tailed hawk	*Buteo jamaicensis*
Red-winged blackbird	*Agelaius phoeniceus*
Rock dove	*Columbia livia*
Swainson's Hawk [2]	*Buteo swainsoni*
Tree swallow	*Tachycineta bicolor*
Turkey vulture	*Cathartes aura*
Western meadowlark	*Sturnella neglecta*
Western kingbird	*Tyrannus verticalis*
Western tanager	*Piranga ludoviciana*
White-crowned sparrow	*Zonotrichia leucophrys*
White-tailed kite	*Elanus leucurus*
Yellow-billed magpie	*Pica nuttalli*
FISH	
Mosquitofish	*Gambusia affinis*
REPTILES	
Western fence lizard	*Sceloporus occidentalis*
MAMMALS	
California ground squirrel	*Otospermophilus beecheyi*
Coyote (sign)	*Canis latrans*
Jackrabbit	*Lepus californicus*

[1] See discussion for locations observed.

[2] Observed soaring overhead north of the site.

APPENDIX B.

CNDDB Summary Report
CNPS Inventory Query
(Davis and eight surrounding quads)

Summary Table Report

California Department of Fish and Wildlife

California Natural Diversity Database

Query Criteria: Quad IS (Davis (3812156) OR Woodland (3812167) OR Grays Bend (3812166) OR Taylor Monument (3812165) OR Merritt (3812157) OR Sacramento West (3812155) OR Dixon (3812147) OR Saxon (3812146) OR Clarksburg (3812145))

Name (Scientific/Common)	CNDDB Ranks	Listing Status (Fed/State)	Other Lists	Elev. Range (ft.)	Total EO's	Element Occ. Ranks						Population Status		Presence		
						A	B	C	D	X	U	Historic > 20 yr	Recent <= 20 yr	Extant	Poss. Extirp.	Extirp.
Agelaius tricolor tricolored blackbird	G2G3 S1S2	None Threatened	BLM_S-Sensitive CDFW_SSC-Species of Special Concern IUCN_EN-Endangered NABCI_RWL-Red Watch List USFWS_BCC-Birds of Conservation Concern	10 93	955 S:18	1	0	0	0	8	9	12	6	10	6	2
Ambystoma californiense California tiger salamander	G2G3 S2S3	Threatened Threatened	CDFW_WL-Watch List IUCN_VU-Vulnerable	50 50	1231 S:2	0	0	0	0	1	1	2	0	1	0	1
Ammodramus savannarum grasshopper sparrow	G5 S3	None None	CDFW_SSC-Species of Special Concern IUCN_LC-Least Concern	25 240	27 S:2	0	1	1	0	0	0	0	2	2	0	0
Antrozous pallidus pallid bat	G5 S3	None None	BLM_S-Sensitive CDFW_SSC-Species of Special Concern IUCN_LC-Least Concern USFS_S-Sensitive WBWG_H-High Priority	50 70	420 S:2	0	0	0	0	0	2	2	0	2	0	0
Archoplites interruptus Sacramento perch	G2G3 S1	None None	AFS_TH-Threatened CDFW_SSC-Species of Special Concern	10 10	5 S:1	0	0	0	0	0	1	1	0	1	0	0
Ardea alba great egret	G5 S4	None None	CDF_S-Sensitive IUCN_LC-Least Concern	15 25	43 S:2	2	0	0	0	0	0	1	1	2	0	0
Ardea herodias great blue heron	G5 S4	None None	CDF_S-Sensitive IUCN_LC-Least Concern	25 25	155 S:1	1	0	0	0	0	0	0	1	1	0	0
Astragalus tener var. ferrisiae Ferris' milk-vetch	G2T1 S1	None None	Rare Plant Rank - 1B.1 BLM_S-Sensitive	15 15	18 S:4	1	0	0	0	0	3	3	1	4	0	0
Astragalus tener var. tener alkali milk-vetch	G2T1 S1	None None	Rare Plant Rank - 1B.2	15 50	65 S:10	1	4	0	0	5	0	5	5	5	4	1

Name (Scientific/Common)	CNDDB Ranks	Listing Status (Fed/State)	Other Lists	Elev. Range (ft.)	Total EO's	Element Occ. Ranks A	B	C	D	X	U	Population Status Historic > 20 yr	Recent <= 20 yr	Presence Extant	Poss. Extirp.	Extirp.
Athene cunicularia burrowing owl	G4 S3	None None	BLM_S-Sensitive CDFW_SSC-Species of Special Concern IUCN_LC-Least Concern USFWS_BCC-Birds of Conservation Concern	10 100	1989 S:79	2	14	31	6	10	16	39	40	69	7	3
Atriplex cordulata var. cordulata heartscale	G3T2 S2	None None	Rare Plant Rank - 1B.2 BLM_S-Sensitive	35 35	66 S:1	0	0	0	0	1	0	1	0	0	0	1
Atriplex depressa brittlescale	G2 S2	None None	Rare Plant Rank - 1B.2	30 40	60 S:5	0	1	1	1	0	2	3	2	5	0	0
Bombus crotchii Crotch bumble bee	G3G4 S1S2	None Candidate Endangered		50 50	234 S:1	0	0	0	0	0	1	1	0	1	0	0
Bombus occidentalis western bumble bee	G2G3 S1	None Candidate Endangered	USFS_S-Sensitive XERCES_IM-Imperiled	50 50	280 S:1	0	0	0	0	0	1	1	0	1	0	0
Branchinecta conservatio Conservancy fairy shrimp	G2 S2	Endangered None	IUCN_EN-Endangered	15 15	43 S:1	1	0	0	0	0	0	0	1	1	0	0
Branchinecta lynchi vernal pool fairy shrimp	G3 S3	Threatened None	IUCN_VU-Vulnerable	10 100	770 S:13	0	3	5	0	0	5	3	10	13	0	0
Branchinecta mesovallensis midvalley fairy shrimp	G2 S2S3	None None		15 15	128 S:2	0	1	1	0	0	0	0	2	2	0	0
Buteo swainsoni Swainson's hawk	G5 S3	None Threatened	BLM_S-Sensitive IUCN_LC-Least Concern USFWS_BCC-Birds of Conservation Concern	0 135	2518 S:500	75	141	57	15	5	207	61	439	494	4	2
Carex comosa bristly sedge	G5 S2	None None	Rare Plant Rank - 2B.1	5 5	29 S:1	0	1	0	0	0	0	0	1	1	0	0
Centromadia parryi ssp. parryi pappose tarplant	G3T2 S2	None None	Rare Plant Rank - 1B.2 BLM_S-Sensitive	5 20	39 S:2	0	0	0	0	1	1	1	1	1	0	1

Summary Table Report

California Department of Fish and Wildlife

California Natural Diversity Database

Name (Scientific/Common)	CNDDB Ranks	Listing Status (Fed/State)	Other Lists	Elev. Range (ft.)	Total EO's	Element Occ. Ranks						Population Status		Presence		
						A	B	C	D	X	U	Historic > 20 yr	Recent <= 20 yr	Extant	Poss. Extirp.	Extirp.
Charadrius alexandrinus nivosus western snowy plover	G3T3 S2S3	Threatened None	CDFW_SSC-Species of Special Concern NABCI_RWL-Red Watch List USFWS_BCC-Birds of Conservation Concern	40 55	138 S:2	0	0	0	0	0	2	2	0	2	0	0
Charadrius montanus mountain plover	G3 S2S3	None None	BLM_S-Sensitive CDFW_SSC-Species of Special Concern IUCN_NT-Near Threatened NABCI_RWL-Red Watch List USFWS_BCC-Birds of Conservation Concern	35 40	90 S:4	0	2	1	0	1	0	3	1	3	1	0
Chloropyron palmatum palmate-bracted bird's-beak	G1 S1	Endangered Endangered	Rare Plant Rank - 1B.1 SB_RSABG-Rancho Santa Ana Botanic Garden	30 40	25 S:3	0	1	0	0	1	1	2	1	2	0	1
Cicindela hirticollis abrupta Sacramento Valley tiger beetle	G5TH SH	None None		2 50	6 S:2	0	0	0	0	2	0	2	0	0	0	2
Circus hudsonius northern harrier	G5 S3	None None	CDFW_SSC-Species of Special Concern IUCN_LC-Least Concern	48 48	53 S:1	0	1	0	0	0	0	0	1	1	0	0
Coccyzus americanus occidentalis western yellow-billed cuckoo	G5T2T3 S1	Threatened Endangered	BLM_S-Sensitive NABCI_RWL-Red Watch List USFS_S-Sensitive USFWS_BCC-Birds of Conservation Concern	5 70	156 S:3	0	0	0	0	2	1	2	1	1	0	2
Desmocerus californicus dimorphus valley elderberry longhorn beetle	G3T2 S2	Threatened None		13 100	271 S:16	0	0	3	1	0	12	9	7	16	0	0
Egretta thula snowy egret	G5 S4	None None	IUCN_LC-Least Concern	15 15	20 S:1	1	0	0	0	0	0	1	0	1	0	0
Elanus leucurus white-tailed kite	G5 S3S4	None None	BLM_S-Sensitive CDFW_FP-Fully Protected IUCN_LC-Least Concern	19 65	180 S:10	0	6	0	2	1	1	8	2	9	1	0

Summary Table Report

California Department of Fish and Wildlife

California Natural Diversity Database

Name (Scientific/Common)	CNDDB Ranks	Listing Status (Fed/State)	Other Lists	Elev. Range (ft.)	Total EO's	Element Occ. Ranks A	B	C	D	X	U	Population Status Historic > 20 yr	Recent <= 20 yr	Presence Extant	Poss. Extirp.	Extirp.
Elderberry Savanna Elderberry Savanna	G2 S2.1	None None		30 30	4 S:1	0	0	1	0	0	0	1	0	1	0	0
Emys marmorata western pond turtle	G3G4 S3	None None	BLM_S-Sensitive CDFW_SSC-Species of Special Concern IUCN_VU-Vulnerable USFS_S-Sensitive	32 50	1385 S:2	0	1	0	0	0	1	0	2	2	0	0
Eryngium jepsonii Jepson's coyote-thistle	G2 S2	None None	Rare Plant Rank - 1B.2	10 20	19 S:2	0	0	0	0	0	2	0	2	2	0	0
Extriplex joaquinana San Joaquin spearscale	G2 S2	None None	Rare Plant Rank - 1B.2 BLM_S-Sensitive SB_RSABG-Rancho Santa Ana Botanic Garden	15 40	127 S:9	0	2	4	1	0	2	3	6	9	0	0
Falco columbarius merlin	G5 S3S4	None None	CDFW_WL-Watch List IUCN_LC-Least Concern	40 40	37 S:1	0	1	0	0	0	0	0	1	1	0	0
Fritillaria pluriflora adobe-lily	G2G3 S2S3	None None	Rare Plant Rank - 1B.2 BLM_S-Sensitive SB_RSABG-Rancho Santa Ana Botanic Garden SB_UCBBG-UC Berkeley Botanical Garden		112 S:1	0	0	0	0	0	1	1	0	1	0	0
Great Valley Cottonwood Riparian Forest Great Valley Cottonwood Riparian Forest	G2 S2.1	None None		15 15	56 S:1	0	0	0	0	0	1	1	0	1	0	0
Hibiscus lasiocarpos var. occidentalis woolly rose-mallow	G5T3 S3	None None	Rare Plant Rank - 1B.2 SB_RSABG-Rancho Santa Ana Botanic Garden SB_UCBBG-UC Berkeley Botanical Garden	5 40	173 S:7	0	0	5	1	0	1	2	5	7	0	0
Lasionycteris noctivagans silver-haired bat	G5 S3S4	None None	IUCN_LC-Least Concern WBWG_M-Medium Priority		139 S:2	0	0	0	0	0	2	2	0	2	0	0
Lasiurus cinereus hoary bat	G5 S4	None None	IUCN_LC-Least Concern WBWG_M-Medium Priority		238 S:3	0	0	0	0	0	3	3	0	3	0	0

Name (Scientific/Common)	CNDDB Ranks	Listing Status (Fed/State)	Other Lists	Elev. Range (ft.)	Total EO's	Element Occ. Ranks A	B	C	D	X	U	Population Status Historic > 20 yr	Recent <= 20 yr	Presence Extant	Poss. Extirp.	Extirp.
Laterallus jamaicensis coturniculus California black rail	G3G4T1 S1	None Threatened	BLM_S-Sensitive CDFW_FP-Fully Protected IUCN_NT-Near Threatened NABCI_RWL-Red Watch List USFWS_BCC-Birds of Conservation Concern	15 15	303 S:1	0	0	0	0	0	1	0	1	1	0	0
Lepidium latipes var. heckardii Heckard's pepper-grass	G4T1 S1	None None	Rare Plant Rank - 1B.2	5 35	14 S:6	2	3	0	0	0	1	1	5	6	0	0
Lepidurus packardi vernal pool tadpole shrimp	G4 S3S4	Endangered None	IUCN_EN-Endangered	10 50	325 S:8	2	2	2	0	0	2	2	6	8	0	0
Lilaeopsis masonii Mason's lilaeopsis	G2 S2	None Rare	Rare Plant Rank - 1B.1		197 S:1	0	1	0	0	0	0	0	1	1	0	0
Linderiella occidentalis California linderiella	G2G3 S2S3	None None	IUCN_NT-Near Threatened	10 25	438 S:8	0	1	0	3	0	4	0	8	8	0	0
Melospiza melodia song sparrow ("Modesto" population)	G5 S3?	None None	CDFW_SSC-Species of Special Concern	0 20	92 S:9	0	0	0	0	0	9	2	7	9	0	0
Myrmosula pacifica Antioch multilid wasp	GH SH	None None		50 50	3 S:1	0	0	0	0	0	1	1	0	0	1	0
Navarretia leucocephala ssp. bakeri Baker's navarretia	G4T2 S2	None None	Rare Plant Rank - 1B.1 BLM_S-Sensitive	15 20	58 S:2	1	0	0	0	0	1	0	2	2	0	0
Neostapfia colusana Colusa grass	G1 S1	Threatened Endangered	Rare Plant Rank - 1B.1	25 25	64 S:3	0	1	1	1	0	0	0	3	3	0	0
Nycticorax nycticorax black-crowned night heron	G5 S4	None None	IUCN_LC-Least Concern	15 15	37 S:1	1	0	0	0	0	0	1	0	1	0	0
Oncorhynchus mykiss irideus pop. 11 steelhead - Central Valley DPS	G5T2Q S2	Threatened None	AFS_TH-Threatened		31 S:3	0	0	0	0	0	3	0	3	3	0	0
Oncorhynchus tshawytscha pop. 6 chinook salmon - Central Valley spring-run ESU	G5 S1	Threatened Threatened	AFS_TH-Threatened	20 20	13 S:1	0	0	0	1	0	0	0	1	1	0	0

Summary Table Report

California Department of Fish and Wildlife

California Natural Diversity Database

Name (Scientific/Common)	CNDDB Ranks	Listing Status (Fed/State)	Other Lists	Elev. Range (ft.)	Total EO's	Element Occ. Ranks A	B	C	D	X	U	Population Status Historic > 20 yr	Recent <= 20 yr	Presence Extant	Poss. Extirp.	Extirp.
Oncorhynchus tshawytscha pop. 7 chinook salmon - Sacramento River winter-run ESU	G5 S1	Endangered Endangered	AFS_EN-Endangered	20 20	2 S:1	0	0	0	1	0	0	0	1	1	0	0
Plagiobothrys hystriculus bearded popcornflower	G2 S2	None None	Rare Plant Rank - 1B.1	16 16	14 S:1	0	0	0	0	0	1	0	1	1	0	0
Plegadis chihi white-faced ibis	G5 S3S4	None None	CDFW_WL-Watch List IUCN_LC-Least Concern	30 30	20 S:1	0	1	0	0	0	0	1	0	1	0	0
Pogonichthys macrolepidotus Sacramento splittail	GNR S3	None None	AFS_VU-Vulnerable CDFW_SSC-Species of Special Concern IUCN_EN-Endangered	20 20	15 S:1	0	1	0	0	0	0	1	0	1	0	0
Progne subis purple martin	G5 S3	None None	CDFW_SSC-Species of Special Concern IUCN_LC-Least Concern	24 24	71 S:1	0	0	0	0	0	1	0	1	1	0	0
Puccinellia simplex California alkali grass	G3 S2	None None	Rare Plant Rank - 1B.2	25 50	80 S:10	0	0	0	0	5	5	9	1	5	4	1
Sidalcea keckii Keck's checkerbloom	G2 S2	Endangered None	Rare Plant Rank - 1B.1 SB_RSABG-Rancho Santa Ana Botanic Garden	12 100	50 S:4	0	0	0	0	0	4	2	2	4	0	0
Spirinchus thaleichthys longfin smelt	G5 S1	Candidate Threatened		20 20	46 S:1	0	0	0	0	0	1	0	1	1	0	0
Symphyotrichum lentum Suisun Marsh aster	G2 S2	None None	Rare Plant Rank - 1B.2 SB_RSABG-Rancho Santa Ana Botanic Garden SB_USDA-US Dept of Agriculture	1 1	175 S:1	0	0	0	0	0	1	0	1	1	0	0
Taxidea taxus American badger	G5 S3	None None	CDFW_SSC-Species of Special Concern IUCN_LC-Least Concern	5 70	592 S:4	0	0	0	0	0	4	4	0	4	0	0
Thamnophis gigas giant gartersnake	G2 S2	Threatened Threatened	IUCN_VU-Vulnerable	5 50	366 S:80	6	35	13	5	7	14	25	55	73	7	0
Trifolium hydrophilum saline clover	G2 S2	None None	Rare Plant Rank - 1B.2	10 38	49 S:3	0	1	1	0	0	1	0	3	3	0	0

Name (Scientific/Common)	CNDDB Ranks	Listing Status (Fed/State)	Other Lists	Elev. Range (ft.)	Total EO's	Element Occ. Ranks A	B	C	D	X	U	Population Status Historic > 20 yr	Recent <= 20 yr	Presence Extant	Poss. Extirp.	Extirp.
Tuctoria mucronata Crampton's tuctoria or Solano grass	G1 S1	Endangered Endangered	Rare Plant Rank - 1B.1 SB_RSABG-Rancho Santa Ana Botanic Garden	25 25	4 S:2	0	1	1	0	0	0	0	2	2	0	0
Valley Oak Woodland Valley Oak Woodland	G3 S2.1	None None		50 50	91 S:1	0	0	0	0	0	1	1	0	1	0	0
Vireo bellii pusillus least Bell's vireo	G5T2 S2	Endangered Endangered	IUCN_NT-Near Threatened NABCI_YWL-Yellow Watch List	15 15	503 S:2	0	1	0	0	0	1	1	1	2	0	0
Xanthocephalus xanthocephalus yellow-headed blackbird	G5 S3	None None	CDFW_SSC-Species of Special Concern IUCN_LC-Least Concern	5 5	13 S:1	0	0	0	0	0	1	1	0	1	0	0

CNPS California Native Plant Society

Inventory of Rare and Endangered Plants

*The database used to provide updates to the Online Inventory is under construction. View updates and changes made since May 2019 here.

Plant List

26 matches found. *Click on scientific name for details*

Search Criteria

California Rare Plant Rank is one of [1A, 1B, 2A, 2B, 3, 4], Found in Quads 3812167, 3812166, 3812165, 3812157, 3812156, 3812155, 3812147 3812146 and 3812145;

Modify Search Criteria Export to Excel Modify Columns Modify Sort Display Photos

Scientific Name	Common Name	Family	Lifeform	Blooming Period	CA Rare Plant Rank	State Rank	Global Rank
Astragalus pauperculus	depauperate milk-vetch	Fabaceae	annual herb	Mar-Jun	4.3	S4	G4
Astragalus tener var. ferrisiae	Ferris' milk-vetch	Fabaceae	annual herb	Apr-May	1B.1	S1	G2T1
Astragalus tener var. tener	alkali milk-vetch	Fabaceae	annual herb	Mar-Jun	1B.2	S1	G2T1
Atriplex cordulata var. cordulata	heartscale	Chenopodiaceae	annual herb	Apr-Oct	1B.2	S2	G3T2
Atriplex depressa	brittlescale	Chenopodiaceae	annual herb	Apr-Oct	1B.2	S2	G2
Carex comosa	bristly sedge	Cyperaceae	perennial rhizomatous herb	May-Sep	2B.1	S2	G5
Centromadia parryi ssp. parryi	pappose tarplant	Asteraceae	annual herb	May-Nov	1B.2	S2	G3T2
Centromadia parryi ssp. rudis	Parry's rough tarplant	Asteraceae	annual herb	May-Oct	4.2	S3	G3T3
Chloropyron palmatum	palmate-bracted bird's-beak	Orobanchaceae	annual herb (hemiparasitic)	May-Oct	1B.1	S1	G1
Eryngium jepsonii	Jepson's coyote thistle	Apiaceae	perennial herb	Apr-Aug	1B.2	S2?	G2?
Extriplex joaquinana	San Joaquin spearscale	Chenopodiaceae	annual herb	Apr-Oct	1B.2	S2	G2
Fritillaria pluriflora	adobe-lily	Liliaceae	perennial bulbiferous herb	Feb-Apr	1B.2	S2S3	G2G3
Hesperevax caulescens	hogwallow starfish	Asteraceae	annual herb	Mar-Jun	4.2	S3	G3
Hibiscus lasiocarpos var. occidentalis	woolly rose-mallow	Malvaceae	perennial rhizomatous herb (emergent)	Jun-Sep	1B.2	S3	G5T3
Juglans hindsii	Northern California black walnut	Juglandaceae	perennial deciduous tree	Apr-May	1B.1	S1	G1
Lepidium latipes var. heckardii	Heckard's pepper-grass	Brassicaceae	annual herb	Mar-May	1B.2	S1	G4T1

Lessingia hololeuca	woolly-headed lessingia	Asteraceae	annual herb	Jun-Oct	3	S2S3	G3?
Lilaeopsis masonii	Mason's lilaeopsis	Apiaceae	perennial rhizomatous herb	Apr-Nov	1B.1	S2	G2
Myosurus minimus ssp. apus	little mousetail	Ranunculaceae	annual herb	Mar-Jun	3.1	S2	G5T2Q
Navarretia leucocephala ssp. bakeri	Baker's navarretia	Polemoniaceae	annual herb	Apr-Jul	1B.1	S2	G4T2
Neostapfia colusana	Colusa grass	Poaceae	annual herb	May-Aug	1B.1	S1	G1
Plagiobothrys hystriculus	bearded popcornflower	Boraginaceae	annual herb	Apr-May	1B.1	S2	G2
Puccinellia simplex	California alkali grass	Poaceae	annual herb	Mar-May	1B.2	S2	G3
Symphyotrichum lentum	Suisun Marsh aster	Asteraceae	perennial rhizomatous herb	(Apr)May-Nov	1B.2	S2	G2
Trifolium hydrophilum	saline clover	Fabaceae	annual herb	Apr-Jun	1B.2	S2	G2
Tuctoria mucronata	Crampton's tuctoria or Solano grass	Poaceae	annual herb	Apr-Aug	1B.1	S1	G1

Suggested Citation

California Native Plant Society, Rare Plant Program. 2020. Inventory of Rare and Endangered Plants of California (online edition, v8-03 0.39). Website http://www.rareplants.cnps.org [accessed 03 February 2020].

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California Natural Diversity Database
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Questions and Comments
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APPENDIX C.

USFWS Species List

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Sacramento Fish And Wildlife Office
Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846
Phone: (916) 414-6600 Fax: (916) 414-6713

In Reply Refer To: January 22, 2020
Consultation Code: 08ESMF00-2020-SLI-0012
Event Code: 08ESMF00-2020-E-02633
Project Name: Aggie Research Campus

Subject: Updated list of threatened and endangered species that may occur in your proposed project location, and/or may be affected by your proposed project

To Whom It May Concern:

The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, under the jurisdiction of the U.S. Fish and Wildlife Service (Service) that may occur within the boundary of your proposed project and/or may be affected by your proposed project. The species list fulfills the requirements of the Service under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

Please follow the link below to see if your proposed project has the potential to affect other species or their habitats under the jurisdiction of the National Marine Fisheries Service:

http://www.nwr.noaa.gov/protected_species/species_list/species_lists.html

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Please feel free to contact us if you need more current information or assistance regarding the potential impacts to federally proposed, listed, and candidate species and federally designated and proposed critical habitat. Please note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. This verification can be completed formally or informally as desired. The Service recommends that verification be completed by visiting the ECOS-IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the ECOS-IPaC system by completing the same process used to receive the enclosed list.

The purpose of the Act is to provide a means whereby threatened and endangered species and the ecosystems upon which they depend may be conserved. Under sections 7(a)(1) and 7(a)(2) of the Act and its implementing regulations (50 CFR 402 *et seq.*), Federal agencies are required to utilize their authorities to carry out programs for the conservation of threatened and endangered species and to determine whether projects may affect threatened and endangered species and/or designated critical habitat.

A Biological Assessment is required for construction projects (or other undertakings having similar physical impacts) that are major Federal actions significantly affecting the quality of the human environment as defined in the National Environmental Policy Act (42 U.S.C. 4332(2)(c)). For projects other than major construction activities, the Service suggests that a biological evaluation similar to a Biological Assessment be prepared to determine whether the project may affect listed or proposed species and/or designated or proposed critical habitat. Recommended contents of a Biological Assessment are described at 50 CFR 402.12.

If a Federal agency determines, based on the Biological Assessment or biological evaluation, that listed species and/or designated critical habitat may be affected by the proposed project, the agency is required to consult with the Service pursuant to 50 CFR 402. In addition, the Service recommends that candidate species, proposed species and proposed critical habitat be addressed within the consultation. More information on the regulations and procedures for section 7 consultation, including the role of permit or license applicants, can be found in the "Endangered Species Consultation Handbook" at:

http://www.fws.gov/endangered/esa-library/pdf/TOC-GLOS.PDF

Please be aware that bald and golden eagles are protected under the Bald and Golden Eagle Protection Act (16 U.S.C. 668 *et seq.*), and projects affecting these species may require development of an eagle conservation plan (http://www.fws.gov/windenergy/eagle_guidance.html). Additionally, wind energy projects should follow the wind energy guidelines (http://www.fws.gov/windenergy/) for minimizing impacts to migratory birds and bats.

Guidance for minimizing impacts to migratory birds for projects including communications towers (e.g., cellular, digital television, radio, and emergency broadcast) can be found at: http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/towers.htm; http://www.towerkill.com; and http://www.fws.gov/migratorybirds/CurrentBirdIssues/Hazards/towers/comtow.html.

We appreciate your concern for threatened and endangered species. The Service encourages Federal agencies to include conservation of threatened and endangered species into their project planning to further the purposes of the Act. Please include the Consultation Tracking Number in the header of this letter with any request for consultation or correspondence about your project that you submit to our office.

Attachment(s):

- Official Species List

Official Species List

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Sacramento Fish And Wildlife Office
Federal Building
2800 Cottage Way, Room W-2605
Sacramento, CA 95825-1846
(916) 414-6600

Project Summary

Consultation Code: 08ESMF00-2020-SLI-0012

Event Code: 08ESMF00-2020-E-02633

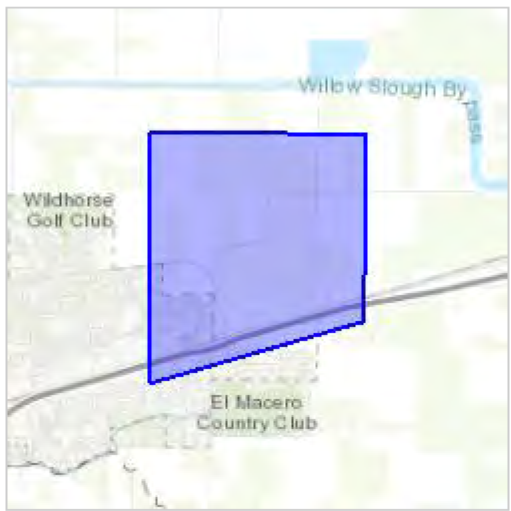
Project Name: Aggie Research Campus

Project Type: DEVELOPMENT

Project Description: Approximately 265 acre mixed use development. Project in the planning phase.

Project Location:

Approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/place/38.565278533418294N121.68601528159672W



Counties: Yolo, CA

Endangered Species Act Species

There is a total of 9 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

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1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

Birds

NAME	STATUS
Western Snowy Plover *Charadrius nivosus nivosus* Population: Pacific Coast population DPS-U.S.A. (CA, OR, WA), Mexico (within 50 miles of Pacific coast) There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/8035	Threatened

Reptiles

NAME	STATUS
Giant Garter Snake *Thamnophis gigas* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/4482	Threatened

Amphibians

NAME	STATUS
California Red-legged Frog *Rana draytonii* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2891 Species survey guidelines: https://ecos.fws.gov/ipac/guideline/survey/population/205/office/11420.pdf	Threatened
California Tiger Salamander *Ambystoma californiense* Population: U.S.A. (Central CA DPS) There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2076	Threatened

Fishes

NAME	STATUS
Delta Smelt *Hypomesus transpacificus* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/321	Threatened

Insects

NAME	STATUS
Valley Elderberry Longhorn Beetle *Desmocerus californicus dimorphus* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/7850 Habitat assessment guidelines: https://ecos.fws.gov/ipac/guideline/assessment/population/436/office/11420.pdf	Threatened

Crustaceans

NAME	STATUS
Conservancy Fairy Shrimp *Branchinecta conservatio* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/8246	Endangered
Vernal Pool Fairy Shrimp *Branchinecta lynchi* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/498	Threatened
Vernal Pool Tadpole Shrimp *Lepidurus packardi* There is **final** critical habitat for this species. Your location is outside the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/2246	Endangered

Critical habitats

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

APPENDIX D.

Photographs

Photo 1. View north from southeast corner of site. Tilled agricultural fields occur through most of the BSA. 7 October 2014.

Photo 2. View west toward Mace Channel in western portion of site. Two adjacent culverts pass water beneath Mace Blvd., one of which is visible in distance. 7 October 2014.

Photo 3. View looking downstream (east) toward the Mace Channel as it leaves the Project site. 7 October 2014.

Photo 4. View west in a recently maintained portion of the Mace Channel near the center of the site. 7 October 2014.

Photo 5. View east from bed of Mace Channel in central portion of BSA. Vegetation has recently been removed. No water is present. 10 December 2014.

Photo 6. View west toward the detention basin from its eastern edge. Several young Fremont's cottonwoods occur in distance. 7 October 2014.


Photo 7. View south toward the blue elderberry shrub located approximately 80 ft east of Mace Blvd., along western boundary of the BSA. 7 October 2014.


Photo 8. View northeast along eastern boundary of BSA toward offsite eucalyptus grove site. 7 October 2014.

Photo 9. View west along Co. Rd. 32A, outside the BSA to the south. Railroad tracks and upland swale on left. 7 October 2014.


Photo 10. View northeast along the Park and Ride driveway. Ruderal weeds occur along the driveway. The BSA is in the background. 7 October 2014.


Photo 11. View southwest toward patch of blue elderberry shrubs and tamarisk located along west side of Road 104 in northern portion of BSA. 7 October 2014.


Photo 12. View north along Road 104 in north part of BSA. Ruderal weeds and alfalfa agriculture on right. 7 October 2014.

Photo 13. Google Street View, May 2014. View west from along Road 105 showing Mace Channel with no water present and ruderal weeds on bed and banks.

Photo 14. Google Street View, May 2012. View west from along Road 105 showing Mace Channel with no water present and ruderal weeds on bed and banks.

Photo 15. Google Street View, May 2014. View east from along Road 105 showing Mace Channel with no water present and ruderal weeds on bed and banks.

Photo 16. Google Street View, May 2012. View east from along Road 105 showing Mace Channel with no water present and ruderal weeds on bed and banks.

Photo 17. 10 December 2014. View south along Road 105 showing Mace Channel with ruderal weeds (perennial pepperweed and yellow star-thistle) on bed and banks and no water present.

Photo 18. 10 December 2014. View east (downstream) toward Mace Channel from Road 105. No water is present. Little to no emergent wetland vegetation is present.

Photo 19. 10 December 2014. View of Mace Channel, looking downstream (east), from a location approximately 500 ft east of the BSA. Ruderal weeds dominate. Little to no emergent wetland vegetation is present.

Photo 20. 10 December 2014. View of Mace Channel, looking upstream (west) toward the BSA, from a location approximately 500 ft east of the BSA. Ruderal weeds dominate in the channel. Little to no emergent wetland vegetation is present.

Photo 21. 7 October 2014. Mace Channel inlet under the Yolo Bypass levee. No water is present.

Photo 22. 7 October 2014. Mace Channel outlet, with large metal flapgate resting in closed position, on the Yolo Bypass side of the Yolo Bypass levee. No water is present.

APPENDIX E

Species Evaluated Table

Species Evaluated Table

Special-Status Species/ Common Name	Federal Status [a]	State Status [a,b]	Source [c]	Habitat Requirements	Potential to Occur in the BSA?
Invertebrates					
Bombus occidentalis occidentalis Western bumble bee	--	C	2	Colony-nesting bumble bee found in meadows and grasslands with abundant floral sources. Requires adequate nectar and pollen supplies from February to November. Common nectar sources include *Cirsium*, *Eriogonum*, *Solidago*, *Aster*, and *Ceanothus*. Requires floral resources distributed over the spring, summer, and fall. Nests in underground cavities such as squirrel burrows and in open west- and southwest-facing slopes often bordered by trees. Occasionally nests above ground in logs. Isolated patches of habitat are not sufficient to fully support bumble bee populations. Historically common on the west coast of North America from southern British Columbia, through central CA, south to NM. In CA, western bumble bee is now restricted to high-elevation Sierra Nevada sites and a few records along the north coast (Xerces 2018).	No. The BSA is mostly disked agricultural fields. The primarily agricultural region lacks sufficient floral resources distributed over the spring, summer, and fall. This species has been extirpated from the valley floor. There are no CNDDB records of this species in the Central Valley after 1980.
Bombus crotchii Crotch bumble bee	--	C	2	Inhabits open grassland and scrub habitats. Primarily nests underground. Generalist foragers visiting a wide variety of flowering plants including plants in the Fabaceae, Apocynaceae, Asteraceae, Lamiaceae, and Boraginaceae plant families. Requires floral resources distributed over the spring, summer, and fall. Isolated patches of habitat are not sufficient to fully support bumble bee populations. Historically common in the Central Valley, now considered extirpated from the northernmost part of the Valley, and nearly absent from Arbuckle, south (Hatfield et al. 2014; Xerces 2018).	No. The BSA is mostly disked agricultural fields. The primarily agricultural region lacks sufficient floral resources distributed over the spring, summer, and fall. This species is potentially extirpated from the valley floor. There are no CNDDB records of this species in the Central Valley after 2007.
Branchinecta conservatio Conservancy fairy shrimp	E, CH	--	1,2	Occurs in grassland communities (USFWS 1994) where it inhabits large (greater than 300 sq ft), deep (between 10 and 27 cm), usually turbid vernal pools where rooted vegetation is absent. Habitat must provide continuous pooling for a duration sufficient to support reproduction (46 days to reproduce) (Helm 1998). Known from eight populations in CA: Vina Plains, Butte and Tehama cos.; Sacramento National Wildlife Refuge, Glenn Co.; Yolo Bypass Wildlife Area, Yolo Co.; Jepson Prairie, Solano Co.; Mapes Ranch, Stanislaus Co.; University of California, Merced, Merced Co.; Grasslands Ecological Area, Merced Co.; and Los Padres National Forest, Ventura Co. (USFWS 2007b).	No. There are no vernal pools in the BSA. The BSA is in active agriculture.
Branchinecta lynchi Vernal pool fairy shrimp	T, CH	--	1,2	Inhabits a wide variety of vernal pool habitats. Most commonly found in small (< 0.05 ac), clear to tea-colored vernal pools with mud, grass, or basalt bottoms in unplowed grasslands (USFWS 2005).	No. There are no vernal pools in the BSA. The BSA is in active agriculture.
Desmocerus californicus dimorphus Valley elderberry longhorn beetle	T, CH	--	1,2,4	Requires an elderberry shrub (*Sambucus nigra* ssp. *caerulea* or *Sambucus racemosa* var. *racemosa*) as a host plant (USFWS 1999b).	Yes. See discussion.

Special-Status Species/ Common Name	Federal Status [a]	State Status [a,b]	Source [c]	Habitat Requirements	Potential to Occur in the BSA?
Lepidurus packardi Vernal pool tadpole shrimp	E, CH	--	1,2	Typically occurs in large, deep vernal pools (USFWS 2005), but can also make use of smaller pools within larger vernal pool complexes (Helm 1998).	No. There are no vernal pools in the BSA. The BSA is in active agriculture.
Fish					
Archoplites interruptus Sacramento perch	--	SC	2	Inhabits freshwater sloughs, slow-moving rivers, lakes, reservoirs, and farm ponds. Often found near submerged or emergent vegetation. Tolerates variable conditions, including a wide range of turbidity, temperature, salinity, and pH. Occurs mainly in inshore areas of larger lakes (Moyle 2002).	No. The Mace Drainage Channel is dry for much of the year. A metal flap gate at the Yolo Bypass prevents migration into the Mace Drainage Channel.
Hypomesus transpacificus Delta smelt	T, CH	T	1	Euryhaline (tolerant of a wide salinity range) species that spawns in freshwater dead-end sloughs and shallow edge-waters of channels of the Delta (USFWS 2010). Restricted to the San Pablo Bay upstream through the Delta in Contra Costa, Sacramento, San Joaquin, Solano, and Yolo cos. (Moyle 2002). Their historic range extended from San Pablo Bay upstream to at least the city of Sacramento on the Sacramento River and the city of Mossdale on the San Joaquin River (USFWS 2010).	No. The Mace Drainage Channel is dry for much of the year. A metal flap gate at the Yolo Bypass prevents migration into the Mace Drainage Channel.
Oncorhynchus mykiss Central Valley steelhead distinct population segment (DPS)	T, CH	--	1,2	Anadromous salmonid historically distributed throughout the Sacramento and San Joaquin river drainages. While steelhead are found elsewhere in the Sacramento River system, the principal remaining wild populations are a few hundred fish that spawn annually in Deer and Mill Creeks in Tehama Co. and a population of unknown size in the lower Yuba River. Spawning occurs in small tributaries on coarse gravel beds in riffle areas (Busby et al. 1996). With the possible exception of a small population in the lower Stanislaus River, steelhead appear to have been extirpated from the San Joaquin basin (Moyle 2002).	No. The Mace Drainage Channel does not have appropriate spawning substrate or hydrology. A metal flap gate at the Yolo Bypass prevents migration into the Mace Drainage Channel.
Oncorhynchus tshawytscha Central Valley spring-run Chinook salmon evolutionarily significant unit (ESU)	T, CH	T	1,2	Anadromous salmonid that enters the Sacramento River from March to July and spawns from late August through early October. Adult females prepare spawning beds in streams with suitable gravel composition, water depth, and velocity. After hatching, fry and subyearlings return to the ocean to complete development (McGinnis 1984). Extant populations of this ESU spawn in the Sacramento River and its tributaries. Populations in the San Joaquin River are believed to be extirpated (NMFS 2005).	No. The Mace Drainage Channel does not have appropriate spawning substrate or hydrology. A metal flap gate at the Yolo Bypass prevents migration into the Mace Drainage Channel.
Oncorhynchus tshawytscha Winter-run Chinook salmon, Sacramento River	E, CH	E	1,2	Anadromous salmonid once found throughout the upper Sacramento River basin, now confined to the mainstem Sacramento River below Keswick Dam (Moyle 2002). Adults enter the Sacramento River from December through July and spawn from April to July. Spawning beds are prepared in streams with suitable gravel composition, water depth, and velocity (McGinnis 1984). This ESU is believed to be extirpated from the San Joaquin River Basin. However, an intermittent run has been reported in the lower Calaveras River (NMFS 1998).	No. The Mace Drainage Channel does not have appropriate spawning substrate or hydrology. A metal flap gate at the Yolo Bypass prevents migration into the Mace Drainage Channel.

Special-Status Species/ Common Name	Federal Status [a]	State Status [a,b]	Source [c]	Habitat Requirements	Potential to Occur in the BSA?
Pogonichthys macrolepidotus Sacramento splittail	--	SC	2	This minnow of the backwater slough areas spawns either over shoreline vegetation or over gravel in creek tributaries of rivers during spring high water levels (McGinnis 1984).	No. The Mace Drainage Channel does not have appropriate hydrology. A metal flap gate at the Yolo Bypass prevents migration into the Mace Drainage Channel.
Spirinchus thaleichthys Longfin smelt	C	T	2	Spawns from November to June in freshwater over sandy-gravel substrates, rocks, or aquatic plants. After hatching, larvae move up into surface waters and are transported downstream into brackish-water nursery areas. In the San Francisco estuary, longfin smelt are usually found downstream of Rio Vista on the Sacramento River and from the vicinity of Medford Island downstream on the San Joaquin River. They are occasionally found upstream of these locations (Moyle 2002).	No. The Mace Drainage Channel does not have appropriate hydrology. A metal flap gate at the Yolo Bypass prevents migration into the Mace Drainage Channel.
Amphibians					
Ambystoma californiense California tiger salamander, central population	T, CH	T	1,2,4	Breed and lay eggs primarily in vernal pools and other temporary rainwater ponds. Specific habitat requirements include annual grasslands and open woodlands with animal burrows for summer dormancy, shallow ponds for larval development that do not contain fish, and quiet waterways supporting prey which includes snails, frogs, tadpoles, fish, and invertebrates (CWHR 2020).	No. The BSA is in active agriculture. There are no vernal pools or other suitable breeding habitat in the BSA.
Rana draytonii California red-legged frog	T, CH	SC	1	Inhabits quiet pools of streams, marshes, and occasionally ponds with dense, shrubby, or emergent vegetation. Requires permanent or nearly permanent pools for larval development (CWHR 2020; USFWS 2002). The range extends from near sea level to approximately 5,200 ft, though nearly all sightings have occurred below 3,500 ft. CRLF has been extirpated from the floor of the Central Valley (USFWS 2002).	No. The BSA is in active agriculture. There is no suitable breeding habitat in the BSA.
Reptiles					
Emys marmorata Western pond turtle	--	SC	2,4	Associated with permanent or nearly permanent water in a wide variety of habitat types, normally in ponds, lakes, streams, irrigation ditches, or permanent pools along intermittent streams, from sea level to 4,690 ft (CWHR 2020).	No. The Mace Channel is dry for much of the year and does not contain sufficient water for this species.
Thamnophis gigas Giant garter snake	T	T	1,2,4	Habitat requisites consist of 1) adequate water during the snake's active season (early spring through mid-fall) to provide food and cover; 2) emergent, herbaceous wetland vegetation, such as cattails and bulrushes, for escape cover and foraging habitat during the active season; 3) grassy banks and openings in waterside vegetation for basking; and 4) higher elevation uplands for cover and refuge from flood waters during the snake's winter dormant season (Stebbins 2003).	Yes. This species could occur in the aquatic habitat located near the proposed stormwater capacity improvements. See discussion.
Birds					
Agelaius tricolor Tricolored blackbird	--	T, SC	2,4	Common locally throughout the Central Valley and in coastal districts from Sonoma Co. south. Breeds near freshwater, preferably in emergent wetland of tall, dense cattails or tules, and also in thickets of willow, blackberry, tall herbs and wild rose. The nesting area is highly colonial, supporting a minimum of 50 pairs (CWHR 2020).	Yes. The Mace Channel provides marginal nesting habitat. See discussion.

Special-Status Species/ Common Name	Federal Status [a]	State Status [a,b]	Source [c]	Habitat Requirements	Potential to Occur in the BSA?
Ammodramus savannarum Grasshopper sparrow	--	SC	2	An uncommon and local summer resident and breeder in foothills and lowlands west of Cascade-Sierra Nevada crest from Mendocino and Trinity cos., south to San Diego Co. Occurs in dry, dense grasslands, especially with scattered shrubs for sitting perches. A thick cover of grasses and forbs is essential for concealment. Nests are built of grasses and forbs in slight depression in ground hidden by a clump of grasses or forbs. Usually nests solitarily from early April to mid-July. May form semicolonial breeding groups of 3-12 pairs (CWHR 2020). Nesting sites are of concern to CDFW (2019a).	No. The BSA is in active agriculture.
Athene cunicularia Burrowing owl	--	SC	2,4	Yearlong resident of open, dry grassland and desert habitat, and in grass, forb, and open shrub stages of pinyon-juniper and Ponderosa pine habitats. Uses small mammal burrows, often those of ground squirrels, for roosting and nesting cover (CWHR 2020). Burrowing sites and some wintering sites are of concern to CDFW (2019a).	Yes. See discussion.
Buteo swainsoni Swainson's hawk	--	T	2,4	Uncommon breeding resident and migrant in the Central Valley, Klamath Basin, Northeastern Plateau, Lassen Co., and Mojave Desert. Nests in stands with few trees in juniper-sage flats, in riparian areas, and in oak savannah in the Central Valley. Forages in adjacent grasslands, livestock pastures, or suitable (i.e., low growing) crop fields. Feeds on small birds, rodents, mammals, reptiles, large arthropods, amphibians, and, rarely, fish (CWHR 2020). Nesting sites are of concern to CDFW (2019a).	Yes. See discussion.
Charadrius alexandrinus nivosus Western snowy plover	T	SC	1,2	Nests, feeds, and takes cover on sandy or gravelly beaches along the Pacific coast, at sand pits, dune-backed beaches at creek and river mouths, salt pans at lagoons and estuaries, and alkali lakes (USFWS 2007a; CWHR 2020). Common on sandy marine and estuarine shores in fall and winter. Inland nesting areas occur at the Salton Sea, Mono Lake, and at isolated sites on the shores of alkali lakes in northeastern CA, the Central Valley, and southeastern CA deserts. Requires a sandy, gravelly or friable soil substrate for nesting (CWHR 2020). Nesting sites are of concern to CDFW (2019a). Federal status applies only to the Pacific coastal population.	No. Suitable habitat does not occur in the BSA.
Charadrius montanus Mountain plover	--	SC	2	This species does not nest in CA. It is a winter resident from September through March in the Central Valley from Sutter and Yuba cos. southward into Mexico at elevations below 3,200 ft. Also found in foothill valleys west of the San Joaquin Valley, the Imperial Valley, and plowed fields of Los Angeles and western San Bernardino cos. Mountain plover forage in short and open grasslands, plowed fields with little vegetation, and open sagebrush areas (CWHR 2020). Nonbreeding/wintering sites are of concern to CDFW (2019a).	Yes. Foraging habitat only. See discussion.
Circus hudsonius Northern harrier	--	SSC	2	Occurs in annual grassland up to lodgepole pine and alpine meadow habitat as high as 10,000 ft. Breeds from sea level to 5,700 ft in the Central Valley and Sierra Nevada Mountains, and up to 3,600 ft in northeastern CA. Frequents meadows, grasslands, open rangelands, desert sinks, and both fresh and saltwater emergent wetlands. Seldom found in wooded areas. Uses tall grasses and forbs in wetlands, or at the wetland/field border, for cover. Roosts and nests on the ground in shrubby vegetation, usually at marsh edges. Typically nests in emergent wetlands or along rivers or lakes, but may nest in grasslands, grain fields, or on sagebrush flats several miles from water (CWHR 2020). Nesting sites are of concern to CDFW (2019a).	Yes. Foraging habitat only. See discussion.

Special-Status Species/ Common Name	Federal Status [a]	State Status [a,b]	Source [c]	Habitat Requirements	Potential to Occur in the BSA?
Coccyzus americanus occidentalis Western yellow-billed cuckoo	T	E	2,4	Uncommon to rare summer resident of valley foothill and desert riparian habitats in scattered locations in CA. Breeding populations known from the Colorado River, Sacramento and Owens valleys, along the South Fork of the Kern River (Kern Co.), along the Santa Ana River (Riverside Co.), and along the Amargosa River (Inyo & San Bernardino cos.). They may also nest along San Luis Rey River (San Diego Co.). Nests in dense cover of deciduous trees and shrubs, especially willows, which usually abut a slow-moving watercourse, backwater or seep. Also utilizes adjacent orchards, especially walnuts, in the Central Valley (CWHR 2020). Nesting sites are of concern to CDFW (2019a).	No. There is no suitable habitat in the BSA. The few isolated trees in the BSA do not provide foraging or nesting habitat.
Elanus leucurus White-tailed kite	--	FP	2,4	Yearlong resident in coastal and valley lowlands; rarely found away from agricultural areas. Inhabits herbaceous and open stages of most habitats mostly in cismontane CA. Substantial groves of dense, broad-leafed deciduous trees are used for nesting and roosting. Nest placed near top of dense oak, willow, or other tree stand located near open foraging area. Forages in undisturbed, open grasslands, meadows, farmlands, and emergent wetlands (CWHR 2020). Nesting sites are of concern to CDFW (2019a).	Yes. See discussion.
Laterallus jamaicensis coturniculus California black rail	--	T	2	Inhabits saline, brackish, and freshwater emergent wetlands in the Bay Area, Sacramento-San Joaquin Delta, the Salton Sea, the lower Colorado River, a few locations in coastal southern CA, and the northern Sierra foothills of Butte, Nevada, Placer, and Yuba cos. Typically found in the immediate vicinity of tidal sloughs near the upper limit of tidal flooding in tidal emergent wetlands dominated by pickleweed and in brackish marshes supporting bulrushes in association with pickleweed. In freshwater areas, generally found in marshes dominated by bulrush, cattail, or saltgrass (CWHR 2020). Water regime is a critical habitat factor; black rails are often found in wetlands with perennial standing or flowing water. Black rails use wetland zones with shallower water than other North American rails, generally less than 1.2 in. Wetlands in the Sacramento Valley managed for waterfowl or rice typically lack sufficient shallow water habitat (Richmond et al. 2010).	No. There is no suitable habitat in the BSA. The band of cattail in the Mace Drainage Channel is of limited extent, is periodically cleared, does not provide sufficient cover, and does not contain sufficient water during the summer and fall. This species was not observed during biological surveys.
Melospiza melodia Song sparrow (“Modesto” population)	--	SC	2	A year-round resident that prefers emergent freshwater marshes dominated by tules and cattails as well as riparian willow thickets. Modesto song sparrows also nest in riparian forests of valley oak with sufficient understory of blackberry, along vegetated irrigation canals and levees, and in recently planted valley oak restoration sites. The Modesto song sparrow is restricted to CA where it is locally numerous in the Sacramento Valley, Sacramento-San Joaquin River Delta, and the northern San Joaquin Valley. The Modesto song sparrow remains locally numerous in areas where extensive wetlands occur. Hence, highest densities occur in the Butte Sink area of the Sacramento Valley and in the Sacramento-San Joaquin River Delta. Immediately adjacent to the Butte Sink, song sparrows breed in sparsely vegetated irrigation canals, yet are almost entirely absent from the main stem and tributaries of the Sacramento River above Sacramento (Shuford and Gardali 2008).	Yes. Marginal nesting habitat occurs along Mace Channel. See discussion.

Special-Status Species/ Common Name	Federal Status [a]	State Status [a,b]	Source [c]	Habitat Requirements	Potential to Occur in the BSA?
Progne subis Purple martin	--	SC	2	Found throughout nearly the entire U.S. east of the Rocky Mtns. In the western U.S, occurs in OR, WA, CA, UT, CO, AZ, and NM. Winters in South America and arrives in central CA in late March, Breeding occurs from April into August. Generally inhabits open areas with an open water source nearby. Purple martins nest colonially or singly in cavities both natural and man-made. Purple martins are not as likely to use nest boxes in CA as they are in the eastern U.S. All current known nesting sites in Sacramento are in vertical weep holes beneath bridges built of steel and concrete box girders over urban areas and railroad tracks (Airola and Grantham 2003). Nesting sites are of concern to CDFW (2019a).	No. There is no suitable nesting habitat in the BSA.
Riparia riparia Bank swallow	--	T	4	Found primarily west of CA deserts in riparian and other lowland habitats during the spring-fall period. In summer, restricted to riparian, lacustrine, and coastal areas with vertical banks, bluffs, and cliffs with fine textured sandy soils, into which it digs nesting holes. Approximately 75% of the breeding population in CA occurs along banks of the Sacramento and Feather Rivers in the northern Central Valley. Other colonies are known from the central coast from Monterey to San Mateo cos., and in northeastern CA in Shasta, Siskiyou, Lassen, Plumas, and Modoc cos. Breeding colonies can have between 10 and 1,500, but typically between 100 and 200, nesting pairs (CWHR 2020). Nesting sites are of concern to CDFW (2019a).	No. There is no suitable nesting habitat in the BSA.
Vireo bellii pusillus Least Bell’s vireo	E	E	2,4	Inhabits willows and other low, dense, foothill riparian habitat below approximately 2,000 ft. Currently known from canyons in San Benito and Monterey cos., coastal areas from Santa Barbara Co. south, and the western edges of southern CA deserts. Usually found near water or intermittent streams. Winters in Mexico from September through the end of March. Peak egg-laying season is May through early June (CWHR 2020). In 2010/2011, least Bell’s vireo was observed in Yolo Co. for the first time in decades, along Putah Creek in the Yolo Bypass. The birds were utilizing riparian habitat dominated by sandbar willow, adjacent to riverine and freshwater marsh (CDFW 2020c). Nesting sites are of concern to CDFW (2019a).	No. Dense, willow-dominated riparian habitat does not occur in the BSA. Suitable habitat for this species does not occur in the BSA.
Xanthocephalus xanthocephalus Yellow-headed blackbird	--	SC	2	Breeds commonly, but locally, east of the Cascade Range and the Sierra Nevada, in the Imperial and Colorado River valleys, the Central Valley, and at selected locations in the coast ranges west of the Central Valley. Nests in freshwater emergent wetland with dense vegetation and deep water, often along the borders of lakes or ponds. Feeds on seeds and cultivated grains and eats insects in the breeding season. Breeding season lasts from mid-April to late July (CWHR 2020). Nesting sites are of concern to CDFW (2019a).	No. Lakes, ponds, and deep water do not occur in the BSA. Suitable nesting habitat for this species does not occur in the BSA.

Special-Status Species/ Common Name	Federal Status [a]	State Status [a,b]	Source [c]	Habitat Requirements	Potential to Occur in the BSA?
Mammals					
Antrozous pallidus Pallid bat	--	SC	2	Locally common at low elevations where it occupies a wide variety of habitats including desert, grasslands, shrublands, woodlands, rocky canyons, lower elevation oak savannah, coast redwood, open farmland and mixed conifer forest from sea level up to 3,000 ft in elevation (Bolster 1998, CWHR 2020). Prefers open, dry habitats with rocky areas for roosting, and rock outcrops, cliffs, and crevices with access to open habitats for foraging. Day roosts in caves, crevices, mines, and occasionally buildings and hollow trees. Night roosts may be more open, such as porches and open buildings. Social, often roosting in groups of 20 or more. Absent in the high Sierra Nevada from Shasta to Kern cos. and northwest CA from Del Norte and western Siskiyou cos. south to northern Mendocino Co. (CWHR 2020). May be somewhat dependent on tree roosts. They have been located in tree cavities in oak, Ponderosa pine, coast redwood and giant Sequoia (Bolster 1998).	No. The BSA does not provide roosting habitat for this species. The few trees in the BSA are young and do not have hollows.
Taxidea taxus American badger	--	SC	2	Found throughout most of CA except the northern North Coast. Abundant in drier open stages of many shrub, forest, and herbaceous habitats with friable soils. Feeds on fossorial rodents, some reptiles, insects, earthworms, bird eggs, and carrion (CWHR 2020).	No. The BSA is in active agricultural adjacent to a urban land use. There are no recent badger records near the BSA.
Plants		**CNPS [b]**			
Astragalus pauperculus Depauperate milk-vetch	--	--/ 4.3	3	Annual herb found on vernally mesic, volcanic substrates in chaparral, cismontane woodland, and Valley and foothill grassland from 197 to 3,986 ft. Known from Butte, Placer, Shasta, Tehama, and Yuba cos. Blooms March through May (Jepson eFlora 2020); March through June (CNPS 2020).	No. The BSA is below the elevation range and does not contain vernally mesic, volcanic substrates.
Astragalus tener var. *ferrisiae* Ferris' milk vetch	--	--/ 1B.1	2,3	Annual herb found in vernally mesic meadows and seeps and subalkaline flats in Valley and foothill grassland from 7 to 250 ft. Known from Butte, Colusa, Glenn, Sutter, and Yolo cos. Presumed extirpated from Solano Co. Blooms March through June (Jepson eFlora 2020); April through May (CNPS 2020).	Yes. Marginal habitat occurs only in the detention basin and along field margins. See discussion.
Astragalus tener var. *tener* Alkali milk-vetch	--	--/ 1B.2	2,3	Annual herb found in alkaline conditions of playas, adobe clay Valley and foothill grassland, and vernal pools from 3 to 197 ft. Known from Alameda, Merced, Napa, Solano, and Yolo cos. Presumed extirpated from Contra Costa, Monterey, San Benito, Santa Clara, San Francisco, San Joaquin, Sonoma and Stanislaus cos. (CNPS 2020). Blooms March through June (Jepson eFlora 2020; CNPS 2020).	Yes. Marginal habitat occurs only in the detention basin and along field margins. See discussion.
Atriplex cordulata var. *cordulata* Heartscale	--	--/ 1B.2	2,3	Annual herb found in saline or alkaline conditions of chenopod scrub, meadows and seeps, and sandy Valley and foothill grassland from 0 to 1,837 ft. Known from Alameda, Butte, Contra Costa, Colusa, Fresno, Glenn, Kern, Madera, Merced, Solano, and Tulare cos. Presumed extirpated from San Joaquin, Stanislaus, and Yolo cos. (CNPS 2020). Blooms April through October (CNPS 2020); June through July (Jepson eFlora 2020).	Yes. Marginal habitat occurs only in the detention basin and along field margins. See discussion.
Atriplex depressa Brittlescale	--	--/ 1B.2	2,3	Annual herb found in alkaline and clay soils of chenopod scrub, meadows and seeps, playas, Valley and foothill grassland, and vernal pools from 3 to 1,050 ft. Known from Alameda, Contra Costa, Colusa, Fresno, Glenn, Kern, Merced, Solano, Stanislaus, Tulare, and Yolo cos. (CNPS 2020). Blooms April through October (CNPS 2020); June through October (Jepson eFlora 2020).	Yes. Marginal habitat occurs only in the detention basin and along field margins. See discussion.

Special-Status Species/ Common Name	Federal Status [a]	State Status [a,b]	Source [c]	Habitat Requirements	Potential to Occur in the BSA?
Carex comosa Bristly sedge	--	--/ 2B.1	2,3	Perennial rhizomatous herb found in coastal prairie, Valley and foothill grassland, and in marshes and swamps along lake margins from 0 to 2,051 ft. Known from Contra Costa, Lake, Mendocino, Sacramento, Santa Cruz, Shasta, San Joaquin, and Sonoma cos. Presumed extirpated in San Bernardino and San Francisco cos. (CNPS 2020). Blooms May through September (CNPS 2020); July through September (Jepson eFlora 2020).	Yes. Marginal habitat occurs only in the Mace Channel. In See discussion.
Centromadia parryi ssp. *parryi* Pappose tarplant	--	--/ 1B.2	2,3	Annual herb found in chaparral, coastal prairie, meadows and seeps, coastal salt marshes and swamps, and vernally mesic valley and foothill grassland from 7 to 1,380 ft. Often found in alkaline conditions. Known from Butte, Colusa, Glenn, Lake, Napa, San Mateo, Solano, Sonoma, and Yolo cos. Blooms from May through November (CNPS 2020); June through October (Jepson eFlora 2020).	Yes. Marginal habitat occurs only in the detention basin and along field margins. See discussion.
Centromadia parryi ssp. *rudis* Parry's rough tarplant	--	--/ 4.2	3	Annual herb found in alkaline, vernally mesic seeps in Valley and foothill grassland, vernal pools, and sometimes along roadsides from 0 to 328 ft. Known from Butte, Colusa, Glenn, Lake, Merced, Sacramento, San Joaquin, Solano, Sutter and Yolo cos. Blooms May through October (CNPS 2020); June through October (Jepson eFlora 2020).	Yes. Marginal habitat occurs only in the detention basin and along field margins. See discussion.
Chloropyron palmatum (=*Cordylanthus palmatus*) Palmate-bracted bird's-beak	E	E/ 1B.1	2,3,4	Annual hemiparasitic herb found in alkaline soil of chenopod scrub and Valley and foothill grassland from 16 to 509 ft. Known from Alameda, Colusa, Fresno, Glenn, Madera, and Yolo cos. Presumed extirpated in San Joaquin Co. (CNPS 2020). Blooms May through October (CNPS 2020); June through August (Jepson eFlora 2020).	No. Seasonally flooded saline-alkali soils do not occur in the BSA. The closest record for this species is 5.5 mi to the northwest.
Eryngium jepsonii Jepson's coyote-thistle	--	--/1B.2	2,3	Perennial herb found on clay soils in Valley and foothill grasslands and vernal pools from 9 to 985 ft. Known from Alameda, Amador, Calaveras, Contra Costa, Fresno, Napa, San Mateo, Solano, Stanislaus, Tuolumne, and Yolo cos. Blooms April through August (Jepson eFlora 2020; CNPS 2020).	Shallow clay depressions along the edges of agricultural fields and in other open areas not subject to active cultivation provide potential habitat for this species.
Extriplex joaquinana San Joaquin spearscale	--	--/ 1B.2	2,3	Annual herb found in alkaline soils in chenopod scrub, meadows and seeps, playas, and Valley and foothill grassland from 3 to 2,740 ft. Known from Alameda, Contra Costa, Colusa, Fresno, Glenn, Merced, Monterey, Napa, San Benito, Solano, Yolo and possibly San Luis Obispo cos. Presumed extirpated in Santa Clara, San Joaquin, and Tulare cos. (CNPS 2020). Blooms April through September (Jepson eFlora 2019); April through October (CNPS 2020).	Yes. Marginal habitat occurs only in the detention basin and along field margins. See discussion.
Fritillaria pluriflora Adobe-lily	--	--/ 1B.2	2,3	Perennial bulbiferous herb often found in adobe soils of chaparral, cismontane woodland, and Valley and foothill grassland from 195 to 2,315 ft. Known from Butte, Colusa, Glenn, Lake, Napa, Solano, Tehama, and Yolo cos. Blooms February through April (Jepson eFlora 2020; CNPS 2020). Baldwin, et al. (2012) describe soils as "adobe, generally serpentine of interior foothills."	No. The BSA is in active agriculture, has a history of soil disturbance, does not contain serpentine, and is dominated by silt soils.

Special-Status Species/ Common Name	Federal Status [a]	State Status [a,b]	Source [c]	Habitat Requirements	Potential to Occur in the BSA?
Hesperevax caulescens Hogwallow starfish	--	--/ 4.2	3	Annual herb found in Valley and foothill grassland in mesic and clay soils and in shallow vernal pools from 0 to 1,650 ft. Known from Alameda, Amador, Butte, Contra Costa, Colusa, Fresno, Glenn, Kern, Merced, Monterey, Sacramento, San Joaquin, San Luis Obispo, Solano, Stanislaus, Sutter, Tehama, and Yolo cos. Presumed extirpated from Napa and San Diego cos. Blooms March through June (Jepson eFlora 2020; CNPS 2020).	Yes. Marginal habitat occurs only in the detention basin and along field margins. See discussion.
Hibiscus lasiocarpos var. *occidentalis* Woolly rose-mallow	--	--/ 1B.2	2,3	Perennial rhizomatous herb found in freshwater marshes and swamps from 0 to 394 ft. Often found on river banks, low peat islands in sloughs, or in riprap on sides of levees. Known from Butte, Contra Costa, Colusa, Glenn, Sacramento, San Joaquin, Solano, Sutter, and Yolo cos. (CNPS 2020). Blooms June through September (CNPS 2020); July through November (Jepson eFlora 2020).	Yes. Marginal habitat occurs only along the Mace Channel. See discussion.
Juglans hindsii Northern California black walnut	--	--/ 1B.1	2,3	Deciduous tree found in riparian forests and riparian woodlands from 0 to 1,444 ft. Known from Contra Costa and Napa cos, and possibly from Lake Co. Presumed extirpated in Sacramento, Solano, and Yolo cos. This species blooms April through May, but is identifiable for most of the year based on leaves and fruits (Jepson eFlora 2020; CNPS 2020). There is only one confirmed, native occurrence that CNPS considered viable as of 2003. Trees of this species have hybridized extensively with other *Juglans* sp., and have naturalized widely in areas of cismontane CA that are not part of its historic range (CNPS 2020). The 1B.1 status only applies to trees which recruited naturally long ago and have not hybridized.	No. The BSA does not contain a stand of native walnut.
Lepidium latipes var. *heckardii* Heckard's pepper-grass	--	--/ 1B.2	2,3	Annual herb found in alkaline flats of valley and foothill grassland from 6 to 660 ft. Known from Glenn, Merced, Sacramento, Solano, and Yolo cos. Blooms March through May (CNPS 2020); March through June (Jepson eFlora 2020). *Lepidium latipes* var. *heckardii* is no longer recognized as distinct from the common *Lepidium latipes* var. *latipes* in the *The Jepson manual: Vascular plants of California, 2nd edition* (Al-Shehbaz 2020).	Yes. Marginal habitat occurs only in the detention basin and along field margins. See discussion.
Lessingia hololeuca Wooly-headed lessingia	--	--/ 3	3	Annual herb found in clay, serpentine soils in broadleaved upland forest, coastal scrub, lower montane coniferous forest, and Valley and foothill grassland from 49 to 1,001 ft. Known from Alameda, Monterey, Marin, Napa, Santa Clara, San Mateo, Solano, Sonoma, and Yolo cos. Blooms June through October (Jepson eFlora 2020; CNPS 2020).	No. Serpentinite soils do not occur in the BSA.
Lilaeopsis masonii Mason's lilaeopsis	--	R/ 1B.1	2,3	Perennial rhizomatous herb found in brackish or freshwater marshes and swamps and riparian scrub from 0 to 33 ft. Known from Alameda, Contra Costa, Marin, Napa, Sacramento, San Joaquin, Solano, and Yolo cos. Locally common in Suisun Bay. (CNPS 2020). Blooms April through November (CNPS 2020); June through August (Jepson eFlora 2020). Habitat also described as, "intertidal marshes and streambanks" (Baldwin et al. 2012).	No. The BSA does not contain tidal waters. The BSA does not provide habitat for this species.
Myosurus minimus ssp. *apus* Little mousetail	--	--/ 3.1	3	Annual herb found in Valley and foothill grassland and alkaline vernal pools from 66 to 2,100 ft. Known from Alameda, Contra Costa, Colusa, Lake, Merced, Riverside, San Bernardino, San Diego, Solano, Tulare, and Yolo cos. Blooms March through June (CNPS 2020); April through June (Jepson eFlora 2020). Based on herbarium specimen collection records, this species is associated with vernal pools and similar wetlands (CCH 2020). This subspecies is not recognized by Baldwin, et al. (2012).	No. The BSA does not contain suitable habitat for this species.

Special-Status Species/ Common Name	Federal Status [a]	State Status [a,b]	Source [c]	Habitat Requirements	Potential to Occur in the BSA?
Navarretia leucocephala ssp. *bakeri* Baker's navarretia	--	--/ 1B.1	2,3	Annual herb found in mesic soils in cismontane woodland, lower montane coniferous forest, meadows and seeps, Valley and foothill grassland and vernal pools from 16 to 5,709 ft. Known from Colusa, Glenn, Lake, Lassen, Mendocino, Marin, Napa, Solano, Sonoma, Sutter, Tehama, and Yolo cos. Blooms April through June (Jepson eFlora 2020); April through July (CNPS 2020). Baldwin, et al. (2012) describe habitat as "vernal pools."	No. The BSA does not contain vernal pools.
Neostapfia colusana Colusa grass	T	E/ 1B.1	1,2,3	Annual herb found in large adobe vernal pools from 15 to 660 ft. Known from Glenn, Merced, Solano, Stanislaus, and Yolo cos. Presumed extirpated from Colusa co. Blooms May through August (Jepson eFlora 2020; CNPS 2020). Typically grows in large, deep pools that have long periods of inundation (68 FR 46693).	No. The BSA does not contain vernal pools.
Plagiobothrys hystriculus Bearded popcornflower	--	--/ 1B.1	2,3	Annual herb found in mesic soils in Valley and foothill grassland, along vernal pool margins, and in vernal swales from 0 to 899 ft. Known from Napa, Solano and Yolo cos. (CNPS 2020). Blooms March through May (Jepson eFlora 2020); April through May (CNPS 2020). This species was previously believed to be extinct in CA, but was rediscovered in 2005, and is known only from the Montezuma Hills (CNPS 2020). Baldwin, et al. (2012) describe habitat as "wet grassland, vernal pool margins."	No. The BSA does not contain vernal pools. The BSA is over 25 mi northeast of the Montezuma Hills.
Puccinellia simplex California alkali grass	--	--/1B.2	2,3	Annual herb found in alkaline, vernally mesic sinks, flats, and lake margins within chenopod scrub, meadows, seeps, Valley and foothill grassland, and vernal pools from 7 to 3,050 ft. Known from Alameda, Butte, Contra Costa, Colusa, Fresno, Glenn, Kern, Lake, Los Angeles, Madera, Merced, Napa, San Bernardino, Santa Clara, Santa Cruz, San Luis Obispo, Solano, Stanislaus, Tulare, and Yolo cos. Presumed extirpated from Kings Co. Blooms March through May (Jepson eFlora 2020; CNPS 2020). Habitat also described as "saline flats, mineral springs" (Baldwin et al. 2012).	No. There are no saline flats or mineral springs in the BSA. There are no suitable vernally mesic habitats in the BSA.
Sidalcea keckii Keck's checkerbloom	E	R/1B.1	2	Annual herb found on serpentine and clay soils of cismontane woodland and valley and foothill grassland from 245 to 2,135 ft. Known from Fresno, Merced, and Tulare cos, and possibly from Colusa, Napa, Solano and Yolo cos. Blooms April through May (Jepson eFlora 2020); April through June (CNPS 2020). In Napa and Colusa cos. occur in a range of habitats including serpentine outcrops, serpentine chaparral, roadsides, blue-oak-dominated woodland, south-facing slopes, and grasslands within oak-gray pine woodland. Genetic analyses have identified Colusa and Yolo Co. plants as more closely related to a common Sidalcea species than to *S. keckii* (USFWS 2012).	No. The BSA is outside the geographic and elevation range. There is no suitable habitat in the BSA.
Symphyotrichum lentum Suisun Marsh aster	--	--/ 1B.2	2,3	Perennial rhizomatous herb found in brackish and freshwater marshes and swamps from 0 to 10 ft. Known from Contra Costa, Napa, Sacramento, San Joaquin, Solano, and Yolo cos. (CNPS 2020). Blooms April through November (CNPS 2020); May through November (Jepson eFlora 2020).	Yes. Marginal habitat occurs only along Mace Channel. See discussion.
Trifolium hydrophilum Saline clover	--	--/ 1B.2	2,3	Annual herb found in marshes and swamps, mesic and alkaline soils of Valley and foothill grassland, and vernal pools from 0 to 984 ft. Known from Alameda, Contra Costa, Lake, Monterey, Napa, Sacramento, San Benito, Santa Clara, Santa Cruz, San Joaquin, San Luis Obispo, San Mateo, Solano, Sonoma, and Yolo cos., and potentially from Colusa Co. (CNPS 2020). Blooms April through June (Jepson eFlora 2020; CNPS 2020).	Yes. Marginal habitat occurs only in the detention basin and along field margins. See discussion.

Special-Status Species/ Common Name	Federal Status [a]	State Status [a,b]	Source [c]	Habitat Requirements	Potential to Occur in the BSA?
Tuctoria mucronata Solano grass	E	E/ 1B.1	1,2,3	Annual herb found in mesic soils in Valley and foothill grassland and vernal pools from 16 to 33 ft. Known from Solano and Yolo cos. Blooms April through August (Jepson eFlora 2020; CNPS 2020). Known from only four occurrences (CNPS 2020).	No. The BSA does not contain vernal pools. The BSA is located ~4 mi north of the population located south of Davis.
Natural Communities					
Elderberry Savanna	--	--/ --	2	Open shrub savannah dominated by Sambucus mexicana, usually with an understory of nonnative annual herbs. Requires grazing, fire, or flooding to prevent succession to Great Valley Mixed Riparian Forest. Occurs in areas of fine-textured alluvium that are set back from active river channels, but still subject to flooding and silt deposition. Additional characteristic species include: *Bromus* spp., *Centaurea solstitialis*, and *Marrubium vulgare*. Scattered among surviving stands of riparian vegetation throughout the Sacramento and northern San Joaquin valleys beyond Merced County (Holland 1986).	No. This community does not occur in the BSA.
Great Valley Cottonwood Riparian Forest	--	--/ --	2	Deciduous riparian forest dominated by *Populus fremontii* and *Salix gooddingii* with dense understory. Lianas such as *Vitis californica* are common. Frequent flooding prevents other trees, such as *Acer negundo californica* and *Fraxinus latifolia*, from reaching canopy height. Additional characteristic species include: *Cephalanthus occidentalis, Elymus triticoides*, and *Salix* spp. (Holland 1986).	No. This community does not occur in the BSA.
Valley Oak Woodland	--	--/ --	2	An oak woodland dominated by Valley oak (*Quercus lobata*). Occurs on deep, well-drained alluvial soils, usually in valley bottoms, apparently with more moisture in summer than in blue oak woodland. Intergrades with Valley oak riparian forest near rivers and with blue oak woodland on drier slopes. Found on non-alluvial setting in the South Coast and Transverse ranges. Typically open stands with grassy-understoried savanna rather than a closed woodland. Valley oak is usually the only tree present. Most stands consist of open-canopy growth form trees and seldom exceed 30-40% absolute cover (Holland 1986).	No. This community does not occur in the BSA.

[a] **Status**: Endangered (E); Threatened (T); Proposed (P); Candidate (C), Delisted (D), Fully Protected (FP); Rare (R); State Species of Special Concern (SC); Proposed Critical Habitat (PCH); Critical Habitat (CH) - Project footprint is located within a designated critical habitat unit, but does not necessarily mean that appropriate habitat is present.

[b] **CNPS CA Rare Plant Rank**: **1A** = Presumed extirpated in CA and either rare or extinct elsewhere; **1B** = Rare, threatened, or endangered in CA and elsewhere; **2A** = Presumed extirpated in CA but common elsewhere; **2B** = Rare, threatened, or endangered in CA but more common elsewhere; **3** = Review List: plants about which more information is needed; **4** = Watch List: plants of limited distribution.

CNPS CA Rare Plant Rank Decimal Extensions: **.1** = Seriously threatened in CA (over 80% of occurrences threatened / high degree and immediacy of threat); **.2** = Moderately threatened in CA (20-80% of occurrences threatened / moderate degree and immediacy of threat); **.3** = Not very threatened in CA (< 20% of occurrences threatened / low degree and immediacy of threat or no threats known).

[c] **Sources**: 1 = USFWS (2020) letter; 2 = CDFW (2020c) CNDDB query; 3 = CNPS (2020) query; 4 = Yolo HCP/NCCP.

APPENDIX F.

Map of GGS Habitat by the Yolo Heritage Program

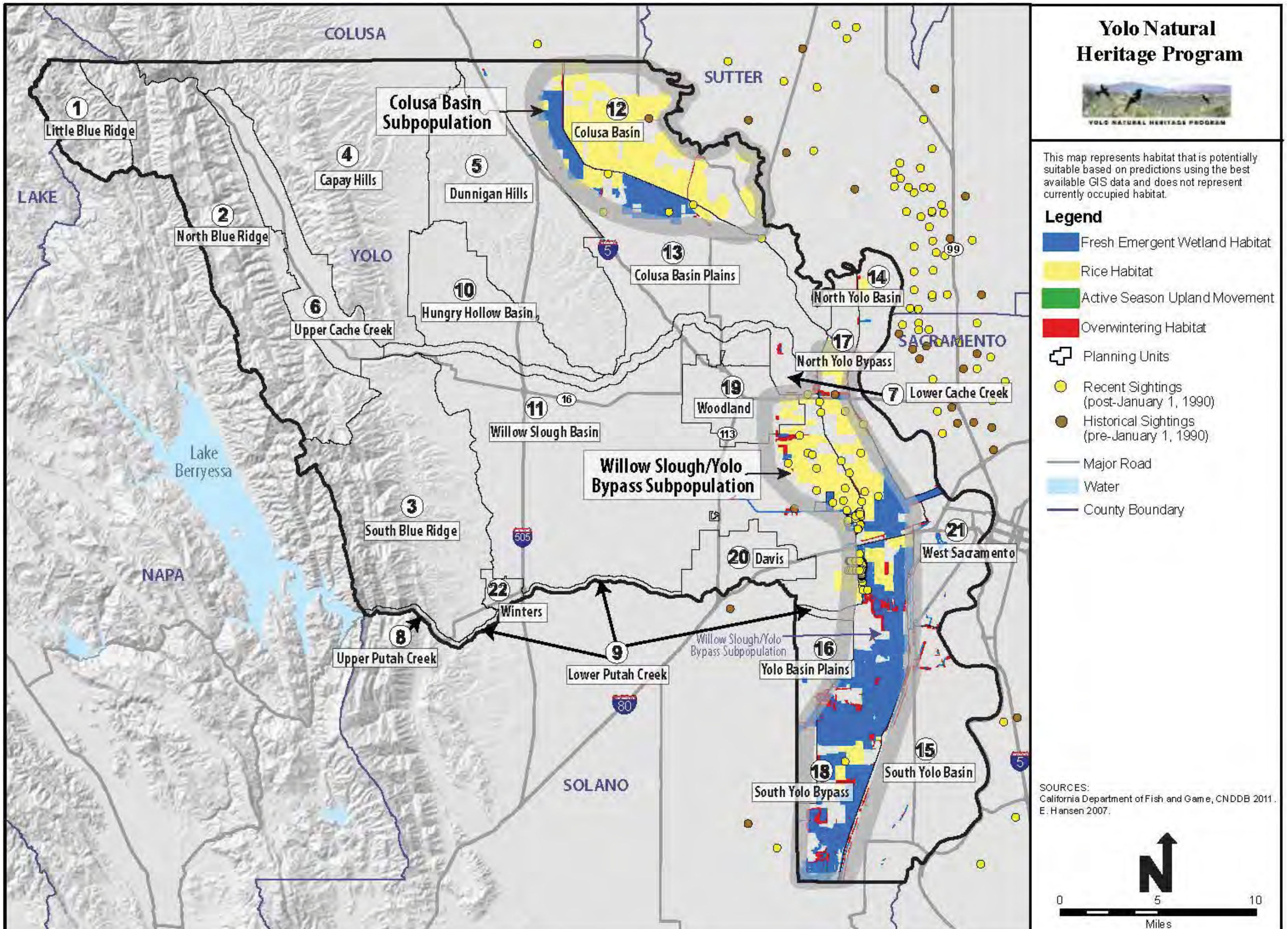

Figure A-19. Giant Garter Snake Modeled Habitat and Occurrences

APPENDIX G.

Preliminary Burrowing Owl Survey Results
(as of January 2020)

SYCAMORE ENVIRONMENTAL CONSULTANTS, INC.
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916/ 427-0703 www.sycamoreenv.com

30 January 2020

Troy Estacio, SVP Acquisitions & Development Services
Buzz Oates Construction, Inc.
555 Capitol Mall
Sacramento, CA 95814

Phone: (916) 379-3800
Email: troyestacio@buzzoates.com

Subject: January 2020 Burrowing Owl Survey Update for the Aggie Research Campus Project, Yolo County, CA

Dear Mr. Estacio,

On 24 January 2020, Sycamore Environmental biologists commenced burrowing owl (*Athene cunicularia*) surveys for the Aggie Research Campus (ARC) Project located just east of the City of Davis in Yolo County, CA. This letter transmits initial results. A total of eight more surveys are planned. A final report documenting the results of the full set of breeding season surveys for burrowing owl will follow the final survey in June/July 2020.

METHODS

Surveys are being conducted in accordance with the CDFW 2012 *Staff Report on Burrowing Owl Mitigation* guidelines (CDFW Guidelines). Table 1 summarizes the area surveyed, biological staff conducting the surveys, and the date and hours of the surveys.

Table 1. Summary of Burrowing Owl Surveys Conducted 2019-2020

DATE	AREA SURVEYED	BIOLOGISTS[1]	HOURS
7 Aug 2019	Project Site & 500-foot buffer	Mike Bower, M.S. Juan Mejia, B.S.	9:00 AM - 2:30 PM
24 Jan 2020	Project Site, Stormwater Capacity Area, & 500-foot buffer	Mike Bower, M.S. Juan Mejia, B.S. Elliot Maldonado, B.S.	6:30 AM - 4:00 PM

[1] Mike Bower, Juan Mejia, and Elliot Maldonado are Certified Yolo HCP/NCCP Qualified Biologists for burrowing owl.

The Burrowing Owl Survey Area is shown on the map in Attachment A. The Survey Area includes 1) the Project site, 2) annexation areas south of the Project site, 3) the northern and eastern sewer line alternatives, 4) the parcels considered for stormwater capacity work approximately 2 miles east of the Project site, and 5) suitable habitat within 500 feet of the aforementioned areas. The survey was performed by biologists with experience surveying for burrowing owl. The biologists walked transects through suitable habitat while searching for burrowing owl and potentially suitable burrows, as defined in the CDFW Guidelines. Binoculars were used to increase visual coverage and detection distances. The locations of reported burrowing owl sightings noted on eBird.org were closely inspected during surveys to verify whether the sightings corresponded with occupied burrows.

The CDFW Guidelines consider burrow sites to be ***occupied*** if a burrowing owl has been observed occupying a burrow, or burrowing owl sign has been observed at a burrow, within the last three years.

PRELIMINARY RESULTS

Table 2 is a summary of survey results thus far.

Table 2. Summary of Burrowing Owl Occupancy

SITE	LOCATION DESCRIPTION	OWLS/SIGN OBSERVED		OWLS LAST OBSERVED
		7 AUG 2019	24 JAN 2020	
A	Approximately 530 feet north of the Project Site, along north side of County Rd 30B	2 owls	2 owls	24 Jan 2019
B	Northwestern edge of Project Site, along east side of County Rd 104	1 owl		7 Aug 2019
C	Western edge of the Project Site, along east side of Mace Blvd, south of intersection with County Rd 104			8 Oct 2018 (survey for another project)
D	Approximately 400 feet west of the Project Site, in vacant lot north of 2nd St	1 owl		7 Aug 2019
E	Approximately 100 feet west of the Project Site, along west side of Mace Blvd; includes artificial burrows southwest of Mace Blvd/ 2nd St intersection	3 owls		7 Aug 2019
F	Approximately 360 feet east of the Mace Blvd / County Rd 32A intersection, along the south side of County Rd 32A		Whitewash & sm. mammal bones	No owls observed

Attachment A contains a map showing the locations of occupied and unoccupied burrow complexes documented thus far. A total of six occupied burrow complexes occur within approximately 500 feet of the Project (Sites A through F). Hundreds of currently unoccupied burrows occur in the Burrowing Owl Survey Area, mostly within the 500-foot survey buffer as shown on Attachment A.

These results are preliminary. An additional eight burrowing owl survey events are planned, including a full set of breeding season surveys in accordance with the CDFW Guidelines.

Please contact me if you have any questions.

Yours truly,

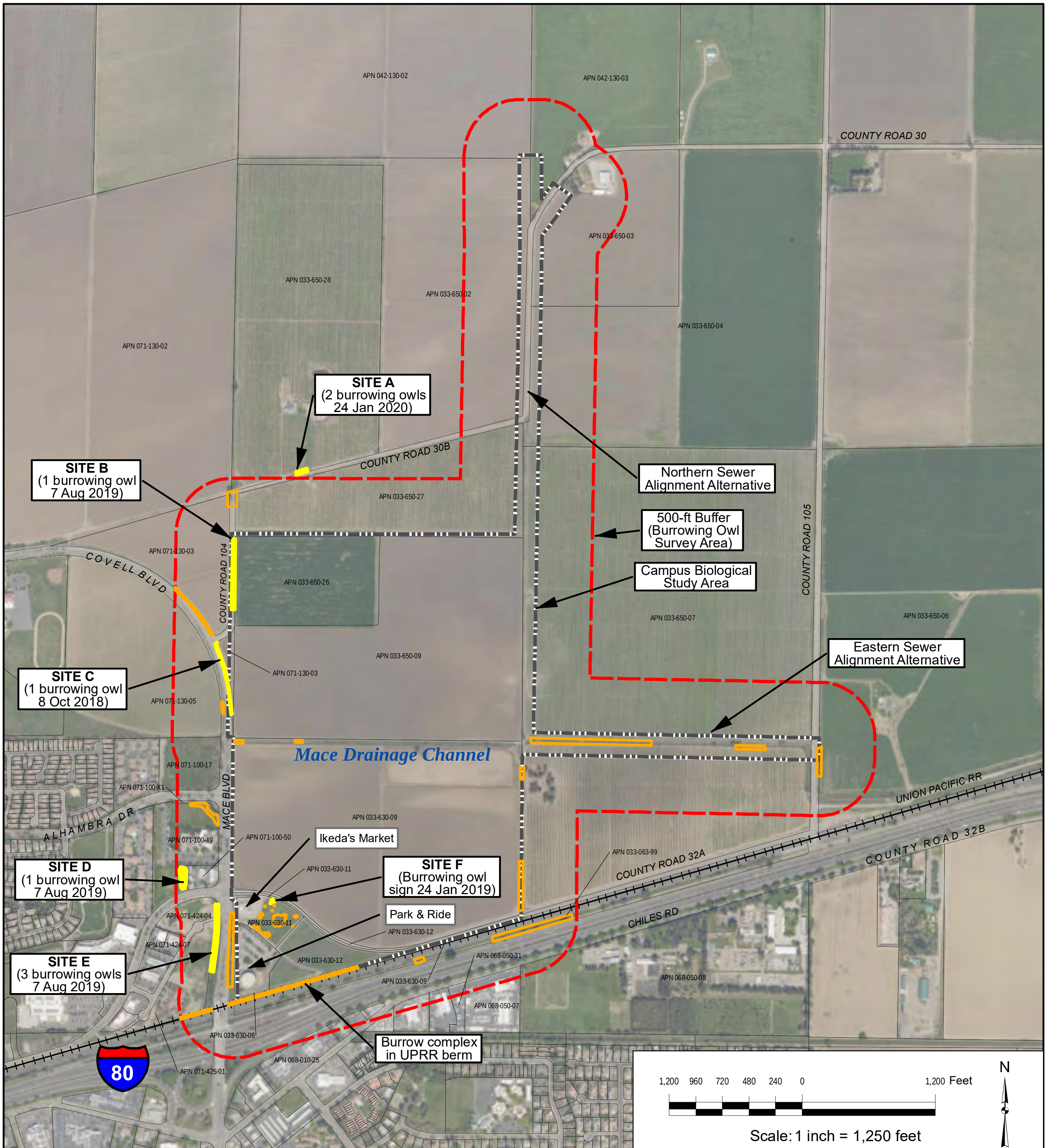
Mike Bower, M.S.
Botanist/Biologist

Attachment A. Preliminary Burrowing Owl Survey Results Map

Attachment A.

Preliminary Burrowing Owl Survey Results Map

January 2020



Aggie Research Campus
Yolo County, CA
30 January 2020

Attachment A.
Preliminary Burrowing Owl
Survey Results Map
Sheet 1 of 2, (Main Site)

Campus Biological Study Area

500-ft Buffer (Burrowing Owl Survey Area)

Burrow Complex With Owl Occupancy
(Year Observed Occupied)

Burrow Complex - No Occupancy

Parcel Boundary

SYCAMORE
Environmental
Consultants, Inc.

Aerial Photograph: 13 August 2018
2018 Yolo County Orthos Imagery
ESRI World Imagery Arcmap Service Layer

14087AggieResearchCampus_AttA_PrelimBOMap_Sht1-2(8x11).mxd

Aggie Research Campus
Yolo County, CA
30 January 2020

Attachment A.
Preliminary Burrowing Owl Survey Results Map
Sheet 2 of 2, (Off-site)

Preferred Off-site Stormwater Capacity Area (100 acres)

500-ft Buffer (Off-site Burrowing Owl Survey Area)

Burrow Complex - No Occupancy

Parcel Boundary

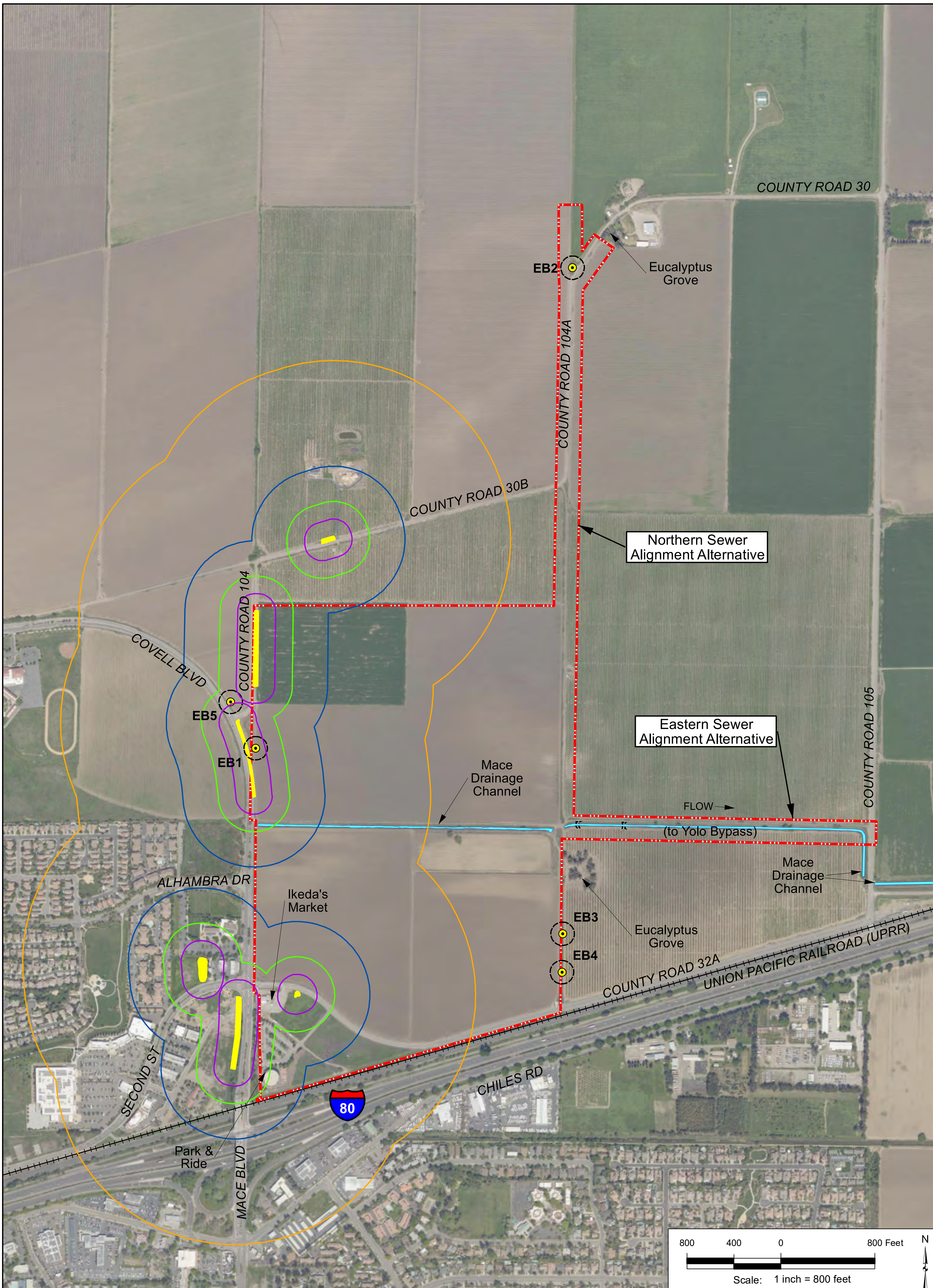
SYCAMORE Environmental Consultants, Inc.

Aerial Photograph: 13 August 2018
2018 Yolo County Orthos Imagery
ESRI World Imagery Arcmap Service Layer

14087AggieResearchCampus_AttA_PrelimBOMap_Sht1-2(8x11).mxd

APPENDIX H.

Map of Yolo HCP/NCCP Resource Avoidance Buffers



Aggie Research Campus
Yolo County, CA
3 February 2020

Campus Biological Study Area (Campus BSA)

Elderberry Shrub Location

Elderberry Shrub Avoidance Buffer (100 ft)

Burrow Complex With Owl Occupancy (Year Observed Occupied)

Burrow Owl 150-ft Avoidance Buffer

Burrow Owl 300-ft Avoidance Buffer

Burrow Owl 600-ft Avoidance Buffer

Burrow Owl 1,500-ft Avoidance Buffer

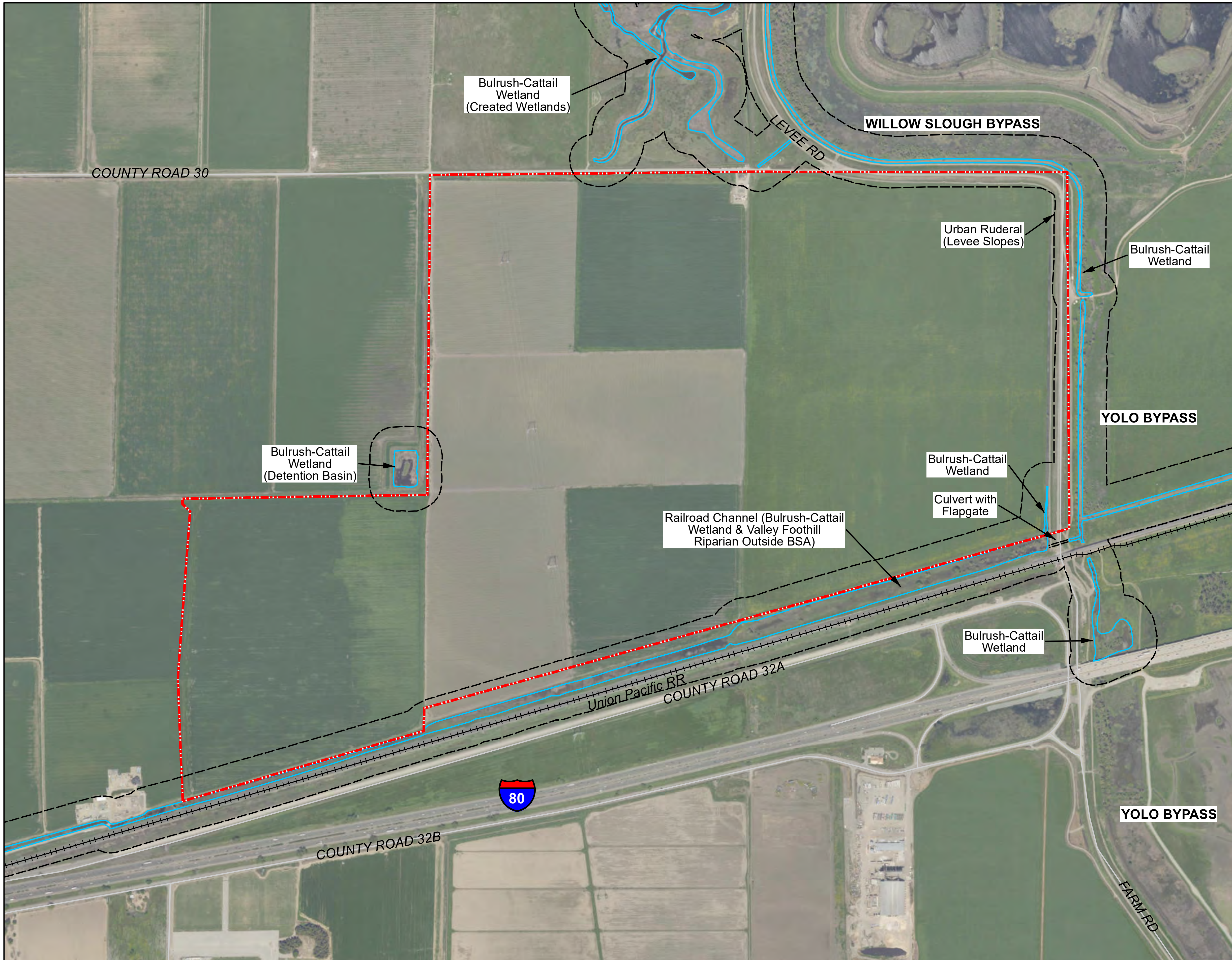
SYCAMORE Environmental Consultants, Inc.

Aerial Photograph: 13 April 2018
2018 Yolo County Orthos Imagery
ESRI World Imagery Arcmap Service Layer

Avoidance Buffers from Table 2-2 of the Yolo HCP/NCCP Permitting Guide (November 2019).

Map of Yolo HCP/NCCP
Resource Avoidance Buffers
Sheet 1 of 2, Main Campus

14087AggieResearchCampus_HCP-NCCPavoidance(11x17)_Sht1of2.mxd



Aggie Research Campus
Yolo County, CA
3 February 2020

Map of Yolo HCP/NCCP
Resource Avoidance Buffers
Sheet 2 of 2, Off-site
Stormwater Capacity Area

Stormwater Capacity Biological Study Area (Stormwater BSA)

Giant Garter Snake Aquatic Habitat

Giant Garter Snake Avoidance Buffer (200 ft)

800 400 0 800 Feet

N

Scale: 1 inch = 800 feet

SYCAMORE
Environmental
Consultants, Inc.

Aerial Photograph: 13 April 2018
2018 Yolo County Orthos Imagery
ESRI World Imagery Arcmap Service Layer

Avoidance Buffers from Table 2-2 of the
Yolo HCP/NCCP Permitting Guide
(November 2019).

14087AggieResearchCampus_HCP-NCCPavoidance(11x17)_Sht2of2.mxd

APPENDIX I.

GGS Habitat Evaluation

11 January 2016

Ms. Alisha Olson, Development Project Manager
The Buzz Oates Group of Companies
8615 Elder Creek Road
Sacramento, CA 95828

Phone: 916/ 379-3838
Email: AlishaOlson@buzzoates.com

Subject: Giant Garter Snake Habitat Evaluation for the Mace Ranch Innovation Center Project, Yolo County, CA

Dear Ms. Olson,

Sycamore Environmental completed a year-long hydrological study and evaluation of giant garter snake (GGS; *Thamnophis gigas*) habitat for the Mace Ranch Innovation Center (MRIC) project site. The study supplements the results of the biological resources evaluation (BRE; Sycamore Environmental 2015) and may serve as partial satisfaction of the August 2015 Draft Environmental Impact Report (DEIR) mitigation measures for GGS (Attachment A).

The purpose of the study was to further characterize GGS habitat and potential to occur both on the main MRIC site and in the Mace Drainage Channel (MDC) downstream of the Project. The BRE concluded that:

> *Urban influence, artificial hydrology, vegetation maintenance, culverts, and lack of water and suitable prey items during the active season make it unlikely that GGS would be able to travel to the site. Suitable GGS habitat is not present in the MDC within the BSA. GGS do not have the potential to occur in the BSA.*

This supplemental GGS habitat evaluation relies on much more data than the analysis in the BRE report and reaches the same conclusion.

STUDY AREA

The MDC is the only potentially suitable aquatic habitat for GGS in or near the MRIC project and is the subject of this study. The MDC delivers stormwater and urban runoff from the City of Davis to the Yolo Bypass. The MDC enters the MRIC site through a pair of culverts beneath Mace Blvd. When sufficient water is present in the MDC, it flows east across the proposed MRIC project site, through a culvert beneath a farm road at the eastern edge of the MRIC site, eastward, under County Road 105, and ultimately under a 170-ft-wide levee and through a large metal flapgate to the Yolo Bypass, where GGS are known to occur.

METHODS

Five long-term study sites were established along the MDC from Mace Blvd (upstream) to just west (downstream) of Road 105, spanning approximately 1.1 mi (see attached map and photos). The five sites were visited a total of 16 times, approximately once every 1 to 4 weeks, between 26 January 2015 and 30 November (see list of survey dates and study sites in Attachment D). During each site visit, the MDC was photographed and water present was noted at each study site. Dominant plant species in the MDC were identified and recorded at each study site (see photograph captions in Attachment C). Data were not collected from Study Site 4 and 5 on 30 January and 12 February 2015.

Precipitation preceding site visits would influence hydrologic observations. As noted in Attachment D, only the 9 April 2015 site visit was preceded by notable precipitation (approximately 1 inch recorded two days prior according to Sacramento Executive Airport Gauge data; NWS 2016).

Drought and irrigation practices could influence hydrologic observations in the MDC. On 30 September 2015, toward the end of the GGS active season, precipitation was 84% of normal based on observed and historic precipitation for the period between 1 October and 30 September 2015 (NWS 2016). Row-irrigated annual sunflower crops were grown along both sides of MDC on the MRIC site, and along the north side of the MDC east (downstream) of the MRIC site in 2015. Row-irrigated crops were also grown along the north side of the MDC farther downstream. Dry upland grain crops were grown on the north side of the channel near the Yolo Bypass. No rice was grown along the MDC in 2015. Rice farming has not occurred along the MDC for more than 20 years based on historical aerials available in Google Earth (Google, Inc. 2016). Some irrigation runoff was observed flowing into the MDC during fieldwork on 19 May and 11 July 2015. Precipitation and irrigation inputs into the MDC were typical in 2015 compared to most years.

RESULTS AND DISCUSSION

GGS Habitat in the Study Area: GGS habitat requirements, biology, and known records are discussed in detail in the BRE (Sycamore Environmental 2015). Essential GGS habitat components include 1) adequate water during the snake's active season (early spring through mid-fall) to provide adequate permanent water to maintain dense populations of food organisms and 2) emergent, herbaceous wetland vegetation, such as cattails and bulrushes, for escape cover and foraging habitat during the active season (USFWS 1999). Both of these essential habitat components are lacking in the 1.1- mile long study reach.

No portion of the MDC within the study area provided permanent water in 2015. Study sites 2 through 5 were almost always dry. Water was intermittently present at study sites 2 through 5 immediately following precipitation events and during irrigation on adjacent farmland. While water was observed at Study Site 1 throughout most of the study duration (Attachment D), the water was restricted to an approximately 50-250-ft portion of the portion of the MDC adjacent to Mace Blvd, and it was typically no more than ±3 inches deep. Water input from precipitation, urban runoff, and irrigation provided periodic short pulses of flow in the channel, but persistent pooling after these water inputs was not observed except as described above at Study Site 1 near Mace Blvd. Lack of permanent water greatly reduces the potential cover and prey base needed by GGS. Very shallow water does not provide adequate escape cover from GGS predators such as herons, and raccoons.

Vegetation in the MDC at study sites 2 through 5 was dominated by perennial pepperweed (*Lepidium latifolium*), bisnaga (*Ammi visnaga*), horseweed (*Erigeron* sp.; formerly *Conyza* sp.), yellow star-thistle

(*Centaurea solstitialis*) and nutsedge (*Cyperus eragrostis*) – most of which are not associated with permanent inundation. Cattails (*Typha* sp.) and bulrushes (*Schoenoplectus* sp.) consistent with permanent or near-permanent inundation were dominant in the MDC only at Study Site 1. Attachment C contains photographs of all five study sites on 11 August 2015, at the height of the GGS active season. The photographs show that most of the MDC was functioning as upland during the GGS active season. Vegetation in the MDC is periodically removed by the City of Davis to promote effective drainage of storm water (pers. comm., D. Ramos).

Anthropogenic (human-caused) changes in ecosystem dynamics may favor and subsidize populations of GGS predators such as domestic cats, especially in areas at the urban interface (USFWS 2006). While predators are not typically considered a substantial cause of GGS population-level decline, an abundance of predators would negatively affect the quality of potential habitat, especially in the absence of escape cover, and especially without other nearby sources of water.

Based on the lack of water (extent, depth, and duration) observed in the MDC study reach in 2015, the lack of emergent wetland vegetation present in 2015, periodic vegetation removal for drainage in the study reach, and urban influence, the portion of the MDC in the study reach does not provide suitable habitat for GGS.

GGS Known Populations and Potential Dispersal to the Project Site: The distribution of GGS is limited by both habitat suitability and relatively poor dispersal and colonization abilities (Halstead *et al*. 2015). Based on numerous studies, GGS show high site fidelity and occupy home ranges of approximately 0.066-0.170 mi^2 (USFWS 2015). Based on telemetry studies, GGS typically don't move more than about 1,000 feet in any single direction during any given season when in suitable habitat (USFWS 2015).

The nearest known populations of GGS are in Willow Slough north of the Project and in the Yolo Bypass, east of the Project. The MDC is not directly connected to Willow Slough. Both Willow Slough and the MDC drain to the Yolo Bypass. Water in the MDC drains into the Bypass through an approximately 8-ft wide, one-way metal flap gate that rests in the closed position. No water flows from the Bypass back into the MDC. There is no aquatic habitat connectivity between the MRIC site and known GGS populations. To reach the MDC within the Project site, GGS in the Yolo Bypass would need to travel over 170 ft of barren Yolo Bypass levee and then approximately 2.5 miles in the generally dry MDC, or roughly 13 times the distance GGS typically move in a season based on telemetry studies (USFWS 2015).

CONCLUSION

The portion of the MDC in the study area (including the MRIC site) does not provide suitable habitat for GGS. Although water was present in roughly 50-250 ft of the MDC near Mace Blvd during much of 2015, the water was not permanent, not deep enough to provide effective escape cover, and not of sufficient extent to support a GGS population. The MRIC site is not within dispersal distance of known GGS populations and the MDC is a poor GGS dispersal pathway.

Please contact me if you have any questions.

Yours truly,

Mike Bower, M.S.
Botanist/Biologist

Attachment A. Copy of August 2015 DEIR Mitigation Measures for Giant Garter Snake
Attachment B. Map of GGS habitat study sites
Attachment C. Photographs of GGS habitat study sites
Attachment D. GGS Study Site Hydrological Data Table

Literature Cited

Google, Inc. 8 January 2016. Google Earth (Version 7.1.5.1557) [Software]. Available from www.google.com/earth/

Halstead, B.J., Wylie, G.D., and Casazza, M.L., 2015, Literature review of giant garter snake (*Thamnophis gigas*) biology and conservation: U.S. Geological Survey Open-File Report 2015–1150. http://dx.doi.org/10.3133/ofr20151150

National Weather Service (NWS). Accessed 6 January 2015. Daily climate report for the Sacramento Executive Airport Gauge. http://www.weather.gov/climate/index.php?wfo=sto

Sycamore Environmental Consultants, Inc. (Sycamore Environmental). August 2015. Biological resources evaluation for the Mace Ranch Innovation Center Project. Prepared for the Buzz Oates Group of Companies, contact: Alisha Olson. Sycamore Environmental, Sacramento, CA.

U.S. Fish and Wildlife Service (USFWS). 1999. Draft recovery plan for the giant garter snake (*Thamnophis gigas*). U.S. Fish and Wildlife Service, Portland, OR.

U.S. Fish and Wildlife Service (USFWS). September 2006. Giant garter snake (*Thamnophis gigas*) five year review: summary and evaluation. U.S. Fish and Wildlife Service, Sacramento Fish and Wildlife Office, Sacramento, CA.

U.S. Fish and Wildlife Service (USFWS). 22 December 2015. Species account: Giant garter snake (*Thamnophis gigas*). Sacramento Fish and Wildlife Office. http://www.fws.gov/sacramento/es_species/Accounts/Amphibians-Reptiles/es_giant-garter-snake.htm

Personal Communication

Dan Ramos, Vice President, Ramco Enterprises, Inc. 7 October 2014. Onsite interview regarding offsite improvements, agricultural history, detention basin history and use, and drainage feature.

GGS Habitat Evaluation
Attachment A.

Copy of August 2015 DEIR Mitigation Measures for Giant Garter Snake inactive season, GGS could seek refuge in burrows and cracks in the upland habitat. If an off-site volume storage pond is constructed within the southern portion of the area shown in Figure 4.4-3, near the Railroad Channel, the possibility exists for GGS to be adversely impacted should GGS occur in this upland habitat.

With implementation of the following mitigation measure, development of the MRIC site near the MDC, would have a ***less-than-significant*** impact to GGS.

Mitigation Measure(s)

MRIC

4.4-3(a) *To ensure avoidance and minimization of impacts to GGS, the project applicant for the MRIC shall implement the following measures:*

Mace Drainage Channel – Preconstruction Surveys

- *Within 15 days prior to conducting any work in the Mace Drainage Channel or existing on-site detention basin, the project applicant shall retain a qualified biologist to conduct a preconstruction survey to verify that no water is present in the channel within the project limits. The preconstruction survey shall be submitted to the City of Davis Department of Community Development and Sustainability for review.*
- *The qualified biologist shall document whether aquatic habitat is present in the Mace Drainage Channel downstream of the MRIC site. If aquatic habitat is not present in the Channel between the MRIC site and CR 105 (a distance of 0.5 miles), then aquatic habitat connectivity is not present in the Mace Drainage Channel and further preconstruction surveys or construction monitoring is not required.*
- *If water is present within the on- and off-site project limits, the Mace Drainage Channel shall be dewatered for a minimum of two weeks prior to construction activities in the Channel.*
- *If the first preconstruction survey reveals that aquatic habitat is present in the Channel between the project site and CR 105, a second preconstruction survey shall be conducted within 24 hours prior to construction. The second preconstruction survey shall be submitted to the City of Davis Department of Community Development and Sustainability for review. The second preconstruction survey shall cover the portion of the Mace Drainage Channel located on the MRIC site, and areas within 200 feet of the channel. If, based on the preconstruction surveys, it is determined that potentially occupied GGS aquatic habitat occurs*

GGS Habitat Evaluation
Attachment B.

Map of GGS habitat study sites

Mace Ranch Innovation Center
Yolo County, CA
8 January 2016

Map of giant garter snake habitat study sites

Project Boundary
Mace Drainage Channel
GGS Study Sites

500 250 0 500 Feet
Scale: 1 inch = 600 feet
N

SYCAMORE Environmental Consultants, Inc.

Aerial Photograph: 2 February 2010
US-CA-Sacramento, UC-G Microsoft Imagery
ESRI World Imagery Arcmap Service Layer

14087MaceInnovation_GGSHabitat.mxd

GGS Habitat Evaluation
Attachment C.

Photographs of GGS habitat study sites

Photo 1. View from Mace Blvd (Study Site 1) looking east toward the Mace Drainage Channel (MDC). Water ±2 inches deep visible in foreground. Cattails (*Typha* sp.) dominate this portion of the MDC. 11 August 2015.

Photo 2. View east toward the MDC near the middle of the MRIC site between Study Site 1 and 2. The MDC is dry and little wetland vegetation is present. 11 August 2015.

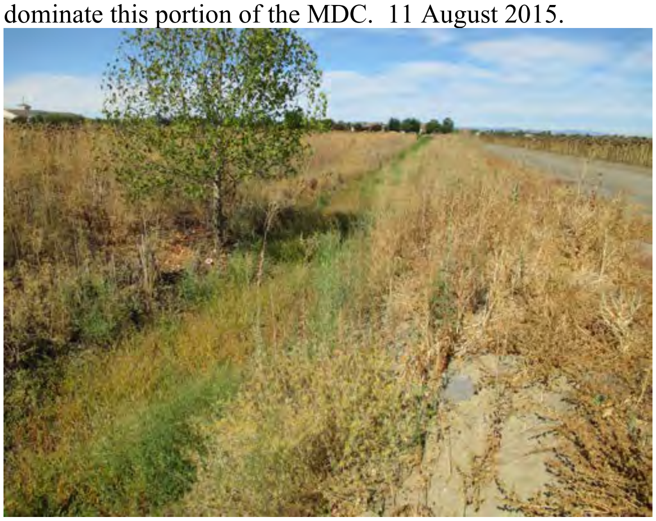


Photo 3. View west toward the MDC near the middle of the MRIC site between Study Site 1 and 2. The MDC is dry and little wetland vegetation is present. 11 August 2015.

Photo 4. View west toward the MDC at Study Site 2. The MDC is dry and vegetation is dominated by perennial pepperweed (*Lepidium latifolium*). 11 August 2015.

Photo 5. View east toward the MDC at Study Site 3, just east of the MRIC site. The MDC is dry and vegetation in the bed of the MDC (mostly *Ammi visnaga*, a plant typically found in disturbed uplands) is drying out. 11 August 2015.

Photo 6. View west toward the MDC from along Road 105 between Study Sites 3 and 4. The MDC is dry and vegetation in the MDC is dominated by perennial pepperweed and yellow star-thistle. 11 August 2015.

Photo 7. View west toward the MDC from along Road 105 at Study Site 4. The MDC is dry and dominated by perennial pepperweed. 11 August 2015.

Photo 8. View east toward the MDC from along Road 105 at Study Site 5. The MDC is dry and dominated by perennial pepperweed, Nutsedge (*Cyperus eragrostis*), and horseweed (*Erigeron* sp.). One young Chinese tallow tree (*Triadica sebifera*) on right. 11 August 2015.

GGS Habitat Evaluation
Attachment D.

GGS Study Site Hydrological Data Table

Mace Ranch Innovation Center – Hydrologic Observations

Date	Biologist	Water Present? (X = Yes)					Notes
		Site 1	Site 2	Site 3	Site 4	Site 5	
		East of Mace	West of Dirt Rd	East of Dirt Rd	West of Rd 105	East of Rd 105	
01/26/15	Noosheen Pouya	X	--	--	--	--	
01/30/15	Andy Loveall	X	--	--	No data	No data	
02/12/15	Andy Loveall	X	--	--	No data	No data	
02/20/15	Andy Loveall	X	--	--	--	--	
03/02/15	Andy Loveall	X	--	--	--	--	
03/13/15	Andy Loveall	X	--	--	--	--	
04/09/15	Noosheen Pouya	X	X	X	X	X	Water not flowing. Precipitation totaling 0.96 inches observed at Sac Executive Gauge on 7 April 2015.
04/23/15	Noosheen Pouya	X	--	--	--	--	
05/07/15	Mike Bower	X	--	--	X	X	Rd 105 water due to back up of water downstream, not flowing, unknown source, possibly irrigation related.
05/19/15	Mike Bower	X	X	--	--	--	West of Dirt Rd water due to irrigation runoff on MRIC site south of Mace Channel
06/22/15	Carly Rich	X	--	--	--	--	
07/11/15	Mike Bower	X	X	X	--	--	West of Dirt Rd water due to irrigation runoff on MRIC site south of Mace Channel.
08/11/15	Mike Bower	X	--	--	--	--	
09/11/15	Mike Bower	X	--	--	--	--	
10/10/15	Mike Bower	X	--	--	--	--	Almost no water near Mace.
11/30/15	Juan Mejia	--	--	--	--	--	No water present at all sites.

APPENDIX D

Watermark Engineering, Inc.

PATRICK L. STIEHR No. 20266 Exp. 3-20 CIVIL

DATE: February 3, 2020

TO: Matt Keasling
Dan Ramos

FROM: Patrick Stiehr, PE

RE: Applicability of MRIC Drainage Study (2015) for Aggie Research Campus Development Project

OVERVIEW

The Mace Ranch Innovation Center (MRIC) was in the development process in early 2015. The project covered 212 acres east of Mace Boulevard and north of County Road 32A. During the development and review process, a mixed-use alternative (MRIC-MU) was added. The project was put on hold later in 2015.

Development activity has since restarted at the MRIC site except for two notable changes. The new development, identified as the Aggie Research Campus, will be 25 acres smaller because the northwest corner (City of Davis property) has been removed. The second less significant change is that a housing element has been added. The housing is similar to the mixed-use alternative presented in 2015.

Watermark Engineering, Inc. prepared the drainage study for MRIC and subsequently added a second drainage study for the mixed-use alternative. The studies were very similar in the configuration of drainage facilities, and design criteria were the same. The differences were minor due to configuration changes of the land use and minor changes to the location and size of the proposed drainage facilities.

PURPOSE

The purpose of this document is to provide a discussion of the similarities between the 2015 project and the current project in relation to drainage. In addition, the 2015 drainage study provides sufficient information for the Aggie Research Campus (ARC) to move forward with environmental documents.

It is noted here that the 2015 drainage study was complete, but it was not considered a design level document. The reason is that there would be numerous small design decisions that had not been completed. The configuration and sizing of the drainage had been established but were going to be refined as more of the development details were finalized.

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Mobile: 916- 715- 1167, email: pstiehr@wtrmark.com

There are six main drainage concerns that were addressed in the 2015 study. A discussion of each of the concerns follows with information that supports that the 2015 study is also applicable to the proposed ARC.

Regulatory Floodplain

The 2015 study indicated that the project area is not within the FEMA regulatory floodplain. There are no changes to that information, and the information is applicable to the ARC.

Local Flooding

The onsite drainage facilities are planned to drain impervious areas to roadside shallow ditches and landscaped gentle swales that release runoff to local detention areas. The actual layout will undoubtedly change, but the concept remains and is applicable to the ARC.

Most of the local runoff will be managed along surface facilities with minimal use of storm drain piping. The details and configuration of the drainage facilities for the ARC will be designed based on the concepts presented in the 2015 study.

Water Quality

The approach to water quality will not change with the relatively minor land use changes. Infiltration and water quality requirements are similar for both ARC and the original MRIC. The surface facilities will be resized and designed to meet current standards.

Upstream Impacts

The modeling analysis within the 2015 study demonstrated that upstream water levels would not increase as a result of the proposed MRIC development. No significant changes to the proposed drainage facilities are proposed or expected for the ARC. As development details become available, the existing modeling and analysis will be updated to confirm no upstream impacts. This is the same approach that was planned for the MRIC in 2015.

Downstream Impacts – Conveyance

The 2015 study included onsite detention areas to attenuate peak runoff from the site to meet design capacity criteria in the downstream receiving channel. There is less area proposed for the ARC, but the site will have an overall higher percentage of imperviousness. Less area means less runoff, but greater imperviousness increases both peak and volume of runoff.

The effects of these two changes will be incorporated into the drainage model, and the size and configuration of the detention and conveyance facilities will be modified to attenuate flows leaving the site to acceptable levels with no impact to downstream conveyance facilities.

Downstream Impacts – Increased Runoff

This issue has a long history as a result of a lawsuit by downstream landowners that claimed the Mace Ranch development increased flooding on the agricultural lands. The Mace Ranch development included the installation of an oversized new outfall into the Yolo Bypass as mitigation. As a result, in most years, there is comparative less flooding on the ag properties just west of the Yolo Bypass levee. However, that was not sufficient.

To account for the increased runoff from the impervious portions of MRIC, two mitigation measures were presented in the 2015 study. The first was a replacement storage option where a field could be lowered to store the incremental increased runoff volume. The recommended field was the southeastern parcel adjacent to the Yolo Bypass levee and the drainage channel, although another nearby field would work. The plan was to lower the field a foot or two by first removing the topsoil and then lowering the field and moving the dirt out of the floodplain, and finally putting the topsoil back in place for continued farming.

The second proposed mitigation measure was to install a small permanent or portable pump to be used when the bypass water level is higher than the ponding level in the adjacent land-side fields. This measure was less attractive because of the ongoing effort needed to ensure the facility is fully functional when needed, which would only average about once every three to five years.

Note that either measure would have a benefit-cost ratio of much less than one. However, either measure meets the goal of no increased ponding depth because of the increased runoff from development.

The same approach would be used for the ARC if necessary. The only difference would be the net volume change, based on less developed area but with more imperviousness.

SUMMARY

There are no significant changes to the land use or the proposed drainage facilities from the 2015 MRIC development to today's ARC planned development. The differences are in the details that are not yet known, similar to when the MRIC project was halted.

There will be more details to revise because of the smaller footprint and greater imperviousness. However, the conceptual level details presented in the 2015 study are applicable to the ARC project.

In my professional opinion, there are no significant differences between the MRIC project and the ARC project that would materially or significantly impact the drainage facilities as set forth in the 2015 study.

Watermark Engineering, Inc.

REGISTERED PROFESSIONAL ENGINEER
PATRICK L. STIEHR
No. 20298
Exp. 3-20
CIVIL
STATE OF CALIFORNIA

DATE: February 10, 2020

TO: Nick Pappani

FROM: Patrick Stiehr, PE

RE: Applicability of MRIC Drainage Study (2015) for Aggie Research Campus Development Project – Supplemental Professional Opinion Letter

Dear Mr. Pappani,

This supplemental memorandum provides additional information and clarification pertaining to the "Applicability of MRIC Drainage Study (2015) for Aggie Research Campus Development Project" memorandum that was submitted on February 4, 2020. The issues addressed in this document respond specifically to questions that were raised in a public comment on the scope of your environmental analysis of the Aggie Research Campus (ARC), which you subsequently posed to me.

I believe that these questions pertaining to changed impacts and/or changed mitigations were addressed in the analysis previously provided; specifically, in the SUMMARY section and shown below:

> There are no significant changes to the land use or the proposed drainage facilities from the 2015 MRIC development to today's ARC planned development…
> …
> [A] preliminary comparison of the former and proposed project differences indicate the conceptual level details presented in the 2015 study are applicable to the ARC project.
> …
> In my professional opinion, there are no significant differences between the MRIC project and the ARC project that would materially or significantly impact the drainage facilities as set forth in the 2015 study.

In response to your email, I have made some additional calculations and made additional model runs using the dynamic hydrologic and hydraulic model that was used in the original analysis. The modeling analysis is comprehensive and accurate but note that there are many design details that will be further refined as the project moves through the design process. This additional effort has added support and strengthens my professional opinion that the drainage analysis from the MRIC mixed-use alternative (MRIC-MU) and the proposed mitigations are applicable to ARC without the need for revision at this stage of the development.

The following includes a statement of, and responses to, the specific inquiries posed:

1. *Provide a qualitative assessment of the implications of the ARC land use changes, i.e. less acreage proposed for the ARC but an overall higher percentage of imperviousness, upon the increase in the rate and amount of runoff volume.*

RESPONSE: Based on a preliminary comparison of the proposed site design, there is a decrease of about 12% in area, and an estimated 11% increase in imperviousness. These two parameters can't be combined directly but the net effect will be a small decrease in the overall peak flow and volume. The estimated 100-year peak unit runoff from the proposed ARC site is about 1.8 cfs per acre compared to about 1.7 cfs per acre for the prior project. The increase over the 187 acre ARC site would be about 19 cfs. However, there are 25 less acres for the ARC project which means to total peak flow would be decreased by about 42 cfs (25 acres x 1.7 cfs per acre). The net decrease of peak flow is expected to be between 10 and 30 cfs, though exact decreases will be determined at later stages of the development refinement.

The volume is expected to be slightly less based on similar assumptions and calculations. The increase volume of runoff will be about four acre-feet because of the expected increase of imperviousness. The reduction of 25 acres will decrease the runoff volume about five acre-feet. The runoff volume will remain in the range of 44-45 acre feet. There is little or no difference in runoff volume between the MRIC-MU project and the ARC project.

2. *Would the amount of runoff be expected to be more or less than originally estimated?*

RESPONSE: The response is the same as above. The overall change will be minor. The degree of modification to the drainage facilities resulting from the change from MRIC-MU to ARC is not atypical of changes that occur in most development projects as the drainage study goes from conceptual to design level.

3. *Is it anticipated that the on-site attenuation facilities could continue to be adequately sized such that the amount of flow leaving the site will not exceed the original design capacity flow of MDC (260 cfs – see pg. 4.9-24 of the EIR)?*

RESPONSE: The comparison between ARC and MRIC-MU indicates that downstream maximum flow criteria will not be exceeded; i.e. the flow leaving the site will not exceed 260 cfs.

4. *Is the off-site storage pond, analyzed as approx. 100-acres in the MRIC-MU analysis, appropriately sized?*

RESPONSE: Because the volume and rate of flow are expected to be similar or less with ARC compared to MRIC-MU, the 100-acres previously identified will continue to be adequate. However, just to be clear, even if the project-level design analysis determines that there will be an increase in volume, the changed volume might require less than 0.1 foot of greater depth, but would not require additional acreage. Furthermore, it is worth noting that the off-site storage pond is only one of several available options to address increased volume downstream; the ponding could also be addressed with a temporary or permanent pump, or other mitigation deemed appropriate by the City.

APPENDIX E

February 19, 2020

Nick Pappani
Raney Planning & Management
1501 Sports Drive
Sacramento, California 95834
cindygnos@raneymanagement.com

Subject: **Traffic noise review for the Aggie Research Campus (ARC) project– City of Davis, California**

Dear Mr. Pappani:

Saxelby Acoustics has prepared the following analysis of traffic noise impacts associated with the above-referenced project. The intent of this analysis is to determine whether the proposed project's traffic noise increases would result in impacts greater than that assumed under the Mace Ranch Innovation Center Project DEIR. The following outlines the criteria used to evaluate traffic noise increase from the DEIR and a revaluation of the Aggie Research Campus traffic noise levels versus those criteria.

CRITERIA

Off-site traffic noise increase threshold test

The test of significance for increases in off-site traffic noise is two-fold. First, traffic noise levels are reviewed to see if the project's contribution to traffic noise would exceed the FICON levels identified in Table 4.11-9 of the DEIR [**Table 1**]. If the project's increase in traffic noise levels along surrounding roadways would exceed the FICON criteria shown in **Table 1**, the proposed project would be considered to have a significant noise impact along that roadway segment.

TABLE 1: SIGNIFICANCE OF CHANGES IN NOISE EXPOSURE

Ambient Noise Level Without Project, Ldn	Increase Required for Significant Impact
<60 dB	+5.0 dB or more
60-65 dB	+3.0 dB or more
>65 dB	+1.5 dB or more

FICON provides guidance in the assessment of changes in ambient noise levels resulting from aircraft operations. The recommendations are based upon studies that relate aircraft noise levels to the percentage of persons highly annoyed by the noise. Although the FICON recommendations were specifically developed to assess aircraft noise impacts, it has been widely accepted that they are applicable to all sources of noise described in terms of cumulative noise exposure metrics such as the Ldn.

SOURCE: FEDERAL INTERAGENCY COMMITTEE ON NOISE (FICON)

The second part of the significance test would be applied if the project does not result in the traffic noise level increases shown in **Table 1** (i.e., the project does not exceed the FICON criteria). In this case, each roadway segment is assessed to determine whether the project's traffic noise contribution would cause any receptors along the roadway to be exposed to exterior noise levels exceeding the City's General Plan Noise Element standards. Specifically, Noise Element Policy 1.1-c requires the following:

> New development and changes in use shall generally be allowed only if they will not adversely impact attainment within the community of the exterior and interior noise standards shown in Table 19 [Table 4.11-7 of DEIR] and Table 20 [Table 4.11-8 of DEIR] Cumulative and project specific impacts by new development on existing residential land uses shall be mitigated consistent with the standards in Table 19 [Table 4.11-7 of DEIR] and Table 20 [Table 4.11-8 of DEIR].

For residential uses, Table 19 [Table 4.11-7 of DEIR] establishes a Normally Acceptable exterior noise level standard of 60 dB L_{dn}. Therefore, if an existing residential receptor is exposed to existing noise levels of less than 60 dB L_{dn}, any project-related traffic noise level increase that causes noise levels to exceed 60 dB L_{dn} would be considered significant. If an existing receptor is exposed to conditionally acceptable exterior noise levels (60 to 70 dB) the FICON criteria shown in **Table 1** would be used as the test of significance.

FUTURE TRAFFIC NOISE ENVIRONMENT AT OFF-SITE RECEPTORS

Off-Site Traffic Noise Impact Assessment Methodology

To assess noise impacts due to project-related traffic increases on the local roadway network, traffic noise levels are predicted at sensitive receptors for existing and future, project and no-project conditions.

Existing and Cumulative noise levels due to traffic were calculated using the Federal Highway Administration Highway Traffic Noise Prediction Model (FHWA RD-77-108). The model is based upon the Calveno reference noise factors for automobiles, medium trucks and heavy trucks, with consideration given to vehicle volume, speed, roadway configuration, distance to the receiver, and the acoustical characteristics of the site.

The FHWA model was developed to predict hourly L_{eq} values for free-flowing traffic conditions. To predict traffic noise levels in terms of L_{dn}, it is necessary to adjust the input volume to account for the day/night distribution of traffic.

Project trip generation volumes were provided by the project traffic engineer (Fehr & Peers, February 2020), truck usage and vehicle speeds on the local area roadways were estimated from field observations. The predicted increases in traffic noise levels on the local roadway network for Existing and Cumulative conditions which would result from the project are provided in terms of L_{dn}.

Traffic noise levels are predicted at the sensitive receptors located at the closest typical setback distance along each project-area roadway segment. In some locations sensitive receptors may not receive full shielding from noise barriers, or may be located at distances which vary from the assumed calculation distance. **Table 2** shows the results of this analysis for Existing and Existing Plus Project conditions. **Table 3** shows the results for Cumulative and Cumulative Plus Project conditions. **Appendix A** shows the complete inputs and results of the traffic noise analysis.

TABLE 2: EXISTING AND EXISTING PLUS ARC PROJECT TRAFFIC NOISE LEVELS

Roadway	Segment	Noise Levels (L_{dn}, dB) at Outdoor Activity Areas of Nearest Sensitive Receptors				
		Existing	Existing + Project	Change	Significance Criteria[1]	Significant? (Y/N)
Alhambra	South of Covell	51.9	52.0	0.1	+5 dB or > 60 dB	No
Alhambra	West of Mace	54.0	55.5	1.5	+5 dB or > 60 dB	No
Covell Blvd.	L to Pole Line	63.2	63.9	0.7	+3 dB	No
Covell Blvd.	Pole Line to Birch	62.8	64.1	1.3	+3 dB	No
Covell Blvd.	Birch to Baywood	62.4	63.7	1.3	+3 dB	No
Covell Blvd.	Baywood to Manzanita	62.6	63.9	1.3	+3 dB	No
Covell Blvd.	Manzanita to Wright	60.1	61.5	1.4	+3 dB	No
Covell Blvd.	Wright to Monarch	60.4	61.8	1.4	+3 dB	No
Covell Blvd.	Monarch to Alhambra	61.8	63.2	1.4	+3 dB	No
Covell Blvd.	Alhambra to Harper JR HS	61.0	62.6	1.6	+3 dB	No
Cowell Blvd	Drummond to Mace	58.9	59.1	0.2	+5 dB or > 60 dB	No
Cowell Blvd	East of Mace	56.9	57.0	0.1	+5 dB or > 60 dB	No
Mace Blvd.	Harper JR HS to Alhambra	51.0	52.4	1.4	+5 dB or > 60 dB	No
Mace Blvd.	Alhambra to 2nd	63.0	64.4	1.4	+3 dB	No
Mace Blvd.	Chiles to Cowell	53.9	54.2	0.3	+5 dB or > 60 dB	No
Mace Blvd.	Cowell to El Macero	61.3	61.5	0.2	+3 dB	No
Mace Blvd.	South of El Macero	60.2	60.4	0.1	+3 dB	No
Pole Line Road	North of Covell	66.3	66.7	0.4	+1.5 dB	No
Pole Line Road	Covell to Claremont	60.9	61.0	0.0	+3 dB	No

[1] Where existing noise levels are less than 60 dB an increase of 5 dB would be a significant increase. Additionally, any increase causing noise levels to exceed the City's Normally Acceptable 60 dB L_{dn} noise level standard at an existing residential use would also be significant. Where existing noise levels exceed 60 dB but are less than 65 dB, an increase of 3 dB or more would be significant. Where existing noise levels exceed 65 dB, an increase of 1.5 dB or more would be significant.

[2] Traffic noise levels do not account for shielding from existing noise barriers or intervening structures. Traffic noise levels may vary depending on actual setback distances and localized shielding.

TABLE 3: CUMULATIVE AND CUMULATIVE PLUS ARC PROJECT TRAFFIC NOISE LEVELS

Roadway	Segment	Noise Levels (L_{dn}, dB) at Outdoor Activity Areas of Nearest Sensitive Receptors				
		Cumulative	Cumulative + Project	Change	Significance Criteria[1]	Significant? (Y/N)
Alhambra	South of Covell	52.6	52.6	0.0	+5 dB or > 60 dB	No
Alhambra	West of Mace	56.7	57.6	0.9	+5 dB or > 60 dB	No
Covell Blvd.	L to Pole Line	63.6	64.3	0.7	+3 dB	No
Covell Blvd.	Pole Line to Birch	63.3	64.4	1.2	+3 dB	No
Covell Blvd.	Birch to Baywood	62.9	64.1	1.2	+3 dB	No
Covell Blvd.	Baywood to Manzanita	63.1	64.3	1.2	+3 dB	No
Covell Blvd.	Manzanita to Wright	60.6	61.9	1.3	+3 dB	No
Covell Blvd.	Wright to Monarch	61.0	62.2	1.2	+3 dB	No
Covell Blvd.	Monarch to Alhambra	62.2	63.5	1.3	+3 dB	No
Covell Blvd.	Alhambra to Harper JR HS	61.5	63.0	1.5	+3 dB	No
Cowell Blvd	Drummond to Mace	61.5	61.6	0.1	+3 dB	No
Cowell Blvd	East of Mace	57.2	57.2	0.1	+5 dB or > 60 dB	No
Mace Blvd.	Harper JR HS to Alhambra	51.5	52.7	1.3	+5 dB or > 60 dB	No
Mace Blvd.	Alhambra to 2nd	64.2	65.4	1.2	+3 dB	No
Mace Blvd.	Chiles to Cowell	55.1	55.3	0.2	+5 dB or > 60 dB	No
Mace Blvd.	Cowell to El Macero	61.7	61.9	0.2	+3 dB	No
Mace Blvd.	South of El Macero	60.7	60.8	0.1	+3 dB	No
Pole Line Road	North of Covell	67.0	67.3	0.4	+1.5 dB	No
Pole Line Road	Covell to Claremont	61.6	61.6	0.0	+3 dB	No

[1] Where existing noise levels are less than 60 dB an increase of 5 dB would be a significant increase. Additionally, any increase causing noise levels to exceed the City's Normally Acceptable 60 dB L_{dn} noise level standard at an existing residential use would also be significant. Where existing noise levels exceed 60 dB but are less than 65 dB, an increase of 3 dB or more would be significant. Where existing noise levels exceed 65 dB, an increase of 1.5 dB or more would be significant.

[2] Traffic noise levels do not account for shielding from existing noise barriers or intervening structures. Traffic noise levels may vary depending on actual setback distances and localized shielding.

The project-related increases in transportation noise levels would be less than the FICON criteria outlined in **Table 1** above. As shown in the table, some noise-sensitive receptors located along the project-area roadways are currently exposed to exterior traffic noise levels exceeding the City of Davis 60 dB Ldn exterior noise level standard for residential uses. These receptors would continue to experience elevated exterior noise levels with implementation of the proposed project; however, the proposed project's contribution to traffic noise increases is predicted to be 1.6 dB, or less. For example, sensitive receptors located adjacent to Covell Boulevard from Pole Line Road to Birch Lane currently experience an exterior noise level of approximately 62.8 dB Ldn. This exceeds the City's Normally Acceptable exterior noise level standard of 60 dB Ldn. Under Existing Plus Project conditions, exterior traffic noise levels are predicted to be approximately 64.1 dB Ldn. This would still exceed the City's Normally Acceptable exterior noise level standard of 60 dB Ldn. However, the project's contribution 1.3 dB would not exceed the FICON criteria of 3.0 dB where existing noise levels are between 60 and 65 dB. Therefore, this would be a less than significant impact at this particular location.

With respect to the second part of the test of significance**, Table 2** and **Table 3** demonstrate that the proposed project is not predicted to cause increases in existing traffic noise levels which would trigger a new exceedance of the City of Davis' 60 dB Ldn exterior noise level standard at sensitive receptor locations.

Therefore, traffic-related noise increases attributable to project vehicles would result in less than significant impacts to existing sensitive receptors along nearby roadways. These findings are consistent with the findings of the Mace Ranch Innovation Center DEIR and this impact would remain less than significant.

<u>Mitigation Measure(s)</u>
None required.

FUTURE TRAFFIC NOISE ENVIRONMENT AT ON-SITE RECEPTORS

Exterior Noise Levels

Under the Mace Ranch Innovation Center DEIR, future traffic noise levels on the project site were predicted to range between 60-65 dBA at the various proposed noise-sensitive uses. Since the preparation of the DEIR, no substantial increase in railroad operations or Interstate 80 traffic volumes is known to have occurred. However, predicted cumulative traffic volumes for Mace Boulevard have increased from approximately 26,040 vehicles per day to 29,590. This would result in an increase of on-site traffic noise levels of approximately 0.56 dBA. This would potentially result in on-site noise levels increasing up to 0.56 dBA, or 60.5-65.5 dBA at on-site receptors. This increase would not be perceptible and would result in noise levels which do not exceed the City's 60-70 dBA conditionally acceptable noise standard range for residential uses and 65-75 dBA conditionally acceptable range for transient lodging and office, business commercial, and professional uses. These findings are consistent with the findings of the Mace Ranch Innovation Center DEIR and this impact would remain less than significant.

Interior Noise Levels

Exterior noise levels are predicted to be 60.5-65.5 dB Ldn, or less at each of the proposed MRIC use areas. Typical construction measures provide a 25 dB exterior-to-interior noise level reduction. Therefore, interior noise levels are predicted to be less than 40.5 dB Ldn for all proposed MRIC uses. This would comply with the City's 45 dB Ldn standard for residential type uses (hotel) and 55 dB Ldn standard for office uses. These findings are consistent with the findings of the Mace Ranch Innovation Center DEIR and this impact would remain less than significant.

Sincerely,

Saxelby Acoustics LLC

Luke Saxelby, INCE Bd. Cert.
Principal Consultant
Board Certified, Institute of Noise Control Engineering

Appendix A: Traffic Noise Calculation Inputs and Results

Appendix A-1

FHWA-RD-77-108 Highway Traffic Noise Prediction Model

Project #: 190904

Description: Aggies Research Campus - Existing Traffic

Ldn/CNEL: Ldn

Hard/Soft: Soft

Segment	Roadway Segment	ADT	Day %	Eve %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)	Contours (ft.) - No Offset 60 dBA	65 dBA	70 dBA	Level, dBA
1	Alhambra	3,020	85	0	15	1.0%	1.0%	30	60	-5	37	17	8	51.9
2	Alhambra	4,850	85	0	15	1.0%	1.0%	30	60	-5	51	24	11	54.0
3	Covell Blvd.	19,960	83	0	17	1.0%	1.0%	35	100	0	163	76	35	63.2
4	Covell Blvd.	15,650	83	0	17	1.0%	1.0%	35	90	0	139	64	30	62.8
5	Covell Blvd.	15,510	83	0	17	1.0%	1.0%	35	95	0	138	64	30	62.4
6	Covell Blvd.	14,890	83	0	17	1.0%	1.0%	35	90	0	134	62	29	62.6
7	Covell Blvd.	14,490	83	0	17	1.0%	1.0%	35	60	-5	132	61	28	60.1
8	Covell Blvd.	15,530	83	0	17	1.0%	1.0%	35	60	-5	138	64	30	60.4
9	Covell Blvd.	15,360	83	0	17	1.0%	1.0%	40	60	-5	170	79	37	61.8
10	Covell Blvd.	12,820	83	0	17	1.0%	1.0%	40	60	-5	150	70	32	61.0
11	Cowell Blvd	3,740	85	0	15	1.0%	1.0%	25	40	0	34	16	7	58.9
12	Cowell Blvd	4,370	85	0	15	1.0%	1.0%	25	60	0	37	17	8	56.9
13	Mace Blvd.	12,950	83	0	17	1.0%	1.0%	40	600	0	151	70	33	51.0
14	Mace Blvd.	17,080	83	0	17	1.0%	1.0%	40	115	0	182	85	39	63.0
15	Mace Blvd.	10,090	83	0	17	1.0%	1.0%	40	325	0	128	60	28	53.9
16	Mace Blvd.	6,700	83	0	17	1.0%	1.0%	35	65	0	79	37	17	61.3
17	Mace Blvd.	5,310	83	0	17	1.0%	1.0%	35	65	0	68	31	15	60.2
18	Pole Line Road	14,830	85	0	15	1.0%	1.0%	40	60	0	158	73	34	66.3
19	Pole Line Road	10,990	85	0	15	1.0%	1.0%	25	60	0	69	32	15	60.9

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Appendix A-2

FHWA-RD-77-108 Highway Traffic Noise Prediction Model

Project #: 190904
Description: Aggies Research Campus - Existing Plus Project Traffic
Ldn/CNEL: Ldn
Hard/Soft: Soft

											Contours (ft.) - No Offset			
Segment	Roadway Segment	ADT	Day %	Eve %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)	60 dBA	65 dBA	70 dBA	Level, dBA
1	Alhambra	3,060	85	0	15	1.0%	1.0%	30	60	-5	38	18	8	52.0
2	Alhambra	6,850	85	0	15	1.0%	1.0%	30	60	-5	65	30	14	55.5
3	Covell Blvd.	23,630	83	0	17	1.0%	1.0%	35	100	0	183	85	39	63.9
4	Covell Blvd.	20,930	83	0	17	1.0%	1.0%	35	90	0	169	78	36	64.1
5	Covell Blvd.	20,820	83	0	17	1.0%	1.0%	35	95	0	168	78	36	63.7
6	Covell Blvd.	20,280	83	0	17	1.0%	1.0%	35	90	0	165	77	36	63.9
7	Covell Blvd.	19,930	83	0	17	1.0%	1.0%	35	60	-5	163	76	35	61.5
8	Covell Blvd.	21,280	83	0	17	1.0%	1.0%	35	60	-5	170	79	37	61.8
9	Covell Blvd.	21,160	83	0	17	1.0%	1.0%	40	60	-5	210	98	45	63.2
10	Covell Blvd.	18,660	83	0	17	1.0%	1.0%	40	60	-5	193	90	42	62.6
11	Cowell Blvd	3,950	85	0	15	1.0%	1.0%	25	40	0	35	16	8	59.1
12	Cowell Blvd	4,470	85	0	15	1.0%	1.0%	25	60	0	38	18	8	57.0
13	Mace Blvd.	17,770	83	0	17	1.0%	1.0%	40	600	0	187	87	40	52.4
14	Mace Blvd.	23,430	83	0	17	1.0%	1.0%	40	115	0	225	104	48	64.4
15	Mace Blvd.	10,750	83	0	17	1.0%	1.0%	40	325	0	134	62	29	54.2
16	Mace Blvd.	7,050	83	0	17	1.0%	1.0%	35	65	0	82	38	18	61.5
17	Mace Blvd.	5,480	83	0	17	1.0%	1.0%	35	65	0	69	32	15	60.4
18	Pole Line Road	16,390	85	0	15	1.0%	1.0%	40	60	0	169	78	36	66.7
19	Pole Line Road	11,040	85	0	15	1.0%	1.0%	25	60	0	69	32	15	61.0

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Appendix A-3

FHWA-RD-77-108 Highway Traffic Noise Prediction Model

Project #: 190904

Description: Aggies Research Campus - Cumulative Traffic

Ldn/CNEL: Ldn

Hard/Soft: Soft

											Contours (ft.) - No Offset			
Segment	Roadway Segment	ADT	Day %	Eve %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)	60 dBA	65 dBA	70 dBA	Level, dBA
1	Alhambra	3,500	85	0	15	1.0%	1.0%	30	60	-5	41	19	9	52.6
2	Alhambra	9,100	85	0	15	1.0%	1.0%	30	60	-5	78	36	17	56.7
3	Covell Blvd.	22,000	83	0	17	1.0%	1.0%	35	100	0	174	81	38	63.6
4	Covell Blvd.	17,400	83	0	17	1.0%	1.0%	35	90	0	149	69	32	63.3
5	Covell Blvd.	17,300	83	0	17	1.0%	1.0%	35	95	0	148	69	32	62.9
6	Covell Blvd.	16,700	83	0	17	1.0%	1.0%	35	90	0	145	67	31	63.1
7	Covell Blvd.	16,200	83	0	17	1.0%	1.0%	35	60	-5	142	66	31	60.6
8	Covell Blvd.	17,500	83	0	17	1.0%	1.0%	35	60	-5	150	69	32	61.0
9	Covell Blvd.	17,100	83	0	17	1.0%	1.0%	40	60	-5	182	85	39	62.2
10	Covell Blvd.	14,400	83	0	17	1.0%	1.0%	40	60	-5	163	75	35	61.5
11	Cowell Blvd	6,800	85	0	15	1.0%	1.0%	25	40	0	50	23	11	61.5
12	Cowell Blvd	4,600	85	0	15	1.0%	1.0%	25	60	0	39	18	8	57.2
13	Mace Blvd.	14,300	83	0	17	1.0%	1.0%	40	600	0	162	75	35	51.5
14	Mace Blvd.	22,400	83	0	17	1.0%	1.0%	40	115	0	218	101	47	64.2
15	Mace Blvd.	13,200	83	0	17	1.0%	1.0%	40	325	0	153	71	33	55.1
16	Mace Blvd.	7,400	83	0	17	1.0%	1.0%	35	65	0	84	39	18	61.7
17	Mace Blvd.	5,900	83	0	17	1.0%	1.0%	35	65	0	72	34	16	60.7
18	Pole Line Road	17,300	85	0	15	1.0%	1.0%	40	60	0	175	81	38	67.0
19	Pole Line Road	12,700	85	0	15	1.0%	1.0%	25	60	0	76	35	16	61.6

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Appendix A-4

FHWA-RD-77-108 Highway Traffic Noise Prediction Model

Project #: 190904
Description: Aggies Research Campus - Cumulative Plus Project Traffic
Ldn/CNEL: Ldn
Hard/Soft: Soft

Segment	Roadway Segment	ADT	Day %	Eve %	Night %	% Med. Trucks	% Hvy. Trucks	Speed	Distance	Offset (dB)	Contours (ft.) - No Offset 60 dBA	65 dBA	70 dBA	Level, dBA
1	Alhambra	3,540	85	0	15	1.0%	1.0%	30	60	-5	42	19	9	52.6
2	Alhambra	11,090	85	0	15	1.0%	1.0%	30	60	-5	89	41	19	57.6
3	Covell Blvd.	25,670	83	0	17	1.0%	1.0%	35	100	0	193	90	42	64.3
4	Covell Blvd.	22,680	83	0	17	1.0%	1.0%	35	90	0	178	83	38	64.4
5	Covell Blvd.	22,610	83	0	17	1.0%	1.0%	35	95	0	177	82	38	64.1
6	Covell Blvd.	22,090	83	0	17	1.0%	1.0%	35	90	0	175	81	38	64.3
7	Covell Blvd.	21,640	83	0	17	1.0%	1.0%	35	60	-5	172	80	37	61.9
8	Covell Blvd.	23,250	83	0	17	1.0%	1.0%	35	60	-5	181	84	39	62.2
9	Covell Blvd.	22,900	83	0	17	1.0%	1.0%	40	60	-5	222	103	48	63.5
10	Covell Blvd.	20,240	83	0	17	1.0%	1.0%	40	60	-5	204	95	44	63.0
11	Cowell Blvd	7,010	85	0	15	1.0%	1.0%	25	40	0	51	24	11	61.6
12	Cowell Blvd	4,700	85	0	15	1.0%	1.0%	25	60	0	39	18	8	57.2
13	Mace Blvd.	19,120	83	0	17	1.0%	1.0%	40	600	0	196	91	42	52.7
14	Mace Blvd.	29,590	83	0	17	1.0%	1.0%	40	115	0	263	122	57	65.4
15	Mace Blvd.	13,860	83	0	17	1.0%	1.0%	40	325	0	159	74	34	55.3
16	Mace Blvd.	7,750	83	0	17	1.0%	1.0%	35	65	0	87	40	19	61.9
17	Mace Blvd.	6,070	83	0	17	1.0%	1.0%	35	65	0	74	34	16	60.8
18	Pole Line Road	18,860	85	0	15	1.0%	1.0%	40	60	0	185	86	40	67.3
19	Pole Line Road	12,750	85	0	15	1.0%	1.0%	25	60	0	76	35	16	61.6

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APPENDIX F

Aggie Research Campus

Volume 1 – Transportation Impact Study

Prepared for:
Raney Planning & Management, Inc.

March 2020

RS19-3828.01

FEHR & PEERS

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1. Introduction

This study describes existing transportation conditions (environmental and regulatory) and analyzes the potential of the proposed Aggie Research Campus project (the project) to affect the surrounding transportation environment in accordance with current CEQA Guidelines. The analysis evaluates potential impacts to vehicle miles traveled (VMT) and transit, bicycle, and pedestrian components of the transportation system that may result from the proposed project, as well as impacts during project construction. Where necessary and feasible, mitigation measures are identified to reduce these impacts.

An accompanying document, the Aggie Research Campus Traffic Operations Analysis (Volume 2) presents an analysis of the potential effects of the proposed project with respect to traffic operations (i.e., vehicle delay) on roadway facilities within the vicinity of the project site. This analysis is deliberately separate from the transportation impact study in Volume 1 in accordance with the CEQA Guidelines, which no longer permit the use of vehicle delay or level of service (LOS) for the purposes of identifying environmental impacts for land use projects. This analysis has been prepared for two primary reasons. First, it informs other components of the transportation impact analysis (e.g., potential impacts to transit services) and other topics addressed in the Aggie Research Campus SEIR (e.g., air quality, noise, GHG, etc.). Second, it directly addresses the proposed project's consistency with City of Davis General Plan policies related to traffic operations and level of service.

Purpose

This impact analysis supports the Supplemental Environmental Impact Report (SEIR) prepared for the ARC project. The SEIR evaluates the extent to which changes to the project, changes to background circumstances, and/or new information would result in new significant environmental effects or a substantial increase in the severity of previously identified significant effects as described in the Mace Ranch Innovation Center (MRIC) Final Environmental Impact Report (EIR), certified by the City of Davis in September 2017. An overview of those changed conditions is described in the following section.

Changes to Project, Changes to Background Circumstances, and New Information

The following describes the meaningful changes in analysis methods, background travel conditions, environmental thresholds, and other considerations between the publication of the MRIC Final EIR and present conditions:

1. **Mace Boulevard Traffic –** The existing conditions analysis and subsequent impact analyses in the MRIC Final EIR utilized baseline traffic count data collected in October 2014. Traffic counts conducted in May and October of 2019 indicate that peak hour traffic volumes on roadways within the vicinity of the project site have increased substantially since that time, particularly during the PM peak hour. This is primarily due to increased delays and extended periods of congested conditions on eastbound I-80, diverted regional travel demand onto local roadways, the increased prevalence of navigation apps (e.g., WAZE), and changes to roadway capacity and operations, particularly modifications to the eastbound I-80 ramp meters and the four-to-two lane reduction on Mace Boulevard south of Cowell Boulevard. Therefore, the baseline traffic conditions that the project would interact with on study area roadways reflect higher levels of traffic volumes and delay than those studied in the Certified Final EIR. For example, these changed conditions affect southbound Mace Boulevard north of the interchange, a critical movement to which the project would add substantial PM peak hour travel demand. Thus, as a result, project effects may differ for various modes of travel, new travel routes may be selected, and the types of and site access improvements may change. This is discussed in more detail in Volume 2.

2. **Changes to the Project Description** – Although land uses have not technically changed, several subtle modifications to the project description for the mixed-use alternative analyzed in the MRIC EIR have occurred. This includes differing assumptions regarding the extent to which the project's housing and retail component complements its other uses, as well as modifications to project access and off-site transportation improvements. This is discussed in more detail in Chapter 3.
3. **Updated Trip Generation Rates Published by the Institute of Transportation Engineers (ITE)** – the MRIC EIR relied upon the then most recent *Trip Generation Manual*, which was the 9th edition released in 2010. The 10th edition was released in 2017. It includes several new land use categories, and material changes in trip rates for certain land use categories that are part of the proposed project.
4. **New Travel Demand Model** – In 2016, an updated travel demand model was developed as part of the UC Davis Long Range Development Plan (LDRP). This updated model covers the entire City of Davis and UC Davis campus, is calibrated to 2019 conditions, and has a 2036 horizon year. In contrast, the 2014 MRIC EIR relied upon the then most recent version of the City's travel demand model, which was originally developed in 2004.
5. **New Highway Capacity Manual (HCM)** – The 6th Edition of the HCM (Transportation Research Board, 2016) is used in this study, whereas the 2010 HCM was used in the MRIC EIR.
6. **Changes to the CEQA Guidelines** – SB 743 will go into effect statewide starting July 1, 2020. This law states that intersection level of service (or similar measures) should not be used in CEQA documents for purposes of identifying significant impacts of land use projects. Instead, Vehicle

Miles of Travel (VMT) should be used. The California Office of Planning & Research (OPR) released a *Technical Advisory on Evaluating Transportation Impacts in CEQA* in 2018 that described appropriate methods for estimating VMT, threshold setting for significance criteria, and related topics. Intersection LOS results are presented in Volume 2 for informational purposes and to help properly size project access intersections.

Analysis Scenarios

The following scenarios are analyzed in this study:

- **Existing Conditions –** Establishes the existing setting, which is used to measure the significance of project impacts.
- **Existing Plus Project Conditions –** Adds changes to travel demand resulting from buildout of the proposed project to existing conditions.
- **Cumulative No Project Conditions –** Represents cumulative travel demand based on reasonably foreseeable local and regional land use and transportation system changes. For the purposes of this study, the cumulative year is 2036. This scenario assumes the project site remains vacant.
- **Cumulative Plus Project Conditions –** Adds changes to travel demand resulting from buildout of the proposed project to Cumulative No Project conditions.

Evaluations are performed for each element of the transportation system for each of these scenarios.

2. Analysis Methodology

This section describes the methods utilized to analyze the transportation system.

Travel Demand Forecasting

This study utilized several tools to forecast travel demand changes associated with the proposed project as well as planned local and regional land use development and transportation system modifications.

The local UC Davis/City of Davis travel demand model was used for the purposes of forecasting travel demand within the City of Davis and UC Davis vicinity. This model has a base year of 2016 and forecast years of 2030 and 2036. The model was developed in close coordination with the City of Davis and UC Davis in order to incorporate planned land use and transportation system changes both within the City and its sphere of influence and on the UC Davis campus. The coordination effort included the following elements of model development:

- **TAZ system –** The traffic analysis zone (TAZ) development included review by City and UC Davis staff to ensure sufficient detail for both existing and new growth areas.
- **Land use inputs –** Inputs were initially obtained from the SACOG 2012 parcel database used in developing regional model inputs for the 2016 SACOG MTP/SCS. These inputs were reviewed for each TAZ with City and UC Davis staff to develop a complete inventory representing 2016 conditions, which is the model's base year. Similarly, land use forecasts for 2030 and 2036 conditions were developed in cooperation with City staff and UC Davis staff. Land use forecasts for 2030 and 2036 were based on future land use changes throughout the region projected in the 2016 SACOG MTP/SCS. The land use forecasts were refined based on input from City staff and UC Davis staff according to planned City of Davis General Plan growth, planned UC Davis 2018 Long Range Development Plan (LRDP) growth, approved development projects, pipeline development projects, and other reasonably foreseeable land development activities.
- **Roadway network inputs –** The local model roadway network was developed from GIS data representing local, collector, arterial, and freeway functional classifications. Input data included the number of travel lanes and free-flow travel speeds based on the previous UC Davis/City of Davis model developed for the 2003 LRDP update, plus new data from field observations and Google Maps imagery. Capacity inputs for each roadway classification were estimated from reference documents including the HCM 6th Edition and the *Travel Demand Forecasting: Parameters and Techniques, National Cooperative Highway Research Program, Report 716*,

(Transportation Research Board, 2012). Changes to the roadway networks for future year scenarios were provided by City and UC Davis staff as noted above.

- **Vehicle trip rates –** The vehicle trip rates were derived from a variety of sources including the UC Davis Campus Travel Survey, the California Household Travel Survey, local residential trip generation estimates based on observed traffic counts, and the *Trip Generation Manual*, 10th Edition. The rates were estimated for the following trip purposes.
    - Home-Based Work (HBW): trips between a residence and a workplace
    - Home-Based Shop (HBS): trips between a residence and a retail destination
    - Home-Based School (HBK): trips between a residence and a school (K-12)
    - Home-Based Other (HBO): trips between a residence and any other destination
    - Non-Home-Based (OO): trips that do not begin or end at a residence, such as traveling from a workplace to a restaurant, or from a retail store to a bank
    - College (COLL): trips to and from a Community College
    - UC Davis (UCD): trips to and from UC Davis
    - Highway Commercial (HC): trips to and from highway commercial destinations
- **Vehicle trip lengths and external trip patterns –** The vehicle trip lengths and the proportion of vehicle trips that occur exclusively within the model area versus those that have origins or destinations external to the model area were obtained from the UC Davis Campus Travel Survey, the California Household Travel Survey, and the American Community Survey. This information was extracted for each trip purpose above. Trips traveling through the model area without stopping such as those on I-80, were estimated from the regional SACOG SACSIM model developed for the 2016 SACOG MTP/SCS.
- **Trip assignment –** Trip assignment relies on conventional algorithms that assign trips between origin and destination zones based on travel times that reflect the influence of roadway capacity and speeds. A unique aspect of the assignment process is that UC Davis generated trips had to be associated with parking areas on and off-campus since that is where trips start and end. These parking areas were mapped in collaboration with UC Davis staff and iterative testing of the assignment results was used to refine the association.

Consistent with standard practice, the base year model was calibrated and then validated against actual travel conditions present in 2016. The model passed all applicable validation tests.

Vehicle Miles Traveled (VMT)

This study uses vehicles miles traveled (VMT) as the primary metric for transportation impacts. By definition, one VMT is defined as a motor vehicle being driven one mile. VMT is expressed on a daily basis, and in this context, for a typical weekday. VMT values in this study represent the full length of a given trip, and are not truncated at city, county, or region boundaries.

This analysis uses the VMT per service population metric for the purposes of analyzing potential impacts to VMT. This methodology calculates VMT by summing the "VMT from" and "VMT to" a specified area. The VMT accounting is:

$$\text{VMT} = (\text{II} + \text{IX}) + (\text{II} + \text{XI}) = (2 \times \text{II}) + \text{IX} + \text{XI}$$

- Internal-internal (II): The full length of all trips made entirely within the geographic area limits is counted.
- Internal-external (IX): The full length of all trips with an origin within the geographic area and destination outside of the area is counted.
- External-internal (XI): The full length of all trips with an origin outside of the geographic area and destination within the area is counted.

The intra-zonal VMT and VMT between traffic analysis zones, or TAZs, that are both in the study area are double counted. To cancel out the double counting, the VMT is divided by the service population (residential population plus employment population), the generators of both trip ends of the VMT. This is necessary when expressing VMT as an efficiency metric that also represents the VMT generation rate of the service population. The resulting VMT is then compared to the existing VMT and a determination made as to whether the project VMT exceeds the applicable thresholds.

VMT estimates were prepared utilizing the UC Davis/City of Davis travel demand model, SACOG's SACSIM travel demand model, and the California Statewide Travel Demand Model. For project-generated VMT calculations, the following calculations were performed:

- Project-Generated VMT = project's estimated weekday external vehicle trips x average trip length

The average trip lengths were derived from the UC Davis/City of Davis travel demand model, with extra distance appended to project trips with trip ends outside of that local model's boundaries using the SACMET travel demand model and the California Statewide Travel Demand Model (e.g., to capture longer trips to/from the Bay Area that would not otherwise be reflected in the local model).

The following process was employed to prepare estimates for VMT generated at the local and regional level:

- **Local VMT generated by the City of Davis and UC Davis –** The UC Davis/City of Davis travel demand model was used to estimate VMT associated with trips ends within the model boundaries (i.e., the City of Davis sphere of influence and the UC Davis campus). This model was selected for this purpose due to its smaller TAZ structure relative to other available travel demand models, which allows for a more granular evaluation of trips internal to the model boundaries (i.e., to avoid underreporting VMT associated with internal-internal trips associated with a given TAZ). Extra distance was added to trips with trip ends outside of the local model boundaries using the SACSIM travel demand model and the California Statewide Travel Demand Model. Land use inputs for the TAZ containing the project site were calibrated to match the estimated (for Existing Plus Project and Cumulative Plus Project conditions) daily trip generation associated with the project site based on the project trip generation estimates described in the Project Travel Characteristics section.
- **Regional VMT generated by the SACOG region –** The SACSIM travel demand model, prepared by SACOG for regional travel demand forecasting purposes, was utilized to estimate VMT associated with trips with trip ends within the model boundaries (i.e., the SACOG region). Extra distance was added to trips with trip ends outside of the SACSIM model boundaries (e.g., based on actual distance from edge of model to destinations within Solano or Napa Counties, for instance) using the California Statewide Travel Demand Model. VMT associated with SACSIM trips with trip ends within the City of Davis sphere of influence or the UC Davis campus were deleted and replaced with the VMT calculated from the UC Davis/City of Davis travel demand model as described in the previous step.

3. Environmental Setting

This section describes the existing environmental setting, which is the baseline scenario upon which project-specific impacts are evaluated. The environmental setting components include roadway, pedestrian, bicycle, and transit networks in the vicinity of the project site.

Project Location

The proposed project site is located in unincorporated Yolo County immediately east of the City of Davis city limits. The project site is situated east of Mace Boulevard and north of Interstate 80 (I-80) near the "Mace Curve". The project site is located approximately three miles east of Downtown Davis and the University of California, Davis (UC Davis) campus and approximately ten miles west of Downtown Sacramento. The project site is bordered on the west by Mace Boulevard, on the south by County Road 32A (CR 32A), and agricultural fields on the north and east. **Figure 1** displays the project site and surrounding roadway network.

Roadway System

Mace Boulevard, Alhambra Drive, CR 32A, and County Road 30B/104A (CR 30B/104A) provide vehicular access to the project site. Other key roadways in the project vicinity include East Covell Boulevard, Second Street, and Interstate 80. These roadways are described below.

Interstate 80 (I-80) is an east-west interstate freeway near the southern boundary of the project site. From Davis, I-80 connects with the San Francisco Bay Area to the west and Sacramento and the Lake Tahoe Basin to the east. I-80 provides three travel lanes per direction in the vicinity of the project site. I-80 serves Davis via interchanges at Mace Boulevard and Richards Boulevard, as well as a westbound off-ramp at Olive Drive. Additional I-80 interchanges within the vicinity of Davis include the Old Davis Road interchange at the UC Davis campus and the County Road 32A interchange in Yolo County. I-80 and its interchanges are owned and operated by Caltrans.

Mace Boulevard is a two- to four-lane north-south major arterial that borders the west edge of the project site. The roadway provides four lanes south of Alhambra Drive and transitions to two lanes separated by a striped median north of Alhambra Drive, where it becomes East Covell Boulevard. The speed limit is 40 miles per hour (mph).

East Covell Boulevard is a four-lane east-west major arterial that connects Mace Boulevard at Alhambra Drive to State Route 113 and points west. West of the project site, East Covell Boulevard has a posted speed limit of 40 mph from Mace Boulevard to Wright Boulevard.

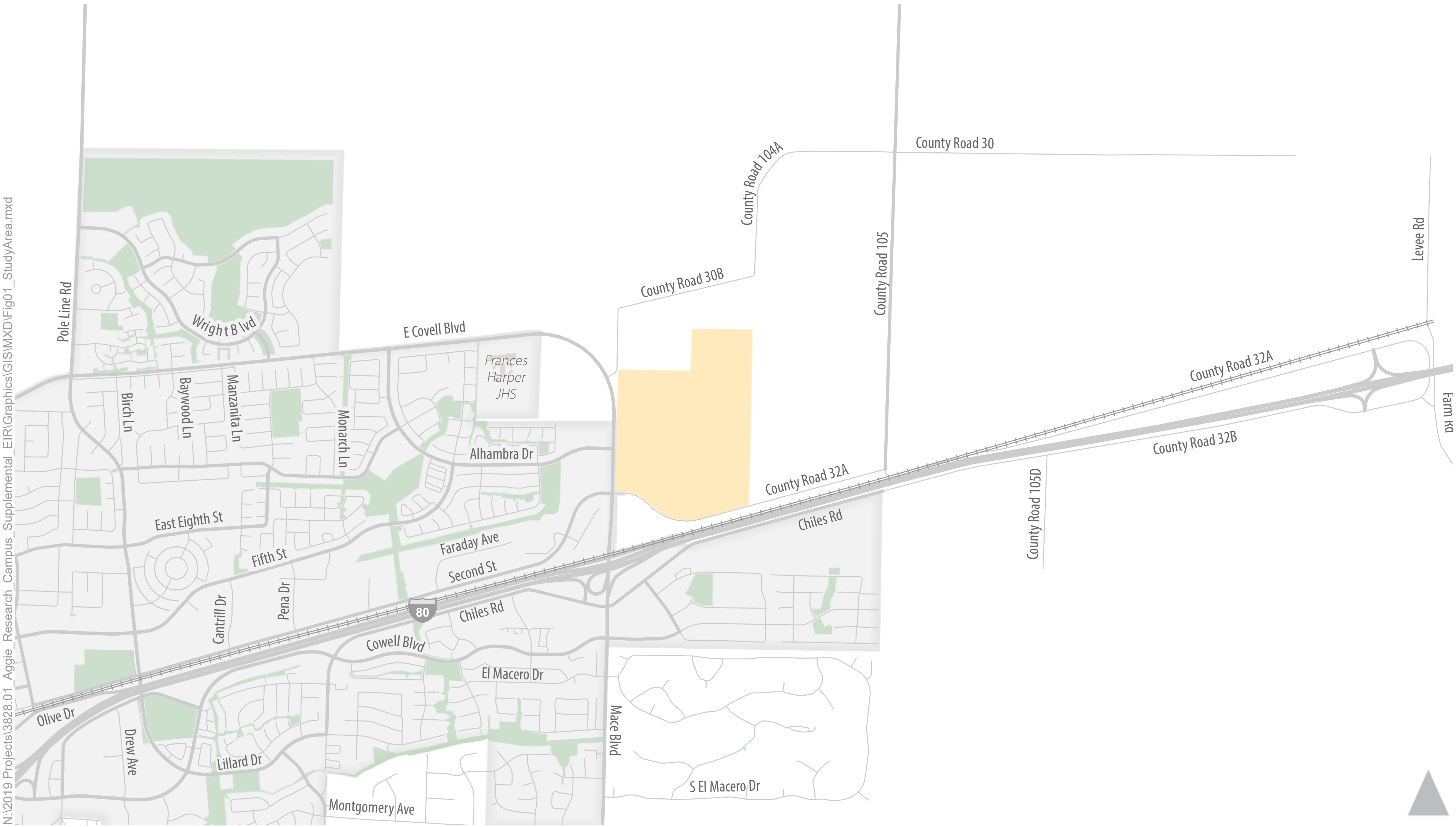
Alhambra Drive is a two-lane minor arterial that connects Mace Boulevard to East Covell Boulevard. The speed limit is 30 mph.

County Road 32A (CR 32A) is a two-lane east-west minor arterial that borders the south side of the project site. There is an advisory 35 mph speed signed along the curve adjacent to the project site; on the rest of the roadway, the speed limit is 55 mph except for the curve near the railroad grade crossing. The roadway has soft shoulders and bike lanes. West of Mace Boulevard, CR 32A becomes Second Street. CR 32A is owned and operated by Yolo County.

Second Street is a two- to four-lane east-west minor arterial connecting Mace Boulevard to L Street and Downtown Davis. The speed limit in the project vicinity is 35 mph.

County Road 30B/104A (CR 30B/104A) is a two-lane roadway that connects East Covell Boulevard to CR 105 northeast of the project site. There are no speed limit signs in the project vicinity, so the assumed prima facie speed limit is 55 mph. There is an advisory 15 mph sign at the curve located north of the project site. The roadway has soft shoulders, and no sidewalks or bike lanes are provided.

Refer to Volume 2 (Traffic Operations Analysis) for an analysis of the existing peak hour operations of these roadway facilities.



Project Site

Davis City Limit

Figure 1

Study Area

Pedestrian Facilities

The City of Davis has an extensive system of off-street shared-use paths, sidewalks, and crosswalks available for use by pedestrians. Sidewalk coverage on the key roadways in the project vicinity is discussed in the Roadway System section above. In addition, the following shared-use paths are located in the vicinity of the proposed project site:

- East-west path situated between I-80 and the Union Pacific main line, beginning at the eastern terminus of Olive Drive and terminating at CR 105. Users of this path continue east to the causeway bike path;
- East-west path on the south side of East Covell Boulevard to an eastern terminus point at the eastern boundary of Harper Junior High School, approximately 2,500 feet north of the Mace Boulevard/Alhambra Drive intersection. A grade-separated bicycle crossing underneath East Covell Boulevard east of Monarch Lane connects this path to a complementary path on the north side of East Covell Boulevard towards Wildhorse;
- East-west path on both sides of Alhambra Drive between Mace Boulevard and Fifth Street;
- East-west path paralleling Arroyo Avenue with connections to the Fifth Street path to the west and the Alhambra Drive path (via John Barovetto Park) to the east. This path also provides a connection to the Dave Pelz Bicycle Overcrossing, which connects Mace Ranch and South Davis over I-80 and the Union Pacific main line;
- The approximately 12-mile Davis Bike Loop, which passes through Mace Ranch Park. The City-wide bike loop is a combination of on-street bicycle facilities and off-street shared-use paths; and
- Several internal paths in the Mace Ranch neighborhood.

Additionally, the site plan for the Offices @ Mace Ranch project (located at the northwest corner of the Mace Boulevard/Alhambra Drive intersection) includes a path along its frontages of Mace Boulevard and Alhambra Drive. This project is currently under construction and scheduled for completion in 2020.

Pedestrian facilities do not exist along the proposed project site boundaries as the land is currently undeveloped. The signalized intersection of Mace Boulevard/Second Street/CR 32A, located at the southwest corner of the proposed project site, has crosswalks with pedestrian push buttons on all four legs, but there is no connecting sidewalk on the site frontages to the north and east. The signalized intersection of Mace Boulevard/Alhambra Drive, located on the proposed project's western edge, has a crosswalk only on the west leg (crossing Alhambra Drive). There are no pedestrian facilities on the access road to the Park-and-Ride lot southwest of the proposed project site.

Bicycle Facilities

The project site is situated on the edge of the City of Davis bicycle network, which is comprised of an extensive network of on- and off-street bicycle facilities. Bicycle facilities are typically categorized in the following classifications:

- **Class I Multi-Use Off-Street Paths** (also known as shared-use paths) are paved trails that are separated from roadways and allow for shared use by both cyclists and pedestrians.
- **Class II On-Street Bike Lanes** are designated for use by bicycles by striping, pavement legends, and signs.
- **Class III On-Street Bike Routes** are designated by signage for shared bicycle use with vehicles but do not necessarily include any additional pavement width for bicyclists.
- **Class IV Separated Bikeways** (also known as protected bikeways or cycle tracks) are separated bikeways improve upon buffered bike lanes by providing vertical separation between bike lanes and the adjacent travel lanes. Vertical separation can be provided with concrete curb and gutter, bollards or on-street parking.

Figure 2 displays existing bicycle facilities in the proposed project vicinity. In addition to the previously discussed shared-use paths, on-street bicycle facilities are located on the following roadways near the proposed project site:

- Class II Bike Lanes
  - Mace Boulevard in both directions from East Covell Boulevard to Cowell Boulevard;
  - East Covell Boulevard from Mace Boulevard to the westerly city limits;
  - Alhambra Boulevard in both directions from Mace Boulevard to East Covell Boulevard;
  - CR 32A in both directions from Mace Boulevard to CR 32B; and
  - Second Street from Mace Boulevard to L Street.
- Class IV Separated Bikeways
  - Mace Boulevard from Cowell Boulevard to Redbud Drive, including one-way separated bikeways on both sides of the roadway between Cowell Boulevard San Marino Drive and a two-way separated bikeway on the west side of the roadway between San Marino Drive and Redbud Drive.

East Covell Boulevard, which becomes Mace Boulevard along the proposed project frontage, is the only continuous east-west arterial that traverses the entire City of Davis. To facilitate bicycle and pedestrian travel across this high-volume facility, the City of Davis has required the construction of bicycle/pedestrian grade separations for new developments located on the north side of Covell Boulevard. Existing grade separations on Covell Boulevard are located west of F Street, east of F Street (to/from The Cannery), and east of Monarch Lane. A future facility is planned on West Covell east of Denali Drive, as shown in the *City of Davis General Plan*.

Transit Service and Facilities

Transit serving the project site includes local bus service connecting the project site to destinations throughout the City of Davis (e.g., Downtown Davis, the Davis Train Depot, etc.) and the UC Davis campus. Additionally, the project site is served by intercity bus service that is primarily oriented towards serving Davis residents commuting to and from work in Downtown Sacramento.

Transit service in the City of Davis is provided by Unitrans (local bus), Yolobus (intercity bus), Amtrak (intercity rail), and Davis Community Transit (local paratransit):

- **Unitrans** provides local fixed route bus service to the project site. Jointly operated between the Associated Students, UC Davis (ASUCD) and the City of Davis, Unitrans offers 19 routes serving the UC Davis campus and City of Davis neighborhoods, shopping centers, schools, and medical centers. Unitrans operates as a radial bus system with the UC Davis campus serving as the central hub. The main terminals on the UC Davis campus are at the Memorial Union on Howard Way and at the Silo along Hutchison Drive.

  Specific service spans and frequencies vary by route. Generally, Unitrans operates from 6:30 a.m. to 11:30 p.m. Monday through Thursday and until 9:00 p.m. on Fridays. Weekend service is available from 8:30 a.m. to 7:00 p.m. Unitrans routes operate every 15 or 30 minutes during weekdays and every 60 minutes during weekends and evenings. **Table 1** summarizes the weekday and weekend frequency and span for Unitrans bus routes serving the project site.

  The current Unitrans one-way fare is $1.25, with monthly, quarterly, and annual passes available at a discounted price. Free rides are available to UC Davis undergraduate students (fee assessed quarterly with registration), seniors, disabled passengers, City of Davis employees, and transferring Sacramento Regional Transit, Yolobus, Capitol Corridor, and Fairfield Transit passengers.

Table 1: Unitrans Route Summary – Project Site Vicinity

Route	Weekday (M-Th)		Friday		Weekend	
	Peak Frequency (min)	Span	Peak Frequency (min)	Span	Peak Frequency (min)	Span
A – Silo/Amtrak/5th/Alhambra	30	7 a.m. to 11 p.m.	30	7 a.m. to 9 p.m.	--	--
O – MU/Amtrak/5th/Alhambra/Target	--	--	--	--	60	9 a.m. to 7 p.m.
P – MU/Davis Perimeter Counter Clockwise	30	6 a.m. to 11 p.m.	30	6 a.m. to 9 p.m.	60	8 a.m. to 7 p.m.
Q – MU/Davis Perimeter Clockwise	30	6 a.m. to 11 p.m.	30	6 a.m. to 9 p.m.	60	8 a.m. to 7 p.m.
Z – MU/Amtrak/Cantrill/5th	30	7 a.m. to 7 p.m.	30	7 a.m. to 7 p.m.	--	--

Source: Unitrans, 2020.

- **Yolobus** provides fixed route bus and paratransit service throughout Yolo County, as well as commuter bus service to downtown Sacramento. Single rides are available for $2.25 and $3.25 for local and express services, respectively. Discounted daily and monthly passes are also available.

  Local bus routes serving the project site include Routes 42A and 42B, which provide clockwise/counterclockwise loop service between Davis, Woodland, Sacramento International Airport, Downtown Sacramento, and West Sacramento on hourly headways. Express bus routes serving the project site include Routes 43 and 232, both of which are oriented towards serving Davis residents working in Downtown Sacramento (i.e., morning service is eastbound-only and afternoon/evening service is westbound-only).

- **Amtrak** serves the Davis Transit Depot near Second and G Streets in downtown Davis, approximately three miles west of the project site. Amtrak Capitol Corridor service is available at the depot, connecting passengers to Sacramento and Roseville to the east and the Bay Area to the west. Currently, 15 daily Capitol Corridor round-trips are available at the station during regular weekday service. In addition to regular Capitol Corridor service, Amtrak serves the Davis Transit Depot with daily Coast Starlight service (to Los Angeles and Seattle) and intercity bus connections to other Amtrak rail lines (e.g., the Amtrak San Joaquin lines at Sacramento Valley Station).

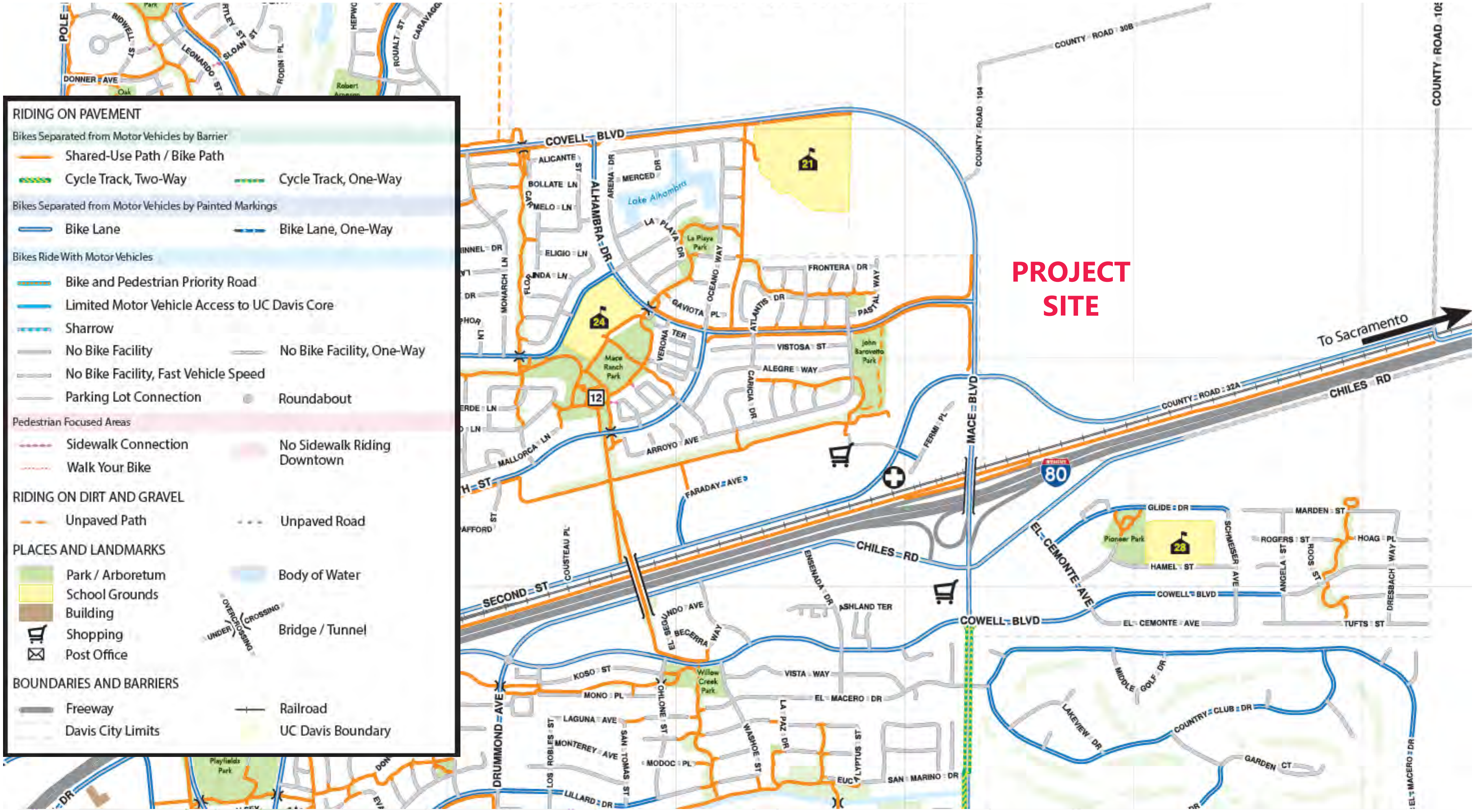
UC Davis, together with operating partners Yolobus and the Sacramento Regional Transit District, is launching the Causeway Connection bus service in April 2020. This service will connect the UC Davis main campus in Davis and the UC Davis Health Campus in Sacramento, replacing the existing inter-campus shuttle. The planned schedule identifies the Mace park-and-ride as a stop for select eastbound trips in the morning and westbound trips in the evening. The park-and-ride will be served hourly during peak periods.

Figure 3 displays the bus stops and routes serving the project site vicinity. The primary bus stops serving the project site are located at the Mace park-and-ride, on southbound Mace Boulevard midblock between Alhambra Drive and Second Street, and on northbound Mace Boulevard immediately north of Second Street.

Rail Transportation

Union Pacific Railroad Company (UPRR) operates a railroad line that runs east-west through the City of Davis. The railroad tracks border the western edge of the project site and are grade-separated with Mace Boulevard. At-grade crossings exist to the south within the study area at County Road 105. The rail crossing includes advanced warning signs, pavement markings, and highway stop signs. According to the Federal Railroad Administration[1], this line is used by an average of 53 trains per day, including freight trains and Amtrak passenger trains. Yolo County, together with UPRR and the City of Davis, is currently evaluating potential modifications to the County Road 105 at-grade crossing to reduce the potential for conflicts with rail operations.

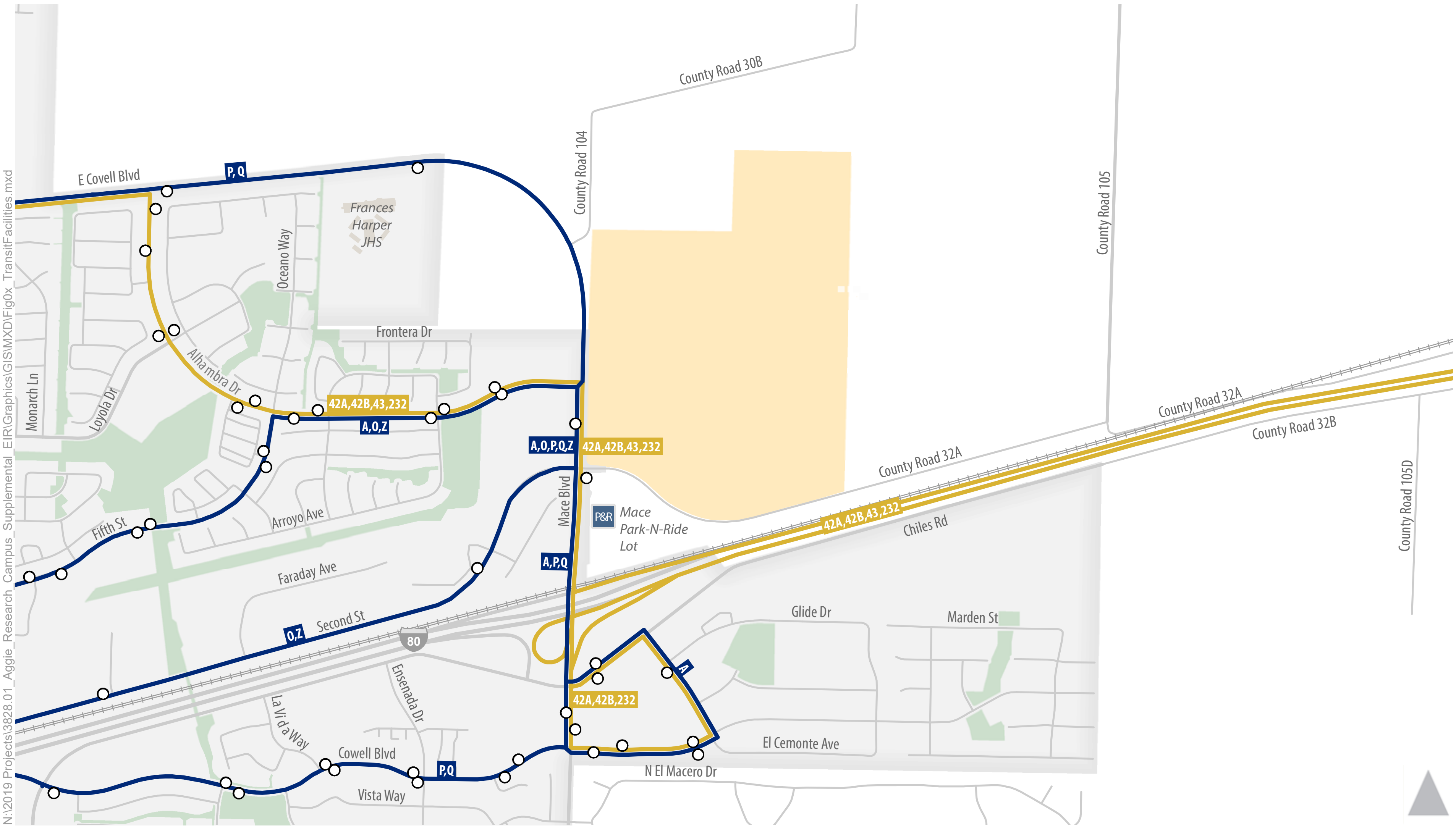
[1] http://safetydata.fra.dot.gov/officeofsafety/publicsite/crossing/xingqryloc.aspx



Source: Davis Bike Map, City of Davis

Figure 2

Existing Bicycle Facilities



Transit Stop
x,x Unitrans Route
x,x Yolobus Route
Project Site
Davis City Limit

Figure 3
Existing Transit Service and Facilities

4. Regulatory Setting

Existing transportation policies, laws, and regulations that would apply to the project are summarized below. This information provides a context for the impact discussion related to the project's consistency with applicable regulatory conditions and development of significance criteria for evaluating project impacts.

State

California Department of Transportation

The California Department of Transportation (Caltrans) is responsible for planning, designing, constructing, operating, and maintaining the State Highway System (SHS). Federal highway standards are implemented in California by Caltrans. Any improvements or modifications to the SHS within the study area would need to be approved by Caltrans.

Caltrans' Local Development – Intergovernmental Review Program (LD-IGR) provides guidance on the evaluation of traffic impacts to State highway facilities. In light of Senate Bill 743 (discussed below) and related changes to the CEQA Guidelines, Caltrans has announced in its *Caltrans Draft VMT-Focused Transportation Impact Study Guide* (Caltrans, February 2020) that it will use VMT as the CEQA transportation impact metric for projects on the State highway system and has indicated it will rely on the Governor's Office of Planning and Research (OPR) *Technical Advisory on Evaluating Transportation Impacts in CEQA* when preparing LD-IGR comments on local agency land use projects.

Senate Bill 743

Senate Bill 743 (Stats. 2013, ch. 386) (SB 743) creates or encourages several statewide CEQA improvements. First, it requires OPR to establish new metrics for determining the significance of transportation impacts of projects within transit priority areas (TPAs) and allows OPR to extend use of the metric beyond TPAs. OPR selected vehicle miles of travel (VMT) as the preferred transportation impact metric and applied their discretion to require its use statewide. Second, it establishes that aesthetic and parking impacts of a residential, mixed-use residential, or employment center projects on an infill site within a TPA shall not be considered significant impacts on the environment. Third, once the new CEQA Guidelines go into effect, which occurred on April 27, 2019, vehicle LOS and similar measures related to delay shall not be used as the sole basis for determining the significance of transportation impacts. Finally, it establishes a new CEQA exemption for a residential, mixed-use, and employment center project a) within a transit priority area, b) consistent with a specific plan for which an EIR has been certified, and c) consistent with a Sustainable Communities Strategy. This exemption requires further review if the project or circumstances changes significantly.

Local

City of Davis General Plan

The *City of Davis General Plan* Transportation Element was last updated in 2013. The following goals and policies related to transportation and circulation are applicable to the project. Most of the listed goals and policies are relevant at a project-level scale, versus City-wide.

Goal #1: Davis will provide a comprehensive, integrated, connected transportation system that provides choices between different modes of transportation.

Performance Objective #1.1: Achieve at least the following mode share distribution for all trips by 2035:

- 10% of trips by walking
- 10% of trips by public transportation
- 30% of trips by bicycle

Performance Objective #1.2: Increase use of walking, bicycling, and public transportation to and from the following places:

- Work
- Schools (elementary, junior high, and senior high)
- UC Davis,
- Downtown

Goal #2: The Davis transportation system will evolve to improve air quality, reduce carbon emissions, and improve public health by encouraging usage of clean, energy-efficient, active (i.e. human powered), and economically sustainable means of travel.

Performance Objective #2.1: Reduce carbon emissions from the transportation sector 61 percent by 2035.

Performance Objective #2.2: Reduce vehicle miles traveled (VMT) by 39 percent by 2035.

Performance Objective #2.3: Annually increase funding for maintenance and operation needs of the transportation system, until fully funded.

Goal #3: Davis will provide a safe and convenient Complete Streets network that meets the needs of all users, including children, families, older adults, and people with disabilities.

Performance Objective #3.1: Improve the quality of service for all users of the transportation system.

Performance Objective #3.2: Reduce the total number of collisions between motor vehicles and bicyclists or pedestrians by 50% by 2035.

Goal #4: Davis will strengthen its status as a premier bicycling community in the nation by continuing to encourage bicycling as a healthy, affordable, efficient, and low-impact mode of transportation accessible to riders of all abilities, and by continuously improving the bicycling infrastructure.

Performance Objective #4.1: Commit a minimum amount of funding for bicycle programming and infrastructure as identified in the "Beyond Platinum – Bicycle Action Plan".

Policy TRANS 1.6: Reduce carbon emissions from the transportation system in Davis by encouraging the use of non-motorized and low carbon transportation modes.

Policy TRANS 1.7: Promote the use of electric vehicles and other low-polluting vehicles, including Neighborhood Electric Vehicles (NEV).

Policy TRANS 2.1: Provide Complete Streets to meet the needs of drivers, public transportation vehicles and riders, bicyclists, and pedestrians of all ages and abilities in all transportation planning, programming, design, construction, reconstruction, retrofit, operations, and maintenance activities and products. The City shall view all transportation improvements as opportunities to improve safety, access, and mobility for all travelers in Davis, and recognizes bicycle, pedestrian, fixed-route transit, and demand-response para-transit modes as integral elements of the transportation system along with motor vehicles. This policy also includes the following language pertaining to automobile level of service:

- LOS D or better is acceptable during non-peak traffic hours.
- LOS E or better is acceptable during peak traffic hours.
- LOS F is acceptable during peak traffic hours in the Core Area and Richards Boulevard/Olive Drive area.
- LOS F is acceptable during peak traffic hours in other areas if approved by City Council.

Action TRANS 2.1(i): Establish a multi-modal Level of Service (LOS) standard to address the needs of all users of the street, including bicyclists and pedestrians, at intersections.

Action TRANS 2.1(k): Work with citizens and technical experts to review the street width and "Greenstreet" standards to reflect pedestrian and bicycle friendly policies in this chapter, including but not limited to the following:

- Design/redesign residential and collector streets to slow vehicular traffic to 25 mph or less.
- Design travel lanes to prioritize pedestrians and bicycles, including provisions for a marked "buffer space" to further separate bicycles from both moving and parked motor vehicles, where right-of-way allows.
- Eliminate intersection standards that allow high speed right turns for motor vehicles.
- Adjust intersection signal operations to smooth traffic flow, reduce automobile idle time, and to adequately service bicycles and pedestrians by giving priority and to maintain momentum.

Roadways within the study area with a Greenstreet designation include Mace Boulevard, Covell Boulevard, Second Street, Chiles Road, Cowell Boulevard, and Pole Line Road.

Action TRANS 2.1(l): Preserve rights-of-way for future transportation use.

Action TRANS 2.1(m): Ensure transit stops have adequate curb space for loading and unloading passengers.

Policy TRANS 2.2: Implement state-of-the-art street design solutions to improve bicycle/pedestrian access, comfort, and safety that may include:

- Bicycle boxes at intersections
- Cycletracks
- Shared lane markings (sharrows)
- Contraflow bicycle lanes
- Improved bicycle detection at intersections
- Two-stage turn queue boxes
- Colored bicycle lanes
- Bicycle route wayfinding

Policy TRANS 2.3: Apply best practices in sustainability to new streets and redesigns of existing streets/corridors.

Policy TRANS 2.4: As part of the initial project review for any new project, a project-specific traffic study may be required. Studies shall identify impacted transportation modes and recommend mitigation measures designed to reduce these impacts to acceptable levels.

Policy TRANS 2.5: Create a network of street and bicycle facilities that provides for multiple routes between various origins and destinations.

Policy TRANS 2.7: Minimize impacts of vehicle traffic on local streets to maintain or enhance livability of the neighborhoods. Consider traffic calming measures along collector and minor arterial streets, where appropriate and feasible, to slow speeds.

Policy TRANS 2.8: Improve the function, safety, and appearance of selected corridors as illustrated.

Action: Develop "corridor plans" for selected streets which warrant special treatment because of existing impact problems or operational issues. Corridor plans should take into consideration adjacent land uses and result in streets that are both functional and aesthetic. The plans should utilize innovative means of slowing traffic, where appropriate, and provide safe access for pedestrians and bicyclists. Mitigation shall be incorporated to protect residences and sensitive receptors from noise, air pollution and other traffic related impacts. The corridor plans may deviate from the standards established in the General Plan, if deviates improve the livability of the area. Covell Boulevard from SR 113 to the west City limit is included in this program.

Policy TRANS 2.10: Prohibit through truck traffic on streets other than identified truck routes shown in the Transportation Element.

Policy TRANS 3.1: Facilitate the provision of convenient, reliable, safe, and attractive fixed route, commuter, and demand responsive public transportation that meets the needs of the Davis community, including exploring innovative methods to meet specialized transportation needs.

Policy TRANS 3.3: Require new development to be designed to maximize transit potential.

Policy TRANS 4.2: Develop a continuous trails and bikeway network for both recreation and transportation that serves the Core, neighborhoods, neighborhood shopping centers, employment centers, schools and other institutions; minimize conflicts between pedestrians, bicyclists, equestrians, and automobiles; and minimize impacts on wildlife. Greenbelts and separated bike paths on arterials should serve as the backbone of much of this network.

Policy TRANS 4.3: Continue to build transportation improvements specifically targeted at bicycles. Refer to Bicycle Plan and Transportation Implementation Plan for list of bicycle-related projects.

Policy TRANS 4.5: Establish and implement bicycle parking standards for new developments and significant redevelopment.

Policy TRANS 4.7: Develop a system of trails around the edge of the city and within the city for recreational use and to allow pedestrians and bicyclists to reach open space and natural areas.

Policy TRANS 5.1: Use parking management techniques to efficiently manage motor vehicle parking supply and promote sustainability.

Policy TRANS 5.2: Existing and future off-street parking lots in development should contribute to the quality of the urban environment and support the goals of this chapter to the greatest extent possible.

Beyond Platinum – City of Davis Bicycle Action Plan

This document included discussions regarding goals and objectives, bicycle facility guidelines, engineering standards, and implementation and funding. The Plan was heard before and adopted by the City Council in February 2014. This document includes numerous goals and policies regarding enforcement, education, and engineering design. The following policies are particularly relevant to this study:

Goal: Provide bike lanes along arterial and collector streets. Provide separated bike paths adjacent to arterial and collector streets only where justified, with full consideration of the potential safety problems this type of facility can create.

Goal: Consider bicycle-operating characteristics in the design of bikeways, intersections, and traffic control systems.

In addition, Appendix C of this document shows a variety of proposed bicycle facilities throughout the City, including the following proposed bicycle facility enhancements within the vicinity of the project site:

- Buffered bike lanes on Second Street between Mace Boulevard and L Street
- Bike lane conflict markings and bike intersection crossing markings on Mace Boulevard at the I-80 interchange ramps

Sacramento Area Council of Governments

The Sacramento Area Council of Governments (SACOG) is responsible for the preparation of, and updates to, its Metropolitan Transportation Plan/Sustainable Communities Strategy (MTP/SCS) and the corresponding Metropolitan Transportation Improvement Program (MTIP) for the six-county Sacramento region. The MTP/SCS provides a 20-year transportation vision and corresponding list of projects. The MTIP identifies short-term projects (seven-year horizon) in more detail. The current 2020 MTP/SCS was adopted by the SACOG board in 2019. The accompanying EIR certified by the SACOG board is currently under legal challenge. The previous MTP/SCS was adopted by the SACOG board in 2016.

5. Project Travel Characteristics

This chapter describes the expected travel characteristics of the proposed project. These characteristics will be used in the development of the Existing Plus Project condition. The Cumulative Plus Project condition will also use many of these same estimates, but will additionally consider changed conditions in the vicinity of the project site (e.g., buildout of nearby planned and approved development) between the two scenarios.

Project Description

The proposed ARC project would consist of a mix of land uses including office/R&D, advanced manufacturing, ancillary retail, residential, and a hotel on 194 acres. The project is anticipated to be built out gradually in four phases over twenty to twenty-five years. **Table 2** presents the buildout development program for the project as proposed by the project applicant.

Table 2: Aggie Research Campus Project – Proposed Land Use Program

Land Use	Units[1]	Buildout Quantities
Office/R&D	KSF	1,510
Advanced Manufacturing	KSF	884
Hotel/Conference	Rooms/KSF	150/160
Ancillary Retail[2]	KSF	100
Total Non-Residential Development	**KSF**	**2,654**
Single-Family Residential	DU	280
Multi-Family Residential	DU	570
Total Residential Development	**DU**	**850**

Notes: [1] KSF = Thousand Square Feet of floor space. DU = Dwelling Unit.
[2] Ancillary retail, as defined in the ARC project description, is intended to provide employees, residents, and visitors with basic conveniences such as: lodging/accommodations, health and fitness center, convenient coffee, and dining opportunities all located within walking distance of the Project's primary businesses and workforce housing uses.
Source: Aggie Research Campus Project Description, October 2019.

The proposed project also includes additional development of the Mace Triangle located on the property bounded by Mace Boulevard, CR 32A, and the Union Pacific railroad tracks. The Mace Triangle development would include 46,000 square feet of office/R&D and 25,000 square feet of ancillary retail.

The proposed project would include the following vehicular access points:

- Full access via existing signalized intersection at Mace Boulevard/Alhambra Drive. The project would construct a new fourth leg (east leg) at the intersection. The project site plan shows the construction of channelized right-turns for the northbound and westbound approaches.
- Full access via a connection from County Road 30B immediately east of its existing unsignalized full access intersection with Mace Boulevard.
- Partial access (right-in/right-out only) on Mace Boulevard between Alhambra Drive and County Road 30B. This would be a new unsignalized intersection with an east leg serving the project site.
- Full access on County Road 32A at the existing unsignalized intersection with the existing driveway to the Mace park-and-ride. The project would construct a new fourth leg) north leg at the intersection.
- Full access on County Road 32A at a new project roadway located east of the existing driveway to the Mace park-and-ride. This would be a new unsignalized intersection with a north leg serving the project site.

According to the ARC Project Description, the project would also include the following on- and off-site transportation infrastructure and programs:

- Three east-west and two north-south internal roadways.
- Approximately 2.25 miles of on-site paths for bicyclists and pedestrians.
- On-site Transit Plaza with dedicated Unitrans bus stops, dedicated pick-up/drop-off facilities for ridehailing services (e.g., Uber and Lyft), and accommodations for a dedicated ARC shuttle that would connect the project site with off-site destinations in the City of Davis and on the UC Davis campus.
- Construction of a new grade-separated bicycle and pedestrian crossing of Mace Boulevard located near the Mace Drainage Channel (north of Alhambra Drive).
- Construction of a new Class I shared-use path on the inside of the Mace Curve between the new grade-separated bicycle and pedestrian crossing and Harper Junior High School.
- Construction of a landscaped pedestrian connection between the project site and the existing Mace park-and-ride.
- Up to 5,858 on-site vehicle parking spaces, to be built gradually as warranted by on-site parking demand.
- TDM strategies such as carpooling, bus transit, shuttles, carshare, and other smart phone technologies to assist in providing transportation options for employees.
- Support for a Transportation Manager who will coordinate transportation options for the site and help to facilitate the use of alternative modes for all workers and residents.

- Provision of bicycle support facilities such as bicycle racks, storage lockers, a repair station, and showers to encourage and help establish the use of bicycles as a predominant mode of transportation to the site.

Details regarding the nature, timing, funding, and implementing/operating responsibility of the transit services and TDM strategies described above are not provided in the ARC Project Description or supporting materials. Therefore, their potential associated effects on project travel characteristics cannot be quantified, and are thus not included in the analysis described below.

Methodology

Prior to 2007, conventional methods available to transportation engineers systematically overestimated the trips generated by and impacts of mixed-use development because they did not accurately reflect the amount of internal trip making or the level of external trips made by transit, biking, and/or walking. This resulted in increased development costs, due to oversized infrastructure, skewed public perception, and resistance to approving smart growth. While the Institute of Transportation Engineers (ITE) Trip Generation Handbook (2017) does include a methodology for estimating internal trips, methods are only provided for AM and PM peak hour conditions, and not for the most critical daily condition (which is a needed input for VMT estimation which is a daily metric).

In the early 2000's, two significant research studies provided the opportunity to improve the state of practice. One study sponsored by the US EPA (MXD) and another by the Transportation Research Board (NCHRP 684) have developed means to improve trip generation estimation for mixed-use development (MXD). The two studies examined over 240 mixed-use development sites throughout the U.S. and, using different approaches, developed new quantification methods. Fehr & Peers has reviewed the two methods, including the basis, capabilities, and appropriate uses of each, to produce a new method (MXD+) that combines the strengths of the two individual tools to establish a new best practice. MXD+ recognizes that traffic generation by mixed-use and other forms of sustainable development relate closely to the density, diversity, design, destination accessibility, transit proximity, and scale of development.

The MXD+ method explains 97 percent of the variation in trip generation among mixed-use developments, compared to 65 percent for the methods previously recommended by ITE. While remaining slightly (2 to 4 percent) conservative to avoid systematically understating impacts, it substantially reduces the 35 to 37 percent average overestimate of traffic generation produced by conventional ITE methods.

Fehr & Peers has applied MXD+ on hundreds of EIRs throughout California over the past decade, including EIRs for several projects in the City of Davis such as The Cannery and the West Davis Active Adult Community.

Project Trip Generation

Table 3 summarizes the estimated weekday and peak hour trip generation for the ARC project using the MXD+ tool. As shown in this table, the ARC project would generate an estimated 23,888 new external daily vehicle trips, 2,232 new external AM peak hour vehicle trips, and 2,479 new external PM peak hour vehicle trips during a typical weekday. The Mace Triangle would generate an estimated 762 new external daily vehicle trips, 93 new external AM peak hour vehicle trips, and 82 new external PM peak hour vehicle trips during a typical weekday.

The following factors influence the estimated trip reductions resulting from internalization and shifts to transit, walk, and bike trips:

- Suburban location on the edge of the developed area
- Low-density surroundings
- Low on- and off-site intersection density, which is a proxy for walkability within the site and overall internal trip-making
- Poor walk/bike access to off-site trip generators/activity centers, particularly due to long travel distances[2]
- Poor intercity/commuter transit access for project employees. Adjacent intercity transit routes are currently designed to serve Davis residents working in Sacramento, but not the 'reverse commute' in the opposite direction.
- High jobs/population ratio (approximately 2.78 jobs for every resident), which would result in the project attracting a large number of commute trips from outside the project site
- Recent housing data indicates low vacancy rates in the City of Davis, resulting in a significant percentage of ARC employees that would reside outside of Davis under Existing Plus Project conditions. Given the long trip distances and the lack of intercity/commuter transit services, these external commute trips would not be candidates for walk, bike, or transit trips.
- Lack of uses complementary to residential land uses (e.g., grocery retailer)

Note that in the MRIC EIR, the trip generation and internalization estimates for the Mixed-Use Alternative were adjusted based upon the presumption that on average, one MRIC employee would reside within each MRIC dwelling unit. Conversely, this study does not establish any explicit association between ARC dwelling units and ARC employees, and instead relies upon empirical data in the MXD+ model (i.e., trip

[2] US Census American Community Survey (ACS) journey to work data from 2017 indicates that approximately nine percent of existing workers living near the project site (i.e., Mace Ranch and South Davis) commute to work via bicycling or walking, compared to a City-wide average of approximately 26 percent. Moreover, Target and Nugget Market, the nearest existing major shopping destinations, are located 0.65 miles and 0.81 miles from project residential uses, respectively. Additionally, access to Nugget Market would require a bicyclist or pedestrian to traverse the Mace Boulevard interchange at I-80.

generation data collected at other mixed-use project sites) to estimate the degree to which on-site residential and commercial uses at the ARC would internalize travel.

Table 3: Aggie Research Campus Project – Vehicle Trip Generation

Land Use	Units	ITE Code	Quantity	Daily	AM In	AM Out	AM Total	PM In	PM Out	PM Total
ARC Project Component										
Net New Uses										
Office/R&D	1,000 Sq. Ft. GLA	710[1]	1,610	16,383	1,392	226	1,618	274	1,436	1,710
Manufacturing	1,000 Sq. Ft. GLA	140[2]	884	3,474	422	126	548	184	408	592
Hotel	Rooms	310[3]	150	1,267	41	29	70	44	42	86
Single Family Residential	Dwelling Units	220[4]	280	2,076	29	98	127	96	55	148
Multifamily Residential	Dwelling Units	221[5]	570	3,103	49	142	191	148	94	242
Raw External Project Trips				*26,303*	*1,933*	*621*	*2,554*	*743*	*2,035*	*2,778*
Reductions										
Internal Capture				-2,032	-204	-66	-270	-68	-188	-256
External Walk and Bike				-183	-17	-5	-22	-5	-13	-18
External Transit				-200	-20	-10	-30	-10	-15	-25
Total Reductions				*-2,415*	*-241*	*-81*	*-322*	*-83*	*-216*	*-299*
Net New External Project Trips				**23,888**	**1,692**	**540**	**2,232**	**660**	**1,819**	**2,479**
Mace Triangle Project Component										
Office/R&D	1,000 Sq. Ft. GLA	710[1]	81	762	80	13	93	13	69	82
Project Total (ARC + Mace Triangle)										
Net New External Project Trips				**24,650**	**1,772**	**553**	**2,325**	**673**	**1,888**	**2,561**

Notes:

[1] ITE Trip Generation land use category (710) – General Office Building (Adj Streets, 7-9A, 4-6P). Includes 100,000 sq. ft. of proposed ancillary retail space for ARC and 25,000 sq. ft. of proposed ancillary retail space for the Mace Triangle, as permitted by ITE for this land use category.

- Daily: Ln(T) = 0.97 * ln(X) + 2.50
- AM Peak Hour: T = 0.94(X) + 26.49 (88% in, 12% out)
- PM Peak Hour: Ln(T) = 0.95 * ln(X) + 0.36 (17% in, 83% out)

[2] ITE Trip Generation land use category (140) - Manufacturing (Adj Streets, 7-9A, 4-6P)

- Daily: T = 3.93(X)

- AM Peak Hour: T = 0.62(X) (73% in, 27% out)
- PM Peak Hour: T = 0.67(X) (44% in, 56% out)

[3] ITE Trip Generation land use category (310) - Hotel (Adj Streets, 7-9A, 4-6P)

- Daily: T = 11.29(X) + -426.97
- AM Peak Hour: T = 0.50(X) + -5.34 (59% in, 41% out)
- PM Peak Hour: T = 0.75(X) + -26.02 (51% in, 49% out)

[4] ITE Trip Generation land use category (220) - Multifamily Housing Low Rise (Adj Streets, 7-9A, 4-6P). This land use category was selected for use for the proposed 290 dwelling units of single-family housing. ITE indicates that this land use category is appropriate for use for attached housing between one and three stories in height, which is aligned with the proposed single-family housing product as described in the project description. Alternative options identified by ITE include detached single-family housing and mid-rise multi-family housing, neither of which align with the proposed single-family housing product as described in the project description.

- Daily: T = 7.56(X) + -40.86
- AM Peak Hour: Ln(T) = 0.95 * ln(X) + -0.51 (20% in, 80% out)
- PM Peak Hour: Ln(T) = 0.89 * ln(X) + -0.02 (65% in, 35% out

[5] ITE Trip Generation land use category (221) - Multifamily Housing Mid-Rise (Adj Streets, 7-9A, 4-6P)

- Daily: T = 5.45(X) + -1.75
- AM Peak Hour: Ln(T) = 0.98 * ln(X) + -0.98 (21% in, 79% out)
- PM Peak Hour: Ln(T) = 0.96 * ln(X) + -0.63 (65% in, 35% out)

Sources: Institute of Transportation Engineers (ITE) *Trip Generation Manual, 10th Edition*, 2017; Fehr & Peers, 2020.

Vehicle Miles Traveled (VMT)

In this study, vehicle miles traveled (VMT) estimates were prepared for the purposes of identifying potential transportation impacts, as well as to inform other EIR sections including air quality, noise, energy, and greenhouse gas emissions. Project-generated VMT estimates were derived from the process previously described in the Analysis Methodology section.

The proposed ARC project is estimated to generate 309,000 VMT under existing conditions and 253,000 VMT under cumulative conditions on a typical weekday. The Mace Triangle project component is estimated to generate 10,800 VMT under existing conditions and 8,500 VMT under cumulative conditions on a typical weekday.

Changes to project-generated VMT estimates between Existing Plus Project and Cumulative Plus Project can be primarily attributed to changes in travel distances made by project residents and employees. They occur because of different local and regional land use patterns that would alter travel behavior within and between the City of Davis and neighboring jurisdictions (e.g., planned residential development within the City of Davis and on the UC Davis campus would enable a greater number of project employees to live locally, thereby reducing their work commute trip distance).

6. Significance Criteria

This section describes the thresholds or criteria that determine whether the project would cause an adverse effect to the roadway system (via its VMT contribution) as well as to the bicycle, pedestrian, and transit systems. These thresholds are based on policies from the *City of Davis General Plan*, policies from owner/operators of affected transportation facilities (e.g., Caltrans), criteria utilized in previous transportation studies prepared by the City, and professional judgment.

Roadway System VMT Criteria

The project is considered to result in a significant impact to the roadway system (via its VMT contribution) if the project-generated VMT per service population exceeds any of the following thresholds relative to existing local or regional VMT per service population averages:

- VMT Threshold #1: Project-generated VMT per service population would be less than or equal to local or regional VMT per service population averages, as analyzed for recent City of Davis CEQA documents;
- VMT Threshold #2: Project-generated VMT per service population would be less than or equal to 15 percent lower than the local or regional VMT per service population averages, as recommended by OPR in the Technical Advisory on Evaluating Transportation Impacts in CEQA; and
- VMT Threshold #3: Project-generated VMT per service population would be less than or equal to 14.3 percent lower than the local or regional VMT per service population averages, the threshold needing to be met in order to be consistent with the 2017 Scoping Plan Update and to achieve State climate goals as defined by the California Air Resources Board (CARB) in the Technical Advisory on Evaluating Transportation Impacts in CEQA.

Bicycle Facility Criteria

The project is considered to result in a significant impact to bicycle facilities if:

- The project conflicts with existing, planned, or possible future bicycle facilities; or
- The project otherwise decreases the performance or safety of such facilities.

Pedestrian Facility Criteria

The project is considered to result in a significant impact to pedestrian facilities if:

- The project conflicts with existing, planned, or possible future pedestrian facilities; or
- The project otherwise decreases the performance or safety of such facilities.

Transit Service and Facilities Criteria

The project is considered to result in a significant impact to transit facilities and services if:

- The project conflicts with existing, planned, or possible future transit facilities and services; or
- The project otherwise decreases the performance or safety of such facilities and services.

Other Transportation Considerations

The project is considered to result in a significant impact if any of the following conditions occur:

- The project does not provide for adequate emergency vehicle access and on-site circulation; or
- Construction-related traffic causes adverse effects as defined by the transportation system criteria described above.

7. Impacts and Mitigation Measures

This section describes the evaluation of potential transportation impacts associated with the construction of the project and, in instances where the project would cause a significant impact, identifies potential mitigation measures that would lessen the severity of the impact.

For the purposes of the SEIR, each impact described in this section concludes with a comparison to the relevant impact findings for the proposed MRIC project as described in Sections 4.14 (Transportation and Circulation) and Section 5 (Cumulative Impacts) of the MRIC EIR. Within the MRIC EIR, Impact Statements 4.14-1, 4.14-2, 4.14-3, 4.14-4, 5-21, 5-22, 5-23, and 5-24 all pertain to vehicle delay and LOS. Therefore, these are no longer considered environmental impacts under CEQA, and are not addressed further in this study. Refer to Volume 2 for a discussion of the project's anticipated effects on roadway operations and recommendations to ameliorate such effects for General Plan consistency purposes.

Project Impacts and Mitigation Measures

Impact 1: Impacts to vehicle miles traveled (VMT) on the roadway system.

Implementation of the proposed project would change local and regional VMT per service population in a manner that would exceed relevant local and State thresholds. This impact would therefore be **significant**.

The potential impact to VMT was evaluated by comparing the estimated VMT per service population (defined as project residents plus employees) that would be generated by the project to the local and regional VMT per service population averages. For the purposes of this study, the ARC Project is considered to result in a significant impact if the project-generated VMT per service population exceeds any of the following thresholds relative to the existing local or regional VMT per service population averages:

- VMT Threshold #1: Project-generated VMT per service population would be less than or equal to the existing local or regional VMT per service population averages , as analyzed for recent City of Davis CEQA documents;
- VMT Threshold #2: Project-generated VMT per service population would be less than or equal to 15 percent lower than the local or regional VMT per service population averages, as

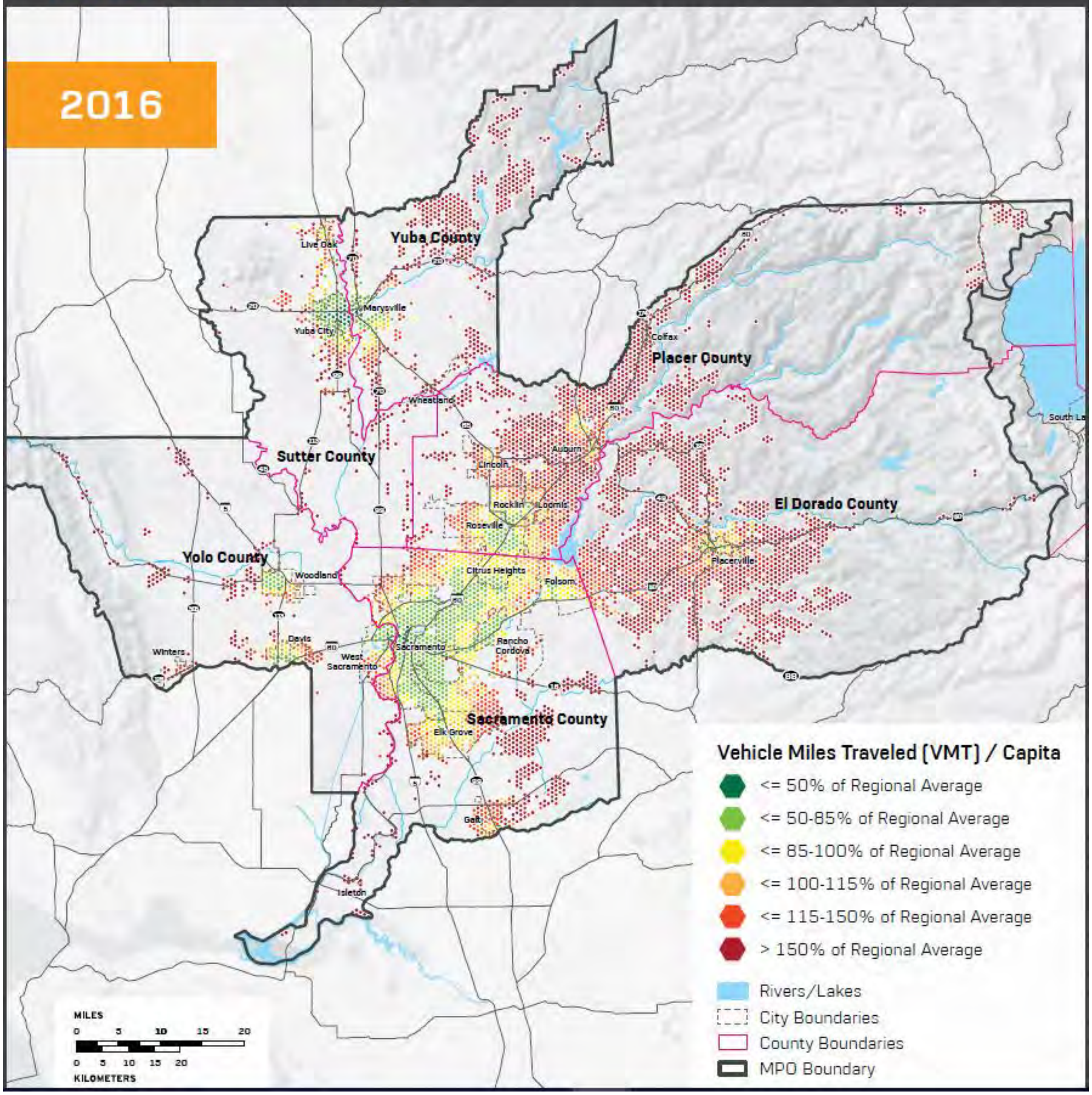
recommended by OPR in the Technical Advisory on Evaluating Transportation Impacts in CEQA; and

- VMT Threshold #3: Project-generated VMT per service population would be less than or equal to 14.3 percent lower than the local or regional VMT per service population averages, the threshold needing to be met in order to be consistent with the 2017 Scoping Plan Update and to achieve State climate goals as defined by the California Air Resources Board (CARB) in the Technical Advisory on Evaluating Transportation Impacts in CEQA.

Table 4 presents the results of the VMT analysis. The proposed ARC Project and future buildout of the Mace Triangle are estimated to generate 309,000 VMT and 10,800 VMT, respectively, under Existing Plus Project conditions on a typical weekday. The project would generate an estimated 39.20 VMT per service population (i.e., residents plus employees) under Existing Plus Project conditions. The total VMT that would be generated by the ARC is equal to nine percent of the total VMT generated by the City of Davis under existing conditions.

The 2020 SACOG MTP/SCS analyzed existing (2016) and future (2040) VMT per capita for geographic areas throughout the SACOG region. The image on the following page illustrates the VMT per capita of the ARC Site vicinity relative to the regional VMT per capita average in 2016. According to the SACOG analysis, the ARC Site is located within a high VMT generating area, where VMT per capita levels measure between 115 and 150 percent of the regional average.

FIGURE 3.10 2016 Vehicle Miles Traveled per Capita



Analyses were performed using US Census OnTheMap database for 2017 conditions, which is the most recent year of available data. The analysis determined that there is a sizeable number of persons residing in the Sacramento metropolitan area that commute long distances to work destinations west of Davis, including many in the Bay Area. If the employment component of the ARC Project could induce some of these employers to relocate their operations or operate satellite work centers at the project site, many of these trips could be ‘intercepted’, resulting in considerably shortened trip distances. This would reduce the project-generated VMT and VMT per service population below the estimates presented in this analysis.

Data currently does not exist to enable quantification of the expected number of ‘regional commute’ employees that would shift their work destination to the ARC Project. Thus, the VMT estimates presented herein are accurate, if not somewhat conservative, so as to ensure impacts are not understated. Potential information that would provide supporting evidence on this topic would include, but is not limited to, surveys of prospective ARC employers, employees, and residents and a detailed economic analysis of existing and anticipated future local and regional housing and employment trends (specifically those related to the City of Davis and UC Davis).

As shown in the Table 4, using this methodology, project-generated VMT per service population would measure below the average VMT per service population generated by the City of Davis and by the City of Davis with UC Davis but above the average VMT per service population generated by the SACOG region. Therefore, the ARC Project would exceed thresholds #1 (excluding local VMT), #2, and #3 listed above, and a **significant** impact would occur.

Table 4: Weekday VMT per Service Population – Existing Plus Project Conditions

Metric	Project Site[1]	City of Davis[2]	City of Davis & UC Davis[3]	SACOG Region[4]
Total VMT	319,800	3,411,358	4,268,554	123,034,634
Residents	2,119	71,755	80,794	2,374,910
Employees	6,040	13,987	26,365	940,683
Service Population	8,159	85,742	106,159	3,315,593
Total VMT per Service Population	39.20	39.79	40.21	37.11
VMT Significance Criteria Comparison				
% Difference between ARC project-generated VMT per service population and existing local/regional VMT per service population		-1.48%	-2.51%	+5.63%
Exceed VMT Threshold #1 (+0%)?		No	No	Yes
Exceed VMT Threshold #2 (-15%)?		Yes	Yes	Yes
Exceed VMT Threshold #3 (-14.3%)?		Yes	Yes	Yes

Notes: [1] Includes both the ARC and the Mace Triangle. ARC and Mace Triangle employee estimates derived from *City of Davis Economic Evaluation of Innovation Park Proposals* (BAE, July 2015) as follows: 5,882 ARC employees + 158 Mace Triangle employees = 6,040 total project employees. ARC resident estimates derived from American Community Survey unit occupancy estimates for the City of Davis as follows: (570 multi-family units x 2.44 occupants per unit) + (280 single-family units x 2.6 occupants per unit) = 2,119 total project residents.
[2] Resident and employee totals derived from the UC Davis/City of Davis Travel Demand Model land use inputs. Includes UC Davis residential uses located off-campus in the City of Davis (e.g., 8th and Wake Apartments).
[3] Resident and employee totals derived from the UC Davis/City of Davis Travel Demand Model land use inputs. Includes both City of Davis residents and employees and UC Davis on-campus residents and employees.
[4] Resident and employee totals derived from the UC Davis/City of Davis Travel Demand Model and SACSIM travel demand model land use inputs.
City of Davis, City of Davis with UC Davis, and SACOG region VMT per service population represent existing conditions.
Source: Fehr & Peers, 2020.

Mitigation Measure 1.1. Develop a TDM program and implement TDM strategies to reduce project-generated VMT.

Prior to issuance of the first building permit in the first phase of development, the applicant shall develop a TDM program for the entire proposed project, including any anticipated phasing, and shall submit the TDM program to the City Department of Public Works for review and approval. To the extent feasible, the TDM program should be designed to accomplish the following goals:

1) Reduce project-generated VMT such that the project achieves all three VMT-related significance thresholds; and

2) Achieve an average vehicle ridership (AVR) of 1.5 for peak period commute trips in accordance with Davis Municipal Code Section 22.15.060.

The Master Owners' Association (MOA) shall be responsible for implementing the TDM program:

1) The MOA shall be responsible for funding and overseeing the delivery of trip reduction/TDM proposed programs and strategies to achieve the project-generated VMT and AVR targets, which may include, but are not limited to, the following:
    a. Establishment of carpool, buspool, or vanpool programs;
    b. Vanpool purchase incentives;
    c. Cash allowances, passes, or other public transit subsidies and purchase incentives;
    d. Low emission vehicle purchase incentives/subsidies;
    e. Parking management strategies including limiting parking supply, charging parking fees, unbundling parking costs, and providing parking cash-out programs;
    f. Full or partial parking subsidies for ridesharing vehicles;
    g. Preferential parking locations for ridesharing vehicles;
    h. Computerized commuter rideshare matching service;
    i. Guaranteed ride-home program for ridesharing;
    j. Alternative workweek and flex-time schedules;
    k. Telecommuting or work-at-home programs;
    l. On-site lunch rooms/cafeterias;
    m. On-site commercial services such as banks, restaurants, groceries, and small retail;
    n. On-site day care facilities;
    o. Bicycle programs including bike purchase incentives, storage, maintenance programs, and on-site education program;
    p. Car share and bike share services;
    q. Enhancements to Unitrans, Yolobus, or other regional bus service;
    r. Enhancements to Capitol Corridor or other regional rail service;
    s. Enhancements to the citywide bicycle network;
    t. Dedicated employee housing located either on-site or elsewhere in the City of Davis;
    u. Designation of an on-site transportation coordinator for the project;
    v. Implement a fair value commuting program where fees charged to SOV commuters (e.g., through parking pricing) are tied to project vehicle trip reduction targets and

fee revenue is rebated to non-SOV commuters, or other pricing of vehicle travel and parking;

w. Support management strategies (e.g., pricing, vehicle occupancy requirements) on roadways or roadway lanes, particularly I-80 over the causeway;

x. Contribute to a VMT mitigation bank or exchange to support VMT reductions elsewhere in the City or region;

y. Change the project to increase project trip internalization (e.g., decrease employment uses and/or increase residential uses).

2) Single-phase development projects shall achieve project-generated VMT and AVR targets within five (5) years of issuance of any certificate of occupancy. Multi-phased projects shall achieve the project-generated VMT and AVR targets for each phase within three (3) years of the issuance of any certificate of occupancy.

3) In conjunction with final map approval, recorded codes, covenants and restrictions (CC&Rs) shall include provisions to guarantee adherence to the TDM objectives and perpetual operation of the TDM program regardless of property ownership, inform all subsequent property owners of the requirements imposed herein, and identify potential consequences of nonperformance.

   Each space use agreement (i.e., lease document) shall also include TDM provisions for the site as a means to inform and commit tenants to, and participate in, helping specific applicable developments meet TDM performance requirements.

4) Mace Triangle businesses shall implement a TDM program, which could be fulfilled by participation within the ARC TDM program.

5) Ongoing reporting:

   1) Annual TDM Report. The MOA for the Project shall submit an annual status report on the TDM program to the City Department of Public Works beginning a year after the issuance of any certificate of occupancy. Data shall be collected in October of each year and the Annual Report submitted by December 31 of each year. The report shall be prepared in the form and format designated by the City, which must either approve or disapprove the program.

      i. The TDM performance reports shall focus on the trip reduction incentives offered by the project, their effectiveness, the estimated greenhouse gas (GHG) emissions generated by the project, and the methods by which a continued trajectory towards carbon neutrality in 2050 can be achieved consistent with Mitigation Measure 1.1. The report shall:

- Report the project-generated VMT levels attained;
- Report the AVR levels attained;
- Verify the TDM plan incentives that have been offered;
- Describe the use of those incentives offered by employers;
- Evaluate why the plan did or did not work to achieve the project-generated VMT and AVR targets and explain why the revised plan is more likely to achieve the project-generated VMT and AVR target levels;
- List additional incentives which can be reasonably expected to correct deficiencies;
- Evaluate the feasibility and effectiveness of trip reduction/TDM program and strategies, as implemented;
- Estimate the greenhouse gas emissions generated by project transportation operations; and
- Identify off-setting GHG credits to be secured by the project to achieve carbon neutrality.

ii. The MOA shall develop and implement an annual monitoring program to determine if project-generated VMT and AVR targets are being met. The monitoring program could include employee travel surveys, traffic counts at project site ingress/egress points, and other relevant information.

iii. If the project-generated VMT and/or AVR targets are not met for any two consecutive years, the applicant or current owner of the site will contribute funding to be determined in a separate study toward the provision of additional or more intensive travel demand management programs, such as enhanced regional transit service to the site, employee shuttles, and other potential measures.

iv. In the event that other TDM objectives are not met as documented in the Annual Monitoring Report submitted by December 31 of each year, the MOA shall:

- Submit to the City within thirty (30) days of submittal of the annual report, a list of TDM measures that will be implemented to meet the TDM objectives within one hundred eighty (180) days of submittal of annual report. At the end of the one-hundred-eighty-day period, the MOA shall submit a revised performance report to determine compliance with TDM objectives. No further measures will be necessary if the TDM objectives are met.

Should the TDM objectives not be satisfied by the end of the one-hundred-eighty-day period, the MOA shall pay a TDM penalty fee to the City in an amount determined by resolution of the City Council. Said penalty fee may be used to provide new transit service and/or subsidize existing transit service, construct bicycle facilities, and/or improve street capacity through construction of physical improvements to be selected by the City of Davis from the list of area-wide improvements identified in the City's CIP.

Significance after Mitigation

Implementation of Mitigation Measure 1.1 would reduce project-generated VMT per service population by instituting a TDM program to reduce external vehicle trips generated by the project. However, the effectiveness of the TDM strategies is not known and subsequent vehicle trip reduction effects cannot be guaranteed. Existing evidence indicates that the effectiveness of TDM strategies with regards to vehicle trip reduction can vary based on a variety of factors, including the context of the surrounding built environment (e.g., urban versus suburban) and the aggregate effect of multiple TDM strategies deployed together. Moreover, many TDM strategies are not just site specific, but also rely on implementation and/or adoption by private entities (e.g., elective use of carpool program by office building tenants).

As noted above, due to uncertainties regarding the ability for the aforementioned mitigation measure to reduce VMT impacts to less-than-significant levels, VMT impacts would be considered **significant and unavoidable**.

Comparison to MRIC EIR

This represents a new unmitigable significant impact when compared to the MRIC EIR, which found impacts to VMT to be less-than-significant with mitigation (see Impact 4.14-6 from the MRIC EIR). This can be explained by the following changes from the MRIC EIR:

- Changes to the project description
- Changes to the VMT significance criteria
- Changes to baseline local and regional land uses
- Changes to VMT analysis methods (e.g., use of new travel demand models)
- Changes to current understanding of efficacy of TDM strategies

Impact 2: Impacts to bicycle and pedestrian facilities.

Implementation of the proposed project would increase bicycle, pedestrian, and vehicle trips within the vicinity of the project site, which could increase the competition for physical space between modes and increase the potential for conflicts involving bicyclists and pedestrians. This impact would therefore be **significant**.

Existing facilities adjacent to the project include Class II bike lanes on Mace Boulevard and Alhambra Drive, and a shared-use path on Alhambra Drive. Existing intersections near the project site are typical of suburban roadway systems in that they were designed and constructed to prioritize the movement of vehicles over other modes of travel. Defining features of these intersections include channelized right-turn lanes, multiple travel lanes for each approach, long crossing distances for bicyclists and pedestrians, and uncontrolled mixing areas between bicyclists, pedestrians, and high-speed vehicular traffic. Altogether, these intersection characteristics can diminish the safety and comfort of bicycle and pedestrian facilities and discourage walking and biking as a mode of travel.

The project would provide a bike path within the 50-foot transition zone of the on-site agricultural buffer, which would connect to the existing Class II bike lane on County Road 32A at the project's southeastern corner. The project would provide bicycle support facilities such as bicycle racks, storage lockers, a repair station, and showers.

The project would construct a grade-separated bicycle and pedestrian crossing of Mace Boulevard north of Alhambra Drive. Additionally, the project would construct a Class I shared-use path on the west side of Mace Boulevard from the proposed grade-separated bicycle and pedestrian crossing to Harper Junior High School. This path improvement along the inside of the Mace Curve would close an existing gap in the off-street path network in the project vicinity. In addition to facilitating bicycle and pedestrian travel to/from the project site, this gap closure project would accommodate students walking and biking to/from Harper Junior High School along Mace Boulevard with a bicycle and pedestrian facility separated from vehicular traffic. The Offices @ Mace Ranch project located at the northwest corner of the Mace Boulevard/Alhambra Drive intersection will also provide a path connection to the proposed grade-separated crossing along its Mace Boulevard and Alhambra Drive frontages. This project is currently under construction and scheduled for completion in 2020.

Project-generated bicycle and pedestrian trips would primarily utilize the following facilities for travel to and from the project site:

- Proposed grade-separated bicycle and pedestrian crossing of Mace Boulevard and path connection to Harper Junior High School
- Existing Class I shared-use path on the south side of Covell Boulevard to/from Wildhorse, Oak Tree Plaza, and North Davis
- Existing Class I shared-use paths throughout Mace Ranch and Class II bike lanes on Alhambra Drive to/from Mace Ranch, East Davis, Central Davis, Downtown Davis, and UC Davis

- Existing Class II bike lanes on Second Street to/from Target Shopping Center, Second Street employment centers, Downtown Davis, and UC Davis
- Existing Class II bike lanes on Mace Boulevard to/from the El Macero Shopping Center and South Davis
- Existing Class II bike lanes on County Road 32A to/from Sacramento
- Existing sidewalks, paths, bike lanes, marked crosswalks, and/or crossings at the following intersections:
    - Mace Boulevard/Alhambra Drive
    - Mace Boulevard/Second Street/County Road 32A
    - Mace Boulevard/I-80 WB Ramps
    - Mace Boulevard/I-80 EB Ramps
    - Mace Boulevard/Chiles Road

The substantial amount of project-generated vehicle trips (as described in Volume 2) would largely utilize the same roadway facilities for travel to and from the project site. Therefore, due to increases in bicycle, pedestrian, and vehicle trips generated by the project within the vicinity of the project site, transportation facilities that require mixing of vehicles, bicyclists, and pedestrians would experience increases in the competition for physical space between the modes and, in turn, an increase in the potential for conflicts involving bicyclists and pedestrians. These conditions could diminish the safety and performance of bicycle and pedestrian facilities, particularly at locations where bicyclists and pedestrians experience long crossing distances, long exposure times, uncontrolled conflicts with high-speed vehicular traffic, or blockages due to queued vehicles. The project's contributions to these conditions would be substantial at the following locations:

- Mace Boulevard/Alhambra Drive
    - Existing southbound channelized right-turn lane due to project increases to bicycle and pedestrian crossings (bicycle-vehicle and pedestrian-vehicle conflicts)
    - Existing eastbound channelized right-turn lane due to project increases to diverted traffic from eastbound Covell Boulevard to Alhambra Drive and increases in bicycle and pedestrian crossings. Moreover, the inability for eastbound vehicles to turn right onto Mace Boulevard (due to worsened traffic congestion on southbound Mace Boulevard caused by the project) could cause queue spillbacks that block the crosswalk (bicycle-vehicle and pedestrian-vehicle conflicts)
    - Proposed northbound and westbound channelized right-turn lanes due to project increases to vehicle traffic and bicycle and pedestrian crossings. Moreover, the inability for westbound vehicles to turn right onto Mace Boulevard (due to worsened traffic congestion on northbound Mace Boulevard caused by the project) could cause queue

spillbacks that block the crosswalk in the westbound channelized right-turn lane (bicycle-vehicle and pedestrian-vehicle conflicts)

- Mace Boulevard/Second Street/County Road 32A
    - Existing southbound channelized right-turn lane due to project increases to vehicle traffic and bicycle and pedestrian crossings (bicycle-vehicle and pedestrian-vehicle conflicts)
    - Existing eastbound channelized right-turn lane due to project increases to bicycle and pedestrian crossings. Moreover, the inability for eastbound vehicles to turn right onto Mace Boulevard (due to worsened traffic congestion on southbound Mace Boulevard caused by the project) could cause queue spillbacks that block the crosswalk (bicycle-vehicle and pedestrian-vehicle conflicts)
- Mace Boulevard/I-80 WB Ramps
    - Existing westbound channelized right-turn lane due to project increases to vehicle traffic and bicycle and pedestrian crossings. Moreover, the inability for westbound vehicles to turn right onto Mace Boulevard (due to worsened traffic congestion on northbound Mace Boulevard caused by the project) could cause queue spillbacks that block the crosswalk (bicycle-vehicle and pedestrian-vehicle conflicts)
    - Existing southbound approach bike lane and upstream unmarked bicycle-vehicle mixing zone due project increases to vehicle queue spillbacks into mixing zone (bicycle-vehicle conflict)
- Mace Boulevard/I-80 EB Ramps
    - Existing southbound slip ramp due to lengthy unmarked bicycle-vehicle mixing zones and project increases to vehicle traffic and bicycle crossings (bicycle-vehicle conflict)
    - Existing northbound slip ramp due to lengthy unmarked bicycle-vehicle mixing zones, unmarked pedestrian crosswalks, and project increases to vehicle traffic and bicycle and pedestrian crossings (bicycle-vehicle and pedestrian-vehicle conflicts)
- Mace Boulevard/Chiles Road
    - Existing southbound channelized right-turn lane due to project increases to vehicle traffic and bicycle crossings (bicycle-vehicle conflict)
    - Existing eastbound channelized right-turn lane due to project increases to bicycle and pedestrian crossings (bicycle-vehicle and pedestrian-vehicle conflicts)
    - Existing northbound channelized right-turn lane due to project increases to vehicle traffic and bicycle and pedestrian crossings (bicycle-vehicle and pedestrian-vehicle conflicts)
- County Road 32A
    - The increase in vehicle trips on County Road 32A could adversely affect bicycle flow along County Road 32A between County Road 105 and the access to the causeway bicycle path. The combination of the existing lane width (11 feet in each direction), high travel speeds,

and soft shoulders plus the addition of project vehicle trips could disrupt bicycle flows on County Road 32A. Bicycle flows could also be disrupted for westbound bicycle traffic on County Road 32A that continues onto the path west of County Road 105. These cyclists must cross vehicle traffic on County Road 32A just southeast of the at-grade rail crossing where County Road 32A has a sharp curve. Similarly, eastbound bicyclists accessing the causeway shared-use path must cross oncoming vehicle traffic on County Road 32A just east of the I-80 off-ramp where County Road 32A has a curve. The addition of project peak hour vehicle trips to County Road 32A has the potential to negatively affect bicyclists making these uncontrolled movements.

Note that except for the proposed westbound and northbound channelized right-turn lanes at the Mace Boulevard/Alhambra Drive intersection, all of the locations described above are existing features of the transportation system. Therefore, while the project would exacerbate the detrimental effects of these features, portions or all of these facilities may be considered existing deficiencies with respect to the bicycle and pedestrian environment.

As described previously, the project would be built-out in four phases over a twenty to twenty-five year time period. Since this analysis examines the hypothetical scenario where the project at buildout would be added to the existing transportation setting, it cannot reasonably identify the associated bicycle and pedestrian impacts of each phase of development based on the timing of the development phase and the surrounding transportation circumstances at that time.

The project would neither construct nor interfere with the implementation of planned bicycle facilities identified in the *City of Davis General Plan* or the *Beyond Platinum Bicycle Action Plan*. Proposed bicycle enhancements in the *City of Davis Beyond Platinum Bicycle Action Plan* include buffered bike lanes along Second Street between Mace Boulevard and L Street, as well as bike lane conflict markings and bike intersection crossing markings on Mace Boulevard at the I-80 interchange ramps. Several of the roadways near the project site, including Mace Boulevard, Covell Boulevard, Second Street, and Chiles Road are designated as Greenstreets in the *City of Davis General Plan*. Action TRANS 2.1(k) calls for the City to review standards for these roadways to reflect other bicycle and pedestrian friendly policies in the Circulation Element, including the elimination of intersection standards that allow high speed right turns for motor vehicles.

The project also would not interfere with planned regional bicycle projects identified in the SACOG MTP/SCS.

Altogether, these factors would constitute a significant impact to bicycle facilities.

Mitigation Measure 2.1. Construct proposed off-site bicycle and pedestrian facilities.

Prior to issuance of the first certificate of occupancy of the ARC, the applicant shall construct the following proposed off-site bicycle and pedestrian facilities as described in the project description and shown on the project site plan:

1) Grade-separated bicycle and pedestrian crossing of Mace Boulevard north of Alhambra Drive
2) Class I shared-use path on the west side of Mace Boulevard between proposed grade-separated crossing and Harper Junior High School
3) Pedestrian and landscaping improvements on the access road between the Mace park-and-ride and County Road 32A

Implementation of these improvements would improve bicycle and pedestrian facilities on Mace Boulevard by reducing the potential for bicycle-vehicle and pedestrian-vehicle conflicts.

Mitigation Measure 2.2. Improve bicycle facilities on County Road 32A.

Prior to issuance of the first certificate of occupancy of the ARC, the applicant shall contribute fair share funding to cover their proportionate cost of the following improvements:

- Widen County Road 32A between County Road 105 and the Causeway Bicycle Path Access to meet Yolo County standards for a two-lane arterial (14-foot travel lanes and 6-foot shoulder/on-street bike lanes).
- Westbound bicycle crossing improvements at the existing at-grade railroad crossing at County Road 32A and County Road 105. Potential improvements include a marked bicycle crossing for westbound bicyclists with advanced warning devices for vehicle traffic. These improvements would facilitate westbound bicyclists continuing west onto the shared-use path located between the Union Pacific Railroad mainline and I-80 (e.g., to the west of County Road 105). As noted earlier, Yolo County, together with Union Pacific and the City of Davis, are currently evaluating potential modifications to this at-grade crossing to reduce the potential for conflicts with rail operations. Therefore, the ultimate improvements constructed at this crossing should be consistent with the preferred modifications identified in this County-led study.
- Eastbound bicycle crossing improvements for bicyclists turning left from County Road 32A onto the causeway shared-use path. Potential improvements include the installation of a

marked crossing on the east leg of the County Road 32A/I-80 WB off-ramp intersection and construction of a two-way path on the north side of County Road 32A between the County Road 32A/I-80 WB off-ramp intersection and the entrance to the causeway path.

- Widen County Road 32A between County Road 105 and the causeway shared-use path access point to meet Yolo County standards for a two-lane arterial (14-foot travel lanes and 6-foot shoulder/on-street bike lanes).

Implementation of these improvements, or a set of improvements of equal effectiveness, would improve bicycle facilities on County Road 32A by reducing the potential for bicycle-vehicle conflicts.

Mitigation Measure 2.3. Identify and construct complete streets improvements on the Mace Boulevard corridor.

The applicant shall identify and construct complete streets improvements on the Mace Boulevard corridor, including the following actions:

1) Prior to issuance of the first building permit for the ARC, the applicant shall fund and complete (in conjunction with City staff) a corridor plan for the Mace Boulevard corridor between Harper Junior High School and Cowell Boulevard.[3] At a minimum, the corridor plan shall identify complete streets improvements that achieve the following goals:
    1) Provide safe and comfortable access for pedestrian and bicyclists
    2) Minimize the potential for bicycle-vehicle and pedestrian-vehicle conflicts
    3) Provide fast and efficient transit operations
    4) Minimize cut-through traffic on residential roadways
    5) Avoid operating conditions that degrade roadway safety (e.g., off-ramp queue spillback to freeway mainline)

    The corridor plan shall be prepared to the satisfaction of the City of Davis Public Works Department and be approved by the City of Davis City Council. The corridor plan should also include a thorough public engagement process to understand the transportation priorities of

[3] Policy TRANS 2.8 of the *City of Davis General Plan* calls for the preparation of corridor plans for selected corridors throughout the City. The segment of Mace Boulevard referenced in Mitigation Measure 2.3-3 includes all of corridor #15 (Mace Boulevard – Harper Junior High School to Interstate 80) and portions of corridors #2 (Chiles Road – Drummond Avenue to East City Limit) and #16 (Mace Boulevard – Interstate 80 to South City Limit) as shown in Map 5 of the *General Plan* Circulation Element. Corridors #2 and #15 do not currently have corridor plans. Corridor #16 south of Cowell Boulevard was recently modified based on prior corridor planning efforts. The segment of Corridor #16 between Cowell Boulevard and Interstate 80 was excluded from those efforts and does not currently have a corridor plan.

the surrounding community. This should include an initial hearing before the Planning Commission and the Bicycling, Transportation, and Street Safety Commission (BTSSC) to solicit initial input and a second hearing for review of the draft plan.

2) In conjunction with submittal of a final planned development or tentative map, whichever occurs first, for each ARC project phase, the MOA for the project shall submit a focused transportation impact study for the phase under review. The study shall document current conditions at the time and identify the anticipated transportation system effects associated with the development proposed for the phase under review and the necessary transportation system improvements to ameliorate these effects in accordance with the methods and significance thresholds used in this transportation impact analysis. Improvements should be consistent with the complete streets goals and improvements identified in the Mace Boulevard corridor plan to be funded and completed by the applicant as described above. The study should also address the degree to which improvements would address any significant impacts caused by the project at buildout as identified in this transportation impact analysis. Potential improvements include, but are not limited to, the following:

    1) Improvements to on- and off-street bicycle facilities on Mace Boulevard and connecting roadways, including Covell Boulevard, Alhambra Drive, Second Street, County Road 32A, and Chiles Road

    2) Improvements to bicycle and pedestrian crossings at the following intersections:

        a. Mace Boulevard/Alhambra Drive
        b. Mace Boulevard/Second Street/County Road 32A
        c. Mace Boulevard/I-80 WB Ramps
        d. Mace Boulevard/I-80 EB Ramps
        e. Mace Boulevard/Chiles Road

       Crossing improvements should reduce the potential for bicycle-vehicle and pedestrian-vehicle conflicts and provide for safe and comfortable access for pedestrians and bicyclists. Potential crossing improvements include, but are not limited to bike lane conflict markings, intersection crossing markings, reductions to crossing distances, and physically separating bicyclists from vehicles (e.g., conversion to a protected intersection). Additionally, crossing improvements should include the modification of existing channelized right-turn lanes to either a) remove and replace the lanes with standard right-turn lanes, or b) retrofit the lanes to reduce vehicles speeds and increase yield compliance rates.

3) Roadway capacity and operations improvements, as described in the Recommendations section of Volume 2. In particular, roadway capacity and operations improvements should address any adverse project effects to transit travel times and on-time performance, as well as operating conditions that degrade roadway safety (e.g., off-ramp queue spillback to freeway mainline).

Improvements identified in the focused transportation impact study should achieve the following performance measures:

1) Reduce the number and/or severity of bicycle-vehicle and pedestrian-vehicle conflict points at intersections and intersection approaches.
2) Eliminate otherwise anticipated increases in transit travel times and/or adverse changes to transit on-time performance that would be caused by the project in accordance with standards established by Unitrans, Yolobus, and other potential future transit operators.
3) Eliminate otherwise anticipated adverse effects to emergency vehicle response times that would be caused by the project in accordance with standards established by the City of Davis Fire Chief.
4) Eliminate otherwise anticipated increases in cut-through traffic on residential roadways that would be caused by the project.
5) Eliminate otherwise anticipated vehicle queuing that would be caused by the project that would adversely affect roadway safety, including off-ramp queue spillbacks to the freeway mainline, queue spillbacks that block bicycle and/or pedestrian facilities, and queue spillbacks that exceed available turn pocket storage and block adjacent through travel lanes.

The focused transportation impact study should also identify the funding and implementing responsibilities for each improvement, including whether the improvement should be constructed by the applicant or if the applicant should contribute fair share funding to cover their proportionate cost for the improvements. The applicant shall construct the improvement and/or contribute fair share funding prior to the issuance of the first certificate of occupancy for each project phase under review.

Secondary Impacts After Mitigation

Elements of Mitigation Measure 2.3, particularly the potential for roadway operations and capacity improvements along the Mace Boulevard corridor, have the potential to exacerbate impacts to VMT described in Impact 1. Existing evidence indicates that Covell Boulevard, Mace Boulevard, and connecting roadways such as Second Street and Chiles Road are utilized as regional cut-through routes when I-80 experiences significant speed reductions and delays during p.m. peak periods (see Volume 2). Therefore, improving operations and reducing delays along these local roadways could increase the attractiveness of these routes as alternatives to I-80 and induce additional regional cut-through activity on local roadways. Parallel local routes require longer trip distances than remaining on I-80, therefore, regional travel demand use of local routes would yield more VMT than use of I-80.

Significance after Mitigation

Implementation of Mitigation Measures 2.1, 2.2, and 2.3 would reduce potential significant impacts associated with bicycle facilities to a less-than-significant level by supporting bicycling to and from the project site and reducing conflicts between bicycles and other travel modes.

However, elements of each mitigation measure would occur within Caltrans, Yolo County, and/or UPRR rights-of-way and would be subject to final approval and actions by others. Moreover, since the remaining fair share contributions needed for the construction of those mitigation measure elements requiring the project's fair share contribution have not been identified by the relevant lead agency, fair share payment by the project applicant would not ensure construction. Finally, the ultimate improvements resulting from Mitigation Measure 2.3 are subject to change pending the outcome of the Mace Boulevard Corridor Plan process described in Mitigation Measure 2.3. Therefore, the implementation and effectiveness of these mitigation measures cannot be guaranteed. As noted above, due to uncertainties regarding the ability for the aforementioned mitigation measures to reduce impacts to bicycle and pedestrian facilities, bicycle and pedestrian facility impacts would be considered **significant and unavoidable**.

Comparison to MRIC EIR

This represents a new unmitigable significant impact when compared to the MRIC EIR, which found impacts to bicycle and pedestrian facilities to be less-than-significant with mitigation (see Impact 4.14-9 from the MRIC EIR). This can be explained by the following changes from the MRIC EIR:

- Changes to the project description
- Changes to the bicycle and pedestrian significance criteria, particularly a new focus on safety and performance of bicycle and pedestrian facilities
- Changes to the feasibility of mitigation measures, particularly those requiring approval and actions by other entities

Impact 3: Impacts to transit service and facilities.

Implementation of the proposed project would increase the number of passengers utilizing transit service and facilities. New transit passenger demand would be accommodated by existing transit services. However, increases to transit travel times caused by the project would adversely affect the on-time performance and service quality of existing transit services. This impact would therefore be **significant**.

The ARC would introduce new office, manufacturing, and retail land uses that are situated in close proximity to the current transit stops (near Mace Boulevard/Second Street) for the A, O, P, Q, and Z bus routes operated by Unitrans. These routes serve a variety of retail, employment, medical, institutional, and recreational destinations throughout the City, and operate with 30-minute headways, and long service hours. The *City of Davis Short Range Transit Plan* indicates that 91 to 95 percent of all riders are UC Davis undergraduate students, three to six percent of riders are UC Davis graduate students, and just over 5 percent of riders are not UC Davis affiliates.

The *Unitrans General Manager's Report for Fiscal Year 2018-19* indicates that Unitrans experiences high levels of crowding (i.e., more than 60 passengers on standard bus or more than 100 passengers on a double-decker bus) on 3.5 percent of all bus trips.

Table 5 summarizes route-level ridership, productivity (passengers per revenue hour), and on-time performance for Unitrans routes serving the project site. Unitrans policy is to increase daily headways from 30 minutes to 15 minutes on routes with more than 60 passengers per hour. The five routes that serve the project site have ridership levels that are well under the 60 passenger per hour threshold and the project would not result in an increase above that threshold. While the project is expected to increase transit ridership on Unitrans, given the expected number of project transit riders and existing transit patronage, the project would not cause a demand above that which is provided or planned.

Table 5: Unitrans Route Performance Summary – Project Site Vicinity

Route	Annual Ridership	Passengers per Revenue Hour	On-Time Performance
A – Silo/Amtrak/5th/Alhambra	231,493	41.1	85%
O – MU/Amtrak/5th/Alhambra/Target	30,541	37.8	Not Reported
P – MU/Davis Perimeter Counter Clockwise	252,649	30.9	80%
Q – MU/Davis Perimeter Clockwise	259,039	32.6	68%
Z – MU/Amtrak/Cantrill/5th	105,990	26.2	90%

Source: *Unitrans General Manager's Report for Fiscal Year 2018-19.*

On-time performance is defined by Unitrans as a as a bus arriving at the terminal before the scheduled time or within five minutes of the scheduled time. Arriving more than five minutes late is defined as "late". Unitrans has a systemwide on-time performance target of 90 percent. Systemwide, Unitrans on-time performance was 88 percent during the 2018-19 fiscal year, and thus failed to meet their on-time performance target. This constitutes a five percent drop in systemwide on-time performance from four years prior. Unitrans indicates that they may consider significant route changes on the A, P, Q, and Z lines in FY 2020 to help reduce travel time and improve on-time performance in East Davis. As described in Volume 2, the project would cause substantial increases to vehicle travel demand and peak hour delay on roadways within the project site vicinity. Affected roadways include Mace Boulevard, Alhambra Drive, and Second Street, all of which are utilized by Unitrans routes serving the study area. Since Unitrans service would experience increases to peak hour delays at a level commensurate with general vehicle traffic, the project would cause adverse effects to Unitrans travel times and on-time performance. Reductions to route-level and systemwide on-time performance caused by the project would require Unitrans to restructure service or increase operating costs in order to maintain acceptable on-time performance thresholds.

Yolobus currently operates both intercity and express bus service in the City of Davis. Routes 42A and 42B are intercity routes that provide hourly service between downtown Sacramento, West Sacramento, Davis, Woodland, and the Sacramento International Airport. The routes have a scheduled bus stop at the intersection of Mace Boulevard and Second Street. The express bus routes operated by Yolobus in Davis are currently programmed to serve inbound commute trips to Sacramento in the morning peak period and return trips to Davis in the evening commute peak period. Since the project is an employment center expected to serve trips in the reverse direction, project employees are not expected to use the existing express bus routes. While the project is expected to result in a small increase in transit ridership on Yolobus, given the expected number of project transit riders and existing transit patronage, the ARC would not cause demand to exceed provided or planned Yolobus capacity. Similar to Unitrans routes serving the study area, Yolobus routes serving the study area would be subject to delay increases due to project-generated vehicle traffic and peak hour delay increases.

The ARC proposes the construction of Transit Plaza within the site that would be accessed via the new project access located on the east leg of the existing Mace Boulevard/Alhambra Drive intersection. This would require that Unitrans and Yolobus buses divert from Mace Boulevard into the project site to serve the transit plaza. This would result in additional travel time that would impact scheduling for the individual routes.

Because the ARC Project would adversely affect transit operations, particularly along the Mace Boulevard corridor, a **significant** impact to transit service and operations would occur as a result of the ARC Project.

Mitigation Measure 3.1. Construct enhanced bus stops on Mace Boulevard near Alhambra Drive.

Prior to the issuance of the first certificate of occupancy of the first ARC project phase, the project applicant shall fund and construct new bus stops with turnouts on both sides of Mace Boulevard at the new primary project access point at Alhambra Drive. The project applicant shall prepare design plans, to be reviewed and approved by the City of Davis Public Works Department, and construct bus stops with shelters, paved pedestrian waiting areas, lighting, real time transit information signage, and pedestrian connections between the new bus stops and all buildings on the project site. Responsibility for implementation of this mitigation measure shall be assigned to the ARC and Mace Triangle on a fair share basis. Upon completion of the ARC transit center, in consultation with Unitrans and Yolobus, the bus stops shall be moved to the ARC transit center at the expense of the ARC.

Mitigation Measure 3.2. Identify and construct complete streets improvements on the Mace Boulevard corridor.

Implement Mitigation Measure 2.3 (Identify and construct complete streets improvements on the Mace Boulevard corridor).

<u>Significance after Mitigation</u>
Implementation of Mitigation Measures 3.1 and 3.2 would reduce potential significant impacts associated with transit service and facilities by supporting transit use to and from the project site and minimizing adverse effects to transit operations that would be caused by the project.

However, elements of Mitigation Measure 3.2 would occur within Caltrans rights-of-way and would be subject to final approval and actions by others. Moreover, since the remaining fair share contributions needed for the construction of mitigation measure elements requiring the project's fair share contribution have not been identified by the relevant lead agency, fair share payment by the project applicant would not ensure construction. Finally, the ultimate improvements resulting from Mitigation Measure 3.2 are subject to change pending the outcome of the Mace Boulevard Corridor Plan process described in Mitigation Measure 3.2. Therefore, the implementation of these mitigation measures and their effectiveness cannot be guaranteed.

As noted above, due to uncertainties regarding the ability for the aforementioned mitigation measures to reduce impacts to transit service and facilities, transit service and facility impacts would be considered **significant and unavoidable**.

Comparison to MRIC EIR

This represents a new unmitigable significant impact when compared to the MRIC EIR, which found impacts to transit service and facilities to be less-than-significant with mitigation (see Impact 4.14-10 from the MRIC EIR). This can be explained by the following changes from the MRIC EIR:

- Changes to the project description
- Changes to the feasibility of mitigation measures, particularly those requiring approval and actions by other entities (e.g., Caltrans)

Impact 4: Impacts to emergency vehicle access.

Implementation of the proposed project would not impede emergency vehicle access. This impact would therefore be **less than significant**.

The proposed project would include three vehicular access points on Mace Boulevard (two full access, and one right-in/right-out only) and two vehicular access points on County Road 32A (both full access). Altogether, these connections would provide multiple opportunities and routes for emergency vehicles to access the site from multiple directions.

Fire access from the South Davis fire station (located one-half mile south of the project site on Mace Boulevard) would be available via northbound Mace Boulevard. Fire access from the Downtown Davis fire station (located nearly three miles west of the project site) would be available via eastbound Fifth Street and Alhambra Drive. Medical emergency service access to/from Sutter Davis Hospital (located over four miles west of the project site) would be available via Covell Boulevard. Each of these corridors have traffic signals equipped with emergency vehicle pre-emption, providing signal priority to emergency vehicles in the event of an emergency.

The design of the on-site roadways and intersections will be subject to City of Davis code and Public Works Department staff review and approval.

Therefore, this impact is considered **less-than-significant**.

Mitigation Measures

None required.

Impact 5: Construction-related impacts.

Implementation of the proposed project would result in construction activities that would disrupt the surrounding multi-modal transportation system. This impact would therefore be **significant**.

Construction of the project, including site preparation and construction, and delivery activities, would generate employee trips and a variety of construction-related vehicles. Construction activities would include disruptions to the transportation network near the project site, including the possibility of temporary lane closures, street closures, sidewalk closures, and bikeway closures. Bicycle and transit access may also be disrupted.

The most concentrated period of heavy truck traffic is anticipated to occur when excavated soil from the off-site storage pond is transported over to the ARC project site. It is forecast that a total of approximately 10,833 trucks will access the site over 30 work days, resulting in an average of approximately 720 truck trips per day (i.e., 360 truck loads per day, with two trips – one loaded trip to the site, one return empty trip – for each load). Trucks are projected to travel to and from the east end of the Howatt Ranch property near the levee adjacent to the Yolo Bypass. Trucks would access the southern portion of the site via County Road 32A, with trucks traveling to the Howatt Ranch site via County Road 32A and County Road 105. Use of County Road 32A by construction trucks could cause a short-term adverse impact to bicyclists using existing bike lanes.

These activities could also result in degraded roadway conditions. Altogether, these factors would result in a significant impact related to project construction.

Mitigation Measure 5.1. Prepare a Construction Traffic Control Plan.

Prior to any construction activities for the project site, the project applicant shall prepare a detailed Construction Traffic Control Plan and submit it for review and approval by the City Department of Public Works. The applicant and the City shall consult with Yolo County, Caltrans, Unitrans, Yolobus, and local emergency service providers for their input prior to approving the Plan. The plan shall ensure that acceptable operating conditions on local roadways and freeway facilities are maintained during construction. At a minimum, the plan shall include:

- The number of truck trips, time, and day of street closures
- Time of day of arrival and departure of trucks
- Limitations on the size and type of trucks, provision of a staging area with a limitation on the number of trucks that can be waiting

- Provision of a truck circulation pattern that minimizes effects on existing vehicle traffic during peak travel periods and maintains safe bicycle circulation
- Minimize use of County Road 32A by construction traffic during peak travel periods
- Resurface and/or repair any damage to roadways that occurs as a result of construction traffic
- Provision of driveway access plan so that safe vehicular, pedestrian, and bicycle movements are maintained (e.g., steel plates, minimum distances of open trenches, and private vehicle pick up and drop off areas)
- Maintain safe and efficient access routes for emergency vehicles
- Manual traffic control when necessary
- Proper advance warning and posted signage concerning street closures
- Provisions for pedestrian safety

A copy of the construction traffic control plan shall be submitted to local emergency response agencies and these agencies shall be notified at least 14 days before the commencement of construction that would partially or fully obstruct roadways.

Significance after Mitigation

Implementation of Mitigation Measure 5.1 would reduce potential significant impacts associated with project construction activity to a **less-than-significant** level by minimizing the effects of project construction to the surrounding multi-modal transportation system.

Cumulative Impacts and Mitigation Measures

Cumulative transportation impacts consider those that would result from the construction of the proposed project combined with other future land use and transportation system changes anticipated to occur by 2036. The project's contribution to cumulative impacts may be considerable if it worsens or results in a significant cumulative impact. Under cumulative conditions, the project would cause an impact if both of the following criteria are met:

- An unacceptable condition would exist; and
- The project would have a cumulatively considerable contribution to the unacceptable condition.

The proposed project is anticipated to be constructed in four phases over a 20 to 25-year period. Under cumulative conditions, the proposed project site plan and off-site transportation system modifications would not differ from those described in the project-specific impact analysis provided above.

The cumulative transportation impact analysis considered reasonably foreseeable land use and transportation system changes expected to occur by the 2036 analysis year, including the completion of the proposed Aggie Research Campus project. These changes include, but are not limited to, the following planned, approved, or under construction land use and transportation projects relevant to the proposed project:

- Land Use Projects
    - UC Davis 2018 Long Range Development Plan (LRDP) – The LRDP anticipates the addition of 5,175 students, 2,135 employees, and 10,958 residents (9,050 students, 485 employees, and 1,423 dependents) on the UC Davis campus between 2016 and 2030. Individual components of the LRDP include the following:
        - West Village Expansion – located west of SR-113 and south of Russell Boulevard, will include an additional 3,300 student beds and 485 employee residents. The student housing portion of the project has been approved by the UC Regents and is currently under construction.
        - Orchard Park Redevelopment – located east of SR-113 and south of Russell Boulevard, will include an additional 200 student family housing units and up to 1,200 student beds.
        - Emerson Hall Replacement (Shasta Hall) – located on Oxford Circle west of Sycamore Lane and north of Russell Boulevard, will include the demolition of an existing 500-bed dormitory and the construction of a new dormitory with capacity for up to 800 student beds.
    - Other mid- to large-sized planned or approved development projects within the City of Davis located over one mile from the project site, including University Commons, the West Davis Active Adult Community, the Nishi Residential Project, Lincoln40, Sterling 5th Street Apartments, Davis Live Plaza 2555, and the 3820 Chiles Road Apartments.
    - Including the City of Davis development projects listed above, residential and employment growth equal to 2036 control totals projected for the City of Davis by SACOG in the adopted 2016 Metropolitan Community Plan/Sustainable Communities Strategy.
    - Residential and employment growth elsewhere in the SACOG region (e.g., Sacramento, West Sacramento, Woodland, etc.) equal to 2036 forecasts projected by SACOG in the adopted 2016 Metropolitan Transportation Plan/Sustainable Communities Strategy.
- Transportation System Projects
    - I-80 HOV lanes from Richards Boulevard to Sacramento.
    - I-80/Richards Boulevard interchange improvements.
    - Anderson Road four-to-two lane reduction between West Covell Boulevard and Villanova Drive.
    - Fifth Street four-to-two lane reduction between L Street and Pole Line Road.

Impact 6: Cumulative impacts to vehicle miles traveled (VMT) on the roadway system.

Under cumulative conditions, implementation of the proposed project would change local and regional VMT per service population in a manner that would exceed relevant local and State thresholds. This impact would therefore be **significant**.

Impact 1 provides an evaluation of potential project impacts to VMT under Existing Plus Project conditions. Under Existing Plus Project conditions, the project would cause a significant impact to VMT by virtue of resulting in project-generated VMT per service population measuring above the applicable significance thresholds relative to existing local and regional VMT per service population averages. The VMT impact analysis for Existing Plus Project conditions applies to Cumulative Plus Project conditions for the following reasons:

- The VMT significance threshold compares project-generated VMT per service population to that of existing local and regional development. This comparison is useful because it provides information regarding how the project aligns with long-term environmental goals related to VMT established based on existing development levels. Use of VMT significance thresholds based on existing development levels is recommended in the OPR Technical Advisory on Evaluating Transportation Impacts in CEQA.
- The OPR Technical Advisory on Evaluating Transportation Impacts in CEQA indicates that VMT efficiency metrics, such as VMT per service population, are not appropriate for CEQA cumulative analysis. Instead, the Technical Advisory recommends that an impact finding from an efficiency-based project-specific VMT analysis (i.e., Existing Plus Project conditions) would imply an identical impact finding for a cumulative VMT analysis. An example provided by OPR explains that a project that falls below an efficiency-based threshold that is aligned with long-term environmental goals and relevant plans would have no cumulative impact distinct from the project impact.

Based on the above, the ARC Project’s cumulative VMT impact would be considered **significant**.

Mitigation Measure 6.1. Develop a TDM program and implement TDM strategies to reduce project-generated VMT.

Implement Mitigation Measure 1.1 (Develop a TDM program and implement TDM strategies to reduce project-generated VMT).

Significance after Mitigation

Implementation of Mitigation Measure 6.1 would reduce project-generated VMT per service population by instituting a TDM program to reduce external vehicle trips generated by the project. However, the effectiveness of the TDM strategies is not known and subsequent vehicle trip reduction effects cannot be guaranteed. Existing evidence indicates that the effectiveness of TDM strategies with regards to vehicle trip reduction can vary based on a variety of factors, including the context of the surrounding built environment (e.g., urban versus suburban) and the aggregate effect of multiple TDM strategies deployed together. Moreover, many TDM strategies are not just site specific, but also rely on implementation and/or adoption by private entities (e.g., elective use of carpool program by office building tenants).

As noted above, due to uncertainties regarding the ability for the aforementioned mitigation measure to reduce cumulative VMT impacts to less-than-significant levels, cumulative VMT impacts would be considered **significant and unavoidable**.

Comparison to MRIC EIR

This represents a new unmitigable significant impact when compared to the MRIC EIR, which did not analyze potential cumulative VMT impacts.

Impact 7: Cumulative impacts to bicycle and pedestrian facilities.

Together with increases vehicle traffic caused by reasonably foreseeable land use growth, implementation of the proposed project would increase bicycle, pedestrian, and vehicle trips within the vicinity of the project site, which could increase the competition for physical space between modes and increase the potential for conflicts involving bicyclists and pedestrians. This impact would therefore be **significant**.

No reasonably foreseeable new bicycle or pedestrian facilities would be constructed within the vicinity of the project site under cumulative conditions. Under cumulative conditions, given the limited amount of reasonably foreseeable land use development near the project site, only modest increases in background bicycle and pedestrian activity would occur within the vicinity of the project site. More substantial increases in background vehicle traffic would occur on study area roadways due to growth elsewhere in and around Davis. However, growth in background vehicle traffic would not materially change the adverse effects to bicycle and pedestrian that would be attributable to the project. Therefore, the project-specific bicycle and pedestrian impact analysis provided in Impact 2 would similarly apply to cumulative plus project conditions.

This would constitute a significant impact to bicycle and pedestrian facilities under cumulative conditions.

Mitigation Measure 7.1. Construct proposed off-site bicycle and pedestrian facilities.

Implement Mitigation Measure 2.1 (Construct proposed off-site bicycle and pedestrian facilities).

Mitigation Measure 7.2. Improve bicycle facilities on County Road 32A.

Implement Mitigation Measure 2.2 (Improve bicycle facilities on County Road 32A).

Mitigation Measure 7.3. Identify and construct complete streets improvements on the Mace Boulevard corridor.

Mitigation Measure 2.3 (Identify and construct complete streets improvements on the Mace Boulevard corridor).

Secondary Impacts After Mitigation

Elements of Mitigation Measure 7.3, particularly the potential for roadway operations and capacity improvements along the Mace Boulevard corridor, have the potential to exacerbate impacts to VMT described in Impact 6. Existing evidence indicates that Covell Boulevard, Mace Boulevard, and connecting roadways such as Second Street and Chiles Road are utilized as regional cut-through routes when I-80 experiences significant speed reductions and delays during p.m. peak periods (see Volume 2). Therefore, improving operations and reducing delays along these local roadways could increase the attractiveness of these routes as alternatives to I-80 and induce additional regional cut-through activity on local roadways. Parallel local routes require longer trip distances than remaining on I-80, therefore, regional travel demand use of local routes would yield more VMT than use of I-80.

Significance after Mitigation

Implementation of Mitigation Measures 7.1, 7.2, and 7.3 would reduce potential significant impacts associated with bicycle facilities to a less-than-significant level by supporting bicycling to and from the project site and minimizing conflicts between bicycles and other travel modes.

However, elements of each mitigation measure would occur within Caltrans, Yolo County, and/or UPRR rights-of-way and would be subject to final approval and actions by others. Moreover, since the remaining fair share contributions needed for the construction of mitigation measure elements requiring the project's fair share contribution have not been identified by the relevant lead agency, fair share payment by the project applicant would not ensure construction. Finally, the ultimate improvements resulting from Mitigation Measure 7.3 are subject to change pending the outcome of the Mace Boulevard Corridor Plan process described in Mitigation Measure 2.3. Therefore, the implementation of these mitigation measures cannot be guaranteed.

As noted above, due to uncertainties regarding the ability for the aforementioned mitigation measures to reduce impacts to bicycle and pedestrian facilities, cumulative impacts to bicycle and pedestrian facilities would be considered **significant and unavoidable**.

Comparison to MRIC EIR

This represents a new unmitigable significant impact when compared to the MRIC EIR, which found cumulative impacts to bicycle and pedestrian facilities to be less-than-significant with mitigation (see Impact 4.14-9 from the MRIC EIR). This can be explained by the following changes from the MRIC EIR:

- Changes to the project description
- Changes to the bicycle and pedestrian significance criteria, particularly a new focus on safety and performance of bicycle and pedestrian facilities
- Changes to the feasibility of mitigation measures, particularly those requiring approval and actions by other entities (e.g., Caltrans)

Impact 8: Cumulative impacts to transit service and facilities.

Implementation of the proposed project would increase the number of passengers utilizing transit service and facilities. New transit passenger demand would be accommodated by transit services anticipated to be in service under cumulative conditions. However, increases to transit travel times caused by the project as well as reasonably foreseeable land use growth would adversely affect the on-time performance and service quality of transit services under cumulative conditions. This impact would therefore be **significant**.

The only anticipated change to transit service in the study area under cumulative conditions is the implementation of the Causeway Connection bus service between UC Davis and the UC Davis Health Campus in Sacramento. This service will serve the Mace park-and-ride once per hour in the eastbound direction during the morning peak period and once per hour in the westbound direction during the evening peak period. Given this schedule, use of the Causeway Connection service by the project would be nominal since project employee will primarily generate commute transit demand in the opposite direction.

Under cumulative conditions, substantial increases in background vehicle traffic would occur on study area roadways due to growth elsewhere in and around Davis. Together with the substantial increase in vehicle traffic caused by the project, this would cause adverse effects to transit operations by increasing transit service delay and running times. However, growth in background vehicle traffic would not materially change the adverse effects to transit services that would be attributable to the project. Therefore, the project-specific transit service and facility impact analysis provided in Impact 3 would similarly apply to cumulative plus project conditions.

This would constitute a significant impact to transit service and facilities under cumulative conditions.

Mitigation Measure 8.1. Construct enhanced bus stops on Mace Boulevard near Alhambra Drive.

Implement Mitigation Measure 3.1 (Construct enhanced bus stops on Mace Boulevard near Alhambra Drive).

Mitigation Measure 8.2. Identify and construct complete streets improvements on the Mace Boulevard corridor.

Implement Mitigation Measure 2.3 (Identify and construct complete streets improvements on the Mace Boulevard corridor).

Secondary Impacts After Mitigation

Elements of Mitigation Measure 8.2, particularly the potential for roadway operations and capacity improvements along the Mace Boulevard corridor, have the potential to exacerbate impacts to VMT described in Impact 6. Existing evidence indicates that Covell Boulevard, Mace Boulevard, and connecting roadways such as Second Street and Chiles Road are utilized as regional cut-through routes when I-80 experiences significant speed reductions and delays during p.m. peak periods (see Volume 2). Therefore, improving operations and reducing delays along these local roadways could increase the attractiveness of these routes as alternatives to I-80 and induce additional regional cut-through activity on local roadways. Parallel local routes require longer trip distances than remaining on I-80, therefore, regional travel demand use of local routes would yield more VMT than use of I-80.

Significance after Mitigation

Implementation of Mitigation Measures 8.1 and 8.2 would reduce potential significant impacts associated with transit service and facilities to a less-than-significant level by supporting transit use to and from the project site and minimizing adverse effects to transit operations that would be caused by the project.

However, elements of Mitigation Measure 8.2 would occur within Caltrans rights-of-way and would be subject to final approval and actions by others. Moreover, since the remaining fair share contributions needed for the construction of mitigation measure elements requiring the project's fair share contribution have not been identified by the relevant lead agency, fair share payment by the project applicant would not ensure construction. Finally, the ultimate improvements resulting from Mitigation Measure 8.2 are subject to change pending the outcome of the Mace Boulevard Corridor Plan process described in Mitigation Measure 3.2. Therefore, the implementation of these mitigation measures cannot be guaranteed.

As noted above, due to uncertainties regarding the ability for the aforementioned mitigation measures to reduce impacts to transit service and facilities, cumulative impacts to transit service and facility would be considered **significant and unavoidable**.

Comparison to MRIC EIR

This represents a new unmitigable significant impact when compared to the MRIC EIR, which did not address potential cumulative impacts to transit service and facilities.

Impact 9: Cumulative impacts to emergency vehicle access.

Implementation of the proposed project would not impede emergency vehicle access. This impact would therefore be **less than significant**.

The proposed project would include three vehicular access points on Mace Boulevard (two full access, and one right-in/right-out only) and two vehicular access points on County Road 32A (both full access). Altogether, these connections would provide multiple opportunities and routes for emergency vehicles to access the site from multiple directions.

Fire access from the South Davis fire station (located one-half mile south of the project site on Mace Boulevard) would be available via northbound Mace Boulevard. Fire access from the Downtown Davis fire station (located nearly three miles west of the project site) would be available via eastbound Fifth Street and Alhambra Drive. Medical emergency service access to/from Sutter Davis Hospital (located over four miles west of the project site) would be available via Covell Boulevard. Each of these corridors have traffic signals equipped with emergency vehicle pre-emption, providing signal priority to emergency vehicle in the event of an emergency.

The design of the on-site roadways and intersections will be subject to City of Davis code and Public Works Department staff review and approval.

Therefore, this is considered a **less-than-significant** impact.

Mitigation Measures

None required.

Impact 10: Cumulative construction-related impacts.

Implementation of the proposed project would result in construction activities that would disrupt the surrounding multi-modal transportation system. This impact would therefore be **significant**.

Construction of the project, including site preparation and construction, and delivery activities, would generate employee trips and a variety of construction-related vehicles. Construction activities would include disruptions to the transportation network near the project site, including the possibility of temporary lane closures, street closures, sidewalk closures, and bikeway closures. Bicycle and transit access may also be disrupted. The project is planned for construction in four phases over a twenty to twenty-five year timeframe. Thus, the construction activities related to the project could occur during the cumulative analysis year.

The most concentrated period of heavy truck traffic is anticipated to occur during the period that the existing detention basin on the site is being filled. It is forecast that a total of approximately 10,833 trucks will access the site over 30 work days, resulting in an average of approximately 720 truck trips per day (i.e., 360 truck loads per day, with two trips – one loaded trip to the site, one return empty trip – for each load). Trucks are projected to travel to and from the east end of the Howatt Ranch property near the levee adjacent to the Yolo Bypass. Trucks would access the southern portion of the site via County Road 32A, with trucks traveling to the Howatt Ranch site via County Road 32A and County Road 105. Use of County Road 32A by construction trucks could cause a short-term adverse impact to bicyclists using existing bike lanes.

These activities could also result in degraded roadway conditions. Altogether, these factors would result in a significant impact related to project construction.

Mitigation Measure 10.1. Prepare a Construction Traffic Control Plan.

Implement Mitigation Measure 5.1 (Prepare a Construction Traffic Control Plan).

Significance after Mitigation

Implementation of Mitigation Measure 10.1 would reduce potential cumulative impacts associated with project construction activity to a **less-than-significant** level by minimizing the effects of project construction to the surrounding multi-modal transportation system.

Aggie Research Campus

Technical Appendix

March 2020

RS19-3828.01

FEHR & PEERS

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MEMORANDUM

Date: January 22, 2020

To: Nick Pappani, Raney Planning & Management

From: Greg Behrens, AICP, Fehr & Peers

Subject: Aggie Research Campus Project Trip Generation

RS19-3828.01

This memorandum provides a brief description of the proposed Aggie Research Campus (ARC) project land uses and the estimated weekday daily and peak hour project trip generation. These estimates will be used in the development of the "Existing Plus Project" condition. The "Cumulative Plus Project" condition will also use many of these same estimates, but will additionally consider changed conditions within the vicinity of the project site (e.g., buildout of nearby planned and approved development projects) between the two scenarios.

Project Description

The proposed project would consist of a mix of land uses including office/R&D, advanced manufacturing, ancillary retail, residential, and hotel on 194 acres. The project site is situated immediately east of the City of Davis city limit, northeast of the Interstate 80 (I-80) interchange at Mace Boulevard.

Table 1 presents the buildout development program for the project as proposed by the project applicant.

Table 1
Aggie Research Campus Project – Proposed Land Use Program

Land Use	Units	Buildout Quantities
Office/R&D	KSF	1,510
Advanced Manufacturing	KSF	884
Hotel/Conference	Rooms/KSF	150/160
Ancillary Retail	KSF	100
Residential[1]	DU	850
Total Non-Residential Development (KSF)		2,654

Source: Aggie Research Campus Project Description, October 2019.
Note: [1]Per direction from City staff, residential would be comprised of one-third single-family dwelling units and two-thirds multi-family dwelling units.

Methodology

MXD+

Prior to 2007, conventional methods available to transportation engineers systematically overestimated the trips generated by and impacts of mixed-use development because they did not accurately reflect the amount of internal trip linking or the level of external trips made by transit, biking, and/or walking. This resulted in increased development costs, due to oversized infrastructure, skewed public perception, and resistance to approving smart growth. While the Institute of Transportation Engineers (ITE) *Trip Generation Handbook* does include a methodology for estimating internal trips, it only applies to AM and PM peak hour conditions and has been shown to be less accurate than more academically-oriented efforts.

In the early 2000's, two significant research studies provided the opportunity to improve the state of practice. One study sponsored by the US EPA (MXD) and another by the Transportation Research Board (NCHRP 684) have developed means to improve trip generation estimation for mixed-use development (MXD). The two studies examined over 240 mixed-use development sites throughout the U.S. and, using different approaches, developed new quantification methods. Fehr & Peers has reviewed the two methods, including the basis, capabilities, and appropriate uses of each, to produce a new method (MXD+) that combines the strengths of the two individual tools to establish a new best practice. MXD+ recognizes that traffic generation by mixed-use and other forms of sustainable development relate closely to the density, diversity, design, destination accessibility, transit proximity, and scale of development.

The MXD+ method explains 97 percent of the variation in trip generation among mixed-use developments, compared to 65 percent for the methods previously recommended by ITE. While remaining slightly (2 to 4 percent) conservative to avoid systematically understating impacts, it substantially reduces the 35 to 37 percent average overestimate of traffic generation produced by conventional ITE methods.

MXD+ improves the accuracy of impact estimation and gives planners a tool to rationally balance land use mix and to incorporate urban design, context compatibility, and transit orientation to create lower impact development. Fehr & Peers has applied MXD+ on hundreds of EIRs throughout California over the past decade, including EIRs for several projects in the City of Davis such as The Cannery and the West Davis Active Adult Community.

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Project Trip Generation

Table 2 summarizes the estimated weekday and peak hour trip generation for the ARC project using the MXD+ tool. As shown in Table 2, the project would generate an estimated 23,888 net daily trips, 2,232 net AM peak hour trips, and 2,479 net PM peak hour trips during a typical weekday.

The following factors influence the estimated trip reductions resulting from internalization and shifts to transit, walk, and bike trips:

- Suburban location on the edge of the developed area
- Low-density surroundings
- Poor walk/bike access to off-site trip generators/activity centers, particularly due to long travel distances
- Poor intercity/commuter transit access
- High jobs/population ratio (approximately 2.78 jobs for every resident), which would result in the project attracting a large number of commute trips without producing a commensurate number of commute trips (i.e., these must be fulfilled by external trips)
- Lack of uses complementary to residential land uses (e.g., neighborhood commercial)

Table 2 Aggie Research Campus Project – Vehicle Trip Generation										
Land Use	**Units**	**ITE Code**	**Quantity**	**Daily**	**AM In**	**AM Out**	**AM Total**	**PM In**	**PM Out**	**PM Total**
Net New Uses										
General Office Building	1,000 Sq. Ft. GLA	710[1]	1,610	16,383	1,392	226	1,618	274	1,436	1,710
Manufacturing	1,000 Sq. Ft. GLA	140[2]	884	3,474	422	126	548	184	408	592
Hotel	Rooms	310[3]	150	1,267	41	29	70	44	42	86
Multifamily Housing Low Rise	Dwelling Units	220[4]	280	2,076	29	98	127	96	55	148
Multifamily Housing Mid Rise	Dwelling Units	221[5]	570	3,103	49	142	191	148	94	242
Raw External Project Trips				*26,303*	*1,933*	*621*	*2,554*	*743*	*2,035*	*2,778*
Reductions										
Internal Capture				-2,032	-204	-66	-270	-68	-188	-256
External Walk and Bike				-183	-17	-5	-22	-5	-13	-18
External Transit				-200	-20	-10	-30	-10	-15	-25
Total Reductions				*-2,415*	*-241*	*-81*	*-322*	*-83*	*-216*	*-299*
Net New External Project Trips				**23,888**	**1,692**	**540**	**2,232**	**660**	**1,819**	**2,479**

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Sources: Institute of Transportation Engineers (ITE) *Trip Generation Manual, 10th Edition*, 2017; Fehr & Peers, 2020.

Notes:

[1] ITE Trip Generation land use category (710) – General Office Building (Adj Streets, 7-9A, 4-6P). Includes 100,000 sq. ft. of proposed ancillary retail space, as permitted by ITE for this land use category.

- Daily: Ln(T) = 0.97 * ln(X) + 2.50
- AM Peak Hour: T = 0.94(X) + 26.49 (88% in, 12% out)
- PM Peak Hour: Ln(T) = 0.95 * ln(X) + 0.36 (17% in, 83% out)

[2] ITE Trip Generation land use category (140) - Manufacturing (Adj Streets, 7-9A, 4-6P)

- Daily: T = 3.93(X)
- AM Peak Hour: T = 0.62(X) (73% in, 27% out)
- PM Peak Hour: T = 0.67(X) (44% in, 56% out)

[3] ITE Trip Generation land use category (310) - Hotel (Adj Streets, 7-9A, 4-6P)

- Daily: T = 11.29(X) + -426.97
- AM Peak Hour: T = 0.50(X) + -5.34 (59% in, 41% out)
- PM Peak Hour: T = 0.75(X) + -26.02 (51% in, 49% out)

[4] ITE Trip Generation land use category (220) - Multifamily Housing Low Rise (Adj Streets, 7-9A, 4-6P). This land use category was selected for use for the proposed 290 dwelling units of single-family housing. ITE indicates that this land use category is appropriate for use for attached housing between one and three stories in height, which is aligned with the proposed single-family housing product as described in the project description. Alternative options identified by ITE include detached single-family housing and mid-rise multi-family housing, neither of which align with the proposed single-family housing product as described in the project description.

- Daily: T = 7.56(X) + -40.86
- AM Peak Hour: Ln(T) = 0.95 * ln(X) + -0.51 (20% in, 80% out)
- PM Peak Hour: Ln(T) = 0.89 * ln(X) + -0.02 (65% in, 35% out

[5] ITE Trip Generation land use category (221) - Multifamily Housing Mid-Rise (Adj Streets, 7-9A, 4-6P)

- Daily: T = 5.45(X) + -1.75
- AM Peak Hour: Ln(T) = 0.98 * ln(X) + -0.98 (21% in, 79% out)
- PM Peak Hour: Ln(T) = 0.96 * ln(X) + -0.63 (65% in, 35% out)

FEHR PEERS

MEMORANDUM

Date: March 6, 2020

To: Nick Pappani, Raney Planning & Management

From: Greg Behrens & John Gard, Fehr & Peers

Subject: Aggie Research Campus MXD+ Model Information

RS19-3828.01

In light of discussions held on February 29, 2020 at City of Davis offices regarding the ARC's trip generation, we prepared this memorandum to document our technical approach and demonstrate using substantial evidence that it is defensible and accurate means for estimating the project's trips.

Table 8-26 of the Draft EIR indicates that the Proposed Project would generate 24,650 new daily vehicle trips, 2,325 new AM peak hour vehicle trips, and 2,561 new PM peak hour vehicle trips. Pages 8-207 through 8-209 describe the MXD+ methodology that was used to develop these estimates. In very simple terms, MXD+ works as follows:

- It begins with the latest ITE *Trip Generation Manual* trip rates, and then estimates internal trips and external walk, bike, and transit trips. Those estimates are then subtracted from the raw ITE trips to yield the external/new vehicle trips the project would generate

MXD+ has been in use by Fehr & Peers for many years including multiple applications in the City of Davis. Despite its widespread use and acceptance, we do occasionally encounter agencies and staff that remain skeptical.

In Fall 2019, Fehr & Peers used its own Research & Development funds to investigate whether MXD+ is still producing accurate estimates of external vehicle trip generation for mixed-use projects. To accomplish this, we performed vehicle trip generation data collection at 15 mixed-use sites across the United States, ranging in size from 4 to 4,000 acres. Four of these sites contained large amounts of office space. These sites, which are situated in California and Georgia, are shown in **Table 1**.

Table 2 shows how MXD+ performed for each of these four sites in terms of its accuracy of matching the actual measured vehicle trip generation at each of these sites. Key findings from this table include:

1. For all three time periods and four sites, MXD+ estimates were within 12 percent or less of the actual, measured count.
2. The average absolute error for the four sites was 8 percent under daily conditions, 7 percent under AM peak hour conditions, and 3 percent under PM peak hour conditions.

This is particularly important because traffic volumes may often fluctuate by 5 percent or more from day to day. Thus, the variation in MXD+ estimates are comparable to, and in some cases, even less than the variation in daily traffic.

Table 1
Fehr & Peers' Mixed-Use Research Sites with Heavy Employment Uses

Mixed-Use Location	Site Acreage	Amount of Office Space	Land Use Mix / Transit Availability
Sunnyvale, Ca	12 acres	564 KSF	Dense complementary land uses located adjacent to a light rail station
Sacramento, Ca	221 acres	1,084 KSF	Suburban setting with complementary land uses limited primarily to residential. Not well served by transit
Santa Clara, Ca	68 acres	1,707 KSF	Good diversity of land uses. 15-minute bus service provided.
Alpharetta, Ga	79 acres	582 KSF	Excellent diversity of land uses. Modest bus service provided.

Source: Fehr & Peers, 2020.

Table 2
External Vehicle Trip Generation Comparison for Fehr & Peers' Mixed-Use Research Sites with Heavy Employment Uses

Mixed-Use Location	External Vehicle Trips					
	Daily		AM Peak Hour		PM Peak Hour	
	MXD+ Estimate	Actual	MXD+ Estimate	Actual	MXD+ Estimate	Actual
Sunnyvale, Ca	8,975 (+3%)	8,707	604 (-13%)	693	702 (0%)	705
Sacramento, Ca	21,583 (+11%)	19,362	1,732 (-7%)	1,863	1,945 (-2%)	1,985
Santa Clara, Ca	26,624 (-12%)	30,330	1,924 (-2%)	1,959	2,335 (-9%)	2,549
Alpharetta, Ga	34,840 (+5%)	33,301	1,610 (-4%)	1,685	2,500 (-2%)	2,543

Note: Value shown in parentheses represent the percentage that the MXD+ estimate over or underpredicts the actual value.
Source: Fehr & Peers, 2020.

Despite the above conclusions, some may continue to be skeptical of MXD+ and wonder if other tools may be equally or more effective at estimating external vehicle trips generated by an employment-oriented mixed-use project. Such a tool does exist, and it is contained in ITE's *Trip Generation Handbook*[1]. **Table 3** compares how the "ITE Internalization Method" compares to MXD+ for the four research sites. This table demonstrates that ITE Internalization method results substantially higher (i.e., less accurate) average absolute error values than the MXD+ method.

Table 3
Comparison of Absolute Error in MXD+ and ITE Internalization Method Vehicle Trip Generation for Fehr & Peers' Mixed-Use Research Sites with Heavy Employment Uses

Mixed-Use Location	Absolute Error of Estimate					
	Daily		AM Peak Hour		PM Peak Hour	
	MXD+	ITE Internalization Method	MXD+	ITE Internalization Method	MXD+	ITE Internalization Method
Sunnyvale, Ca	3%	Method not provided for daily conditions	13%	1%	0%	25%
Sacramento, Ca	11%		7%	13%	2%	17%
Santa Clara, Ca	12%		2%	16%	9%	5%
Alpharetta, Ga	5%		4%	28%	2%	13%
Average	8%		7%	15%	3%	15%

Note: Value shown in parentheses represent the percentage that the MXD+ estimate over or underpredicts the actual value.
Source: Fehr & Peers, 2020.

In conclusion, we believe the MXD+ model is the best tool available to accurately estimate a mixed-use project's trip generation. This memorandum demonstrated its accuracy in matching observed trips from four employment-oriented mix-use projects of similar size to the proposed project.

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1 ITE's methodology is *NCHRP 684: Enhancing Internal Trip Capture Estimation for Mixed-Use Developments* (2011). Page 3 of that report states that "researchers do not recommend use of this method for suburban activity centers or new town types of development: the researchers do not believe it will be applicable". MXD+ blends the predictive equations from NCHRP 684 and the Environmental Protection Agency (EPA) MXD model to better utilize the strengths and minimize the weaknesses of each approach.

Aggie Research Campus

Volume 2 – Traffic Operations Analysis

Prepared for:
Raney Planning & Management, Inc.

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FEHR & PEERS

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1. Introduction

This document presents an analysis of the potential effects of the proposed Aggie Research Campus project (the project) with respect to traffic operations (i.e., vehicle delay) on roadway facilities within the vicinity of the project site. This analysis is deliberately separate from the transportation impact study in Volume 1 in accordance with the CEQA Guidelines, which no longer permit the use of vehicle delay or level of service (LOS) for the purposes of identifying environmental impacts for land use projects. This analysis has been prepared for two primary reasons. First, it informs other components of the transportation impact analysis (e.g., potential impacts to transit services) and other topics addressed in the Aggie Research Campus SEIR (e.g., air quality, noise, GHG, etc.). Second, it directly addresses the proposed project's consistency with City of Davis General Plan policies related to traffic operations and level of service.

An accompanying document, the Aggie Research Campus Transportation Impact Study (Volume 1) describes existing transportation conditions and analyzes the potential for the proposed project to affect the surrounding transportation environment in accordance with current CEQA Guidelines. This includes potential impacts to vehicle miles traveled (VMT) and transit, bicycle, and pedestrian components of the transportation system that may result from the proposed project, as well as impacts during project construction. Where necessary and feasible, mitigation measures are identified to reduce these impacts.

Analysis Scenarios

The following scenarios are analyzed in this study:

- **Existing Conditions –** Establishes the existing setting, which is used to measure project-specific transportation effects.
- **Existing Plus Project Conditions –** Adds changes to travel demand resulting from buildout of the proposed project to existing conditions.
- **Cumulative No Project Conditions –** Represents cumulative travel demand based on reasonably foreseeable local and regional land use and transportation system changes. For the purposes of this study, the cumulative year is 2036. This scenario assumes the project site remains vacant.
- **Cumulative Plus Project Conditions –** Adds changes to travel demand resulting from buildout of the proposed project to Cumulative No Project conditions.

Evaluations are performed for each element of the transportation system for each of these scenarios.

2. Analysis Methodology

This section describes the methods utilized to analyze roadway traffic operations.

Analysis Locations

Figure 1 displays the locations of the study intersections and roadway segments, which were selected in consultation with City of Davis staff and based on the project's expected travel characteristics (i.e., project location and amount of project trips) as well as facilities susceptible to being affected by the project. This analysis includes the following study locations:

<u>Study Intersections</u>

1. East Covell Boulevard/Pole Line Road
2. East Covell Boulevard/Birch Lane
3. East Covell Boulevard/Baywood Lane
4. East Covell Boulevard/Manzanita Lane
5. East Covell Boulevard/Wright Boulevard
6. East Covell Boulevard/Monarch Lane
7. East Covell Boulevard/Alhambra Drive
8. East Covell Boulevard/Harper Junior High School
9. Mace Boulevard/Alhambra Drive/South ARC Driveway
10. Second Street/Fermi Place/Target Driveway
11. Mace Boulevard/Second Street/County Road 32A
12. County Road 32A/Mace Park-and-Ride Driveway/West ARC Driveway
13. Mace Boulevard/I-80 WB Ramps
14. Mace Boulevard/Chiles Road
15. Chiles Road/I-80 EB Ramp
16. Mace Boulevard/Cowell Boulevard
17. Mace Boulevard/El Macero Drive
18. County Road 32A/County Road 105
19. County Road 32A/I-80 WB Ramps
20. County Road 32B/Chiles Road/I-80 EB Ramps
21. Mace Boulevard/Central ARC Driveway
22. Mace Boulevard/County Road 30B/North ARC Driveway
23. County Road 32A/East ARC Driveway

<u>Study Roadway Segments</u>

1. East Covell Boulevard: west of Pole Line Road
2. East Covell Boulevard: east of Pole Line Road
3. Pole Line Road: north of East Covell Boulevard
4. Pole Line Road: south of East Covell Boulevard
5. East Covell Boulevard: west of Alhambra Drive
6. East Covell Boulevard: east of Harper Junior High School
7. Alhambra Drive: south of East Covell Boulevard
8. Alhambra Drive: west of Mace Boulevard
9. Second Street: west of the Fermi Place
10. County Road 32A: east of project site
11. Chiles Road: west of I-80 EB Off-Ramp
12. Chiles Road: east of Mace Boulevard
13. Cowell Boulevard: west of Mace Boulevard
14. Mace Boulevard: south of El Macero Drive

Note that the Certified Final EIR transportation study considered the transportation system effects of not just the MRIC project, but also the proposed Davis Innovation Center and Nishi Gateway projects, for which the combined transportation system effects were expected to cover a larger geographic area and a greater number of local and regional roadway facilities. Because this analysis is being prepared for the ARC project alone, the study area has been revised to focus on roadway facilities susceptible to being impacted by the ARC Project, particularly along the Mace Boulevard and East Covell Boulevard corridors. This results in fewer study intersections and roadway segments analyzed in this analysis when compared to those analyzed in the Certified Final EIR.

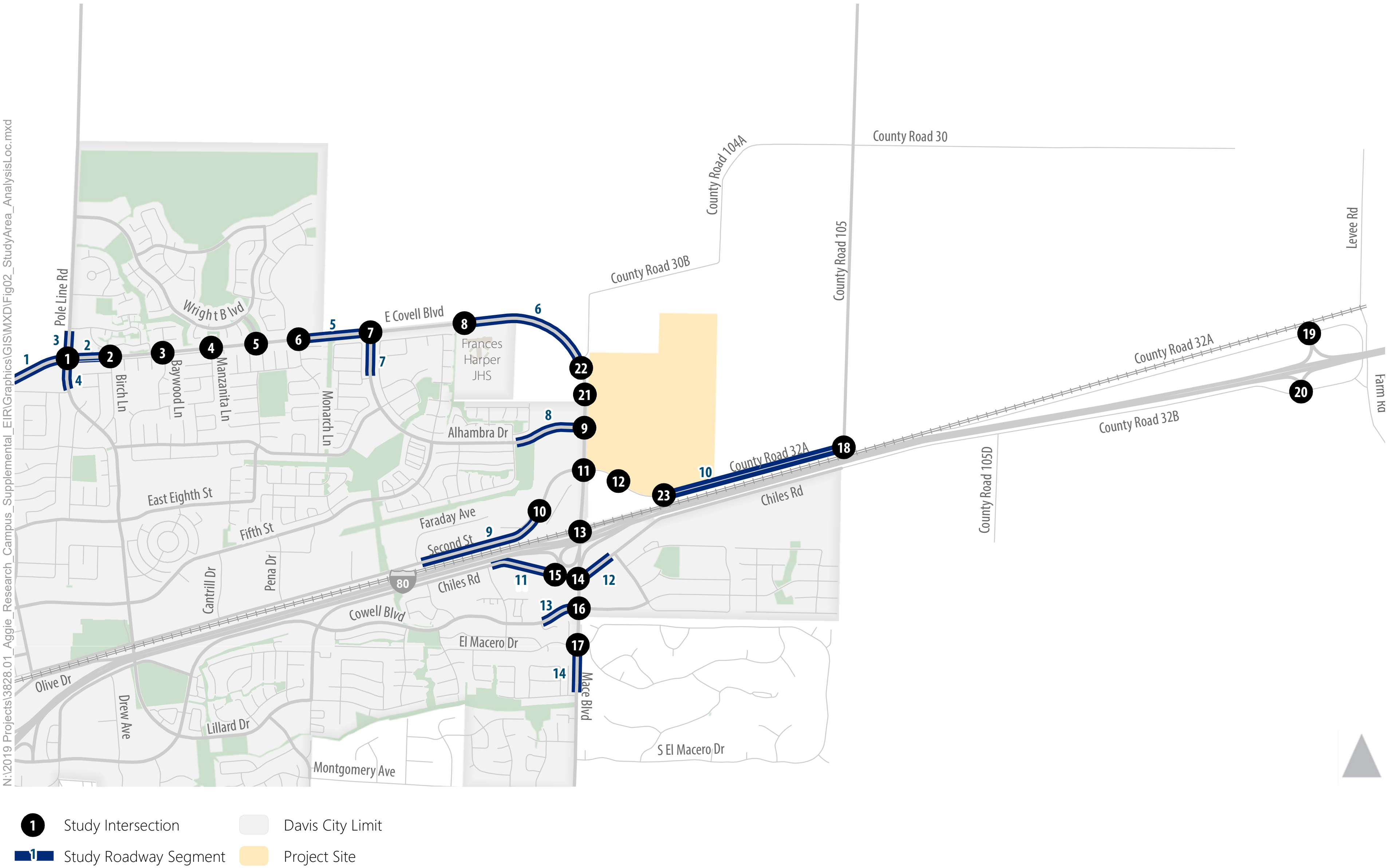

Figure 1

Study Area and Analysis Locations

Roadway System Operations

This study analyzes roadway operating conditions using intersection level of service (LOS) as a primary measure of operational performance. Motorized vehicle LOS is a qualitative measure of traffic flow from the perspective of motorists and is an indication of the comfort and convenience associated with driving. Typical factors that affect motorized vehicle LOS include speed, travel time, traffic interruptions, and freedom to maneuver. Empirical LOS criteria and methods of calculation have been documented in the *Highway Capacity Manual, 6th Edition* (HCM) published by the Transportation Research Board of the National Academies of Science (Transportation Research Board, 2016). The HCM defines six levels of service ranging from LOS A (representing free-flow vehicular traffic conditions with little to no congestion) to LOS F (oversaturated conditions where traffic demand exceeds capacity resulting in long queues and delays). The LOS definitions and calculations contained in the HCM are the prevailing measurement standard used throughout the United States and are used in this study. Motorized vehicle LOS definitions for signalized and unsignalized intersection are discussed below.

Study Intersections

The LOS at signalized intersections is based on the average control delay (i.e., delay resulting from initial deceleration, queue move-up time, time stopped on an intersection approach, and final acceleration) experienced per vehicle traveling through the intersection. **Table 1** summarizes the relationship between delay and LOS for signalized intersections.

Table 1: Signalized Intersection LOS Criteria

Level of Service	Description	Average Control Delay[1]
A	Volume-to-capacity ratio is low and either progression is exceptionally favorable or cycle length is very short.	≤ 10
B	Volume-to-capacity ratio is low and either progression is highly favorable or the cycle length is short. More vehicles stop than with LOS A.	>10 to 20
C	Progression is favorable or the cycle length is moderate. Individual cycle failures (i.e., one or more queued vehicles are not able to depart as a result of insufficient capacity during the cycle) may begin to appear at this level. The number of vehicles stopping is significant, although many vehicles still pass through the intersection without stopping.	>20 to 35
D	Volume-to-capacity ratio is high and either progression is ineffective or the cycle length is long. Many vehicles stop and individual cycle failures are noticeable.	>35 to 55
E	Volume-to-capacity ratio is high, progression is unfavorable, and the cycle length is long. Individual cycle failures are frequent.	>55 to 80
F	Volume-to-capacity ratio is very high, progression is very poor, and the cycle length is long. Most cycles fail to clear the queue.	>80

Note: [1] Average control delay presented in seconds per vehicle. Delay values are rounded to the nearest second and evaluated for LOS based on the above thresholds (i.e., 10 seconds per vehicle = LOS A).
Source: *Highway Capacity Manual, 6th Edition,* Transportation Research Board, 2016.

Similar to signalized intersections, the HCM 6th Edition methodology for stop-controlled intersections reports the LOS based on the control delay experienced by motorists traveling through the intersection. As shown in **Table 2**, the delay ranges for stop-controlled intersections are lower than for signalized intersections. The HCM anticipates that motorists expect signalized intersections to carry higher traffic volume that results in greater delay than a stop-controlled intersection. Stop controls are associated with more uncertainty as delays are less predictable, which can reduce users' delay tolerance.

Table 2: Stop-Controlled Intersection LOS Criteria

Level of Service	Average Control Delay[1]
A	≤ 10
B	>10 to 15
C	>15 to 25
D	>25 to 35
E	>35 to 50
F	>50

Note: [1] Average control delay presented in seconds per vehicle. Delay values are rounded to the nearest second and evaluated for LOS based on the above thresholds (i.e., 10 seconds per vehicle = LOS A).
Source: *Highway Capacity Manual, 6th Edition,* Transportation Research Board, 2016.

As described in Chapter 21 of the HCM 6th Edition, the LOS for all-way stop controlled intersections is based on the average control delay for the entire intersection. For side-street stop-controlled intersections, the LOS is determined separately for each minor-street movement (or shared movement) and may also be basis on major-street left-turn movements, per Chapter 20 of the HCM 6th Edition. However, in previous City of Davis traffic studies, the LOS for side-street stop-controlled intersections was based on the average control delay for the intersection as a whole.

To be consistent with both the HCM 6th Edition and recent City of Davis studies, this analysis documents the LOS for side-street stop-controlled intersections in two forms:

- Intersection LOS: based on the weighted average of the control delay experienced by each movement of the intersection. Note that this is not a recognized LOS metric for side-street stop-controlled intersections per the HCM 6th Edition. However, the City of Davis has previously expressed side-street stop-controlled intersection delay using this measure.
- Worst-case LOS: based on the movement (or shared movement) with the greatest control delay at the intersection, which may consist of minor-street stop-controlled movements or major street left-turns.

Note that the term LOS only applies to intersection delay as measured per the HCM 6th Edition. Other forms of assessing intersection delay are acceptable but they should not be associated with a LOS term that was only intended for the specific HCM measurement.

Use of Micro-Simulation Traffic Operations Analysis

This study analyzes 11 of the 23 existing study intersections using Trafficware's Synchro 10 software. Synchro 10 calculates the control delay consistent with the HCM methodology. These intersections are situated along Covell Boulevard between Pole Line Road and the Mace Boulevard curve, as well as along County Roads 32A and 32B. To account for the effects of turn-pocket overflows, vehicle queuing interactions between adjacent intersections, and interactions between vehicles, bicyclists, and pedestrians, micro-simulation analysis was performed for the remaining 12 study intersections along Mace Boulevard and at/near the I-80/Mace Boulevard interchange were analyzed using the SimTraffic micro-simulation software. It captures the nature of driver behavior and models the interaction between vehicles in a study network. SimTraffic better accounts for the effects of turn-pocket queue overflows, queue blocking, queue interactions between adjacent intersections, and pedestrian crossing interactions when compared to conventional, deterministic analysis methods, such as those outlined in the HCM 6th Edition and applied in Synchro 10. The SimTraffic model was calibrated and validated to existing conditions based on travel time data, peak hour volumes, and observed maximum queue lengths.

Because micro-simulation models rely on the random arrival of vehicles into the network, multiple runs are needed to provide a reasonable level of statistical accuracy and validity. The SimTraffic models were run up to twenty times (each using a different random seed number) and ten of those runs were selected and averaged to determine final model outputs. Selected runs were screened to exclude outliers that under- or over-emphasized delay compared to observed conditions.

Study Roadway Segments

The study roadway segments were evaluated based on the a.m. and p.m. peak hour traffic volumes. Roadway segment analysis is included for purposes of evaluating future year traffic operations. Intersections tend to govern peak hour traffic operations of the local roadway network since they represent the location where traffic movements conflict and capacity of the roadway segment is reduced based on the allocation of right-of-way by traffic control devices such as traffic signals. However, performing intersection analysis for future conditions beyond five to ten years can be speculative given the difficulty of accurately predicting inputs such as individual turning movement volumes and traffic signal operations. To gauge the adequacy of roadway capacity for future conditions, roadway segment analysis can be used instead. The specific methodology involves developing roadway segment volume thresholds correlated to peak hour LOS expectations based on the HCM 6^{th} Edition.

The HCM procedures consider a variety of capacity factors associated with the type of roadway and how intersections are controlled but does not require forecasting individual turning movement volumes. The technical calculations used to derive the volume thresholds for each roadway type and LOS value are shown in **Table 3**.

Table 3: Roadway Segment LOS Criteria

Functional Class	Lanes	LOS Volume Threshold[1]				
		A	B	C	D	E
Arterial	2	-	-	980	1,450	1,690
	4	-	-	2,110	2,730	3,310
Collector	2	-	-	560	930	1,190
Highway	2	-	-	450	970	2,130
Freeway	2	1,270	2,070	2,950	3,650	4,160
	2 + Auxiliary	1,670	3,040	3,990	4,720	5,460
	3	1,910	3,120	4,430	5,470	6,240
	3 + Auxiliary	2,220	4,030	5,270	6,220	7.180
	4	2,490	4,070	5,810	7,210	8,230
	4 + Auxiliary	2,800	5,120	6,700	7,930	9,180

Note: Volumes for Arterials, Collectors, and Highways represent the peak hour two-way segment total. Volumes for Freeways represent peak hour one-way segment totals and thresholds are applied separately for each direction of travel.
Source: *Highway Capacity Manual, 6th Edition,* Transportation Research Board, 2016; Fehr & Peers, 2020.

Travel Demand Forecasting

For the purposes of forecasting traffic volumes for the study intersections and roadway segments, the local UC Davis/City of Davis travel demand model was utilized. This model has an original base year of 2016 and forecast years of 2030 and 2036. The model was developed in close coordination with the City of Davis and UC Davis in order to incorporate planned land use and transportation system changes both within the City and its sphere of influence and on the UC Davis campus. The coordination effort included the following elements of model development:

- **TAZ system –** The traffic analysis zone (TAZ) development included review by City and UC Davis staff to ensure sufficient detail for both existing and new growth areas.
- **Land use inputs –** Inputs were initially obtained from the SACOG 2012 parcel database used in developing regional model inputs for the 2016 SACOG MTP/SCS. These inputs were reviewed for each TAZ with City and UC Davis staff to develop a complete inventory representing 2016 conditions, which is the model's base year. Similarly, land use forecasts for 2030 and 2036 conditions were developed in cooperation with City staff and UC Davis staff. Land use forecasts for 2030 and 2036 were based on future land use changes throughout the region projected in the 2016 SACOG MTP/SCS. The land use forecasts were refined based on input from City staff and UC Davis staff according to planned City of Davis General Plan growth, planned UC Davis 2018 Long

Range Development Plan (LRDP) growth, approved development projects, pipeline development projects, and other reasonably foreseeable land development activities.

- **Roadway network inputs –** The Local Model roadway network was developed from GIS data representing local, collector, arterial, and freeway functional classifications. Input data included the number of travel lanes and free-flow travel speeds based on the previous UC Davis/City of Davis Local Model developed for the 2003 LRDP update, plus new data from field observations and Google Maps imagery. Capacity inputs for each roadway classification were estimated from reference documents including the HCM 6th Edition and the *Travel Demand Forecasting: Parameters and Techniques, National Cooperative Highway Research Program, Report 716*, (Transportation Research Board, 2012). Changes to the roadway networks for future year scenarios were provided by City and UC Davis staff as noted above.
- **Vehicle trip rates –** The vehicle trip rates were derived from a variety of sources including the UC Davis Campus Travel Survey, the California Household Travel Survey, local residential trip generation estimates based on observed traffic counts, and the Trip Generation Manual, 10th Edition (Institute of Transportation Engineers, 2017). The rates were estimated for the following trip purposes.
    - Home-Based Work (HBW): trips between a residence and a workplace
    - Home-Based Shop (HBS): trips between a residence and a retail destination
    - Home-Based School (HBK): trips between a residence and a school (K-12)
    - Home-Based Other (HBO): trips between a residence and any other destination
    - Non-Home-Based (OO): trips that do not begin or end at a residence, such as traveling from a workplace to a restaurant, or from a retail store to a bank
    - College (COLL): trips to and from a Community College
    - UC Davis (UCD): trips to and from UC Davis
    - Highway Commercial (HC): trips to and from highway commercial destinations
- **Vehicle trip lengths and external trip patterns –** The vehicle trip lengths and the proportion of vehicle trips that occur exclusively within the model area versus those that have origins or destinations external to the model area were obtained from the UC Davis Campus Travel Survey, the California Household Travel Survey, and the American Community Survey. This information was extracted for each trip purpose above. Trips traveling through the model area without stopping such as those on I-80, were estimated from the regional SACOG SACSIM model developed for the 2016 SACOG MTP/SCS.

- **Trip assignment –** Trip assignment relies on conventional algorithms that assign trips between origin and destination zones based on travel times that reflect the influence of roadway capacity and speeds. A unique aspect of the assignment process is that UC Davis generated trips had to be associated with parking areas on and off-campus since that is where trips start and end. These parking areas were mapped in collaboration with UC Davis staff and iterative testing of the assignment results was used to refine the association.

The UC Davis/City of Davis travel demand model was applied to generate study intersection traffic volume forecast inputs for the cumulative analysis scenarios described above, as well as to inform the distribution and assignment of project trips under all "plus project" analysis scenarios. Separate model runs were performed for each scenario and the model-produced volume forecasts were extracted for final adjustments to account for differences between the model's base year volume estimates and observed traffic counts. The adjustment involves isolating the incremental change in volume between the base year model and the future year analysis scenario and adding that difference to the baseline (2019) traffic counts. This adjustment process helps to minimize potential errors in the model's base year estimates and is based on the methodology contained in *Analytical Travel Forecasting Approaches for Project-Level Planning and Design, National Cooperative Highway Research Program (NCHRP) Report 765* (Transportation Research Board, 2014).

Roadway Operations Performance Criteria

The following criteria are used to identify operational deficiencies based on the traffic operations analysis.

City of Davis

Per the City of Davis General Plan Transportation Element, LOS E is the minimum acceptable LOS for the majority of intersections within the City, and for each City-operated study intersection in the study area. LOS F is acceptable for other areas (e.g., Downtown Davis and the Richards Boulevard corridor) as established in the General Plan and contingent on approval by the City Council. For the purposes of this analysis, adverse effects to City of Davis roadway operations are defined when the addition of project traffic would cause any of the following:

- For signalized intersections, cause overall intersection operations to deteriorate from an acceptable level (LOS E or better) to an unacceptable level (LOS F);
- For signalized intersections, exacerbate unacceptable (LOS F) operations by increasing an intersection's average delay by five seconds or more;

- For unsignalized intersections, cause the worst-case movement (or average of all movements for all-way stop-controlled intersections) to worsen from an acceptable level (LOS E or better) to an unacceptable level (LOS F) and meet the peak hour signal warrant;
- For unsignalized intersections that operate unacceptably (LOS F) and meet the peak hour signal warrant without the project, worsen operations by increasing the overall intersection's volume served by more than one percent; or
- For unsignalized intersections that operate unacceptably but do not meet the peak hour signal warrant without the project, add sufficient volume to meet the warrant.
- For roadway segments, cause peak hour operations to deteriorate from an acceptable level (LOS E or better) to an unacceptable level (LOS F).
- For roadway segments that operate unacceptably, cause an increase in volume by more than 10 percent. The 10 percent allowance is based on the normal fluctuation in weekday traffic that occurs and the level of variability associated with traffic forecasts.

Yolo County

Per the Yolo County General Plan, LOS C is the minimum acceptable LOS in the unincorporated county, except as specified on designated roadways. LOS D is the minimum acceptable LOS for County Road 32A. For the purposes of this analysis, adverse effects to Yolo County roadway operations are defined when the addition of project traffic would cause any of the following:

- For intersections in the unincorporated county with the exceptions noted below, cause peak hour intersection operations to deteriorate from an acceptable level (LOS C) to an unacceptable level (LOS D or worse);
- For intersections on County Road 32A, cause peak hour intersection operations to deteriorate from an acceptable level (LOS D) to an unacceptable level (LOS E or worse);
- An intersection or roadway segment operates unacceptably under a no project scenario and the project adds 10 or more peak hour trips;
- The project adds 100 daily passenger vehicle trips (or Truck Trip Equivalencies) to an existing roadway that does not meet current County design standards (e.g., structural section, horizontal and vertical curves, lane and shoulder width, etc.); or
- The addition of project traffic causes an all-way stop-controlled or side street stop-controlled intersection to meet MUTCD signal warrant criteria.

Caltrans

Caltrans' Local Development – Intergovernmental Review Program (LD-IGR) provides guidance on the evaluation of traffic effects on State highway facilities. In light of Senate Bill 743 and related changes to the CEQA Guidelines, Caltrans has announced in its *Caltrans Draft VMT-Focused Transportation Impact Study Guide (Caltrans, February 2020)* that it will use VMT as the CEQA transportation impact metric for projects on the State highway system and has indicated it will rely on the Governor's Office of Planning and Research (OPR) *Technical Advisory on Evaluating Transportation Impacts in CEQA* when preparing LD-IGR comments on local agency land use projects.

To analyze potential LOS impacts to the State highway system, this study utilizes the performance expectations established in the Caltrans District 3 Interstate 80 Transportation Concept Report (TCR) (August 2017). According to the I-80 TCR, the horizon year LOS for I-80 within the study area (including ramp terminal intersections) is LOS F. Therefore, LOS F is considered the design operating goal on the I-80 mainline and at I-80 ramp terminal intersections. However, for the purposes of this traffic analysis, significant traffic impacts to I-80 are defined when the addition of proposed project traffic causes any of the following:

- For signalized intersections, causes operations to deteriorate to LOS F and increases an intersection's average delay by five seconds or more;
- For signalized intersections, exacerbate LOS F operations by increasing an intersection's average delay by five seconds or more;
- For unsignalized intersections, causes the worst-case movement (or average of all movements for all-way stop-controlled intersections) to deteriorate to LOS F and meet the California Manual on Uniform Traffic Control Devices (MUTCD) peak hour signal warrant;
- For unsignalized intersections that operate at LOS F and meet MUTCD's peak hour signal warrant without the project, exacerbate operations by increasing the overall intersection's volume by more than one percent;
- For freeway segments, causes operations to deteriorate to LOS F and increases peak hour traffic volume by more than five percent;
- For freeway segments, exacerbate LOS F operations by increasing peak hour traffic volume by more than five percent; or
- Causes off-ramp queues to spill onto freeway.

3. Existing Conditions

Intersection turning movement counts were conducted during the morning (7:00 a.m. to 9:00 a.m.) and evening (4:00 p.m. to 6:00 p.m.) peak periods on Thursday, May 30, 2019 and Thursday, October 16, 2019. Intersection counts included volumes for vehicles, bicyclists, and pedestrians. During the traffic counts, local schools and UC Davis were in regular session and weather conditions were dry and clear. Based on the traffic data collection, the a.m. peak hour within the study area occurred from 7:45 to 8:45 a.m., and the p.m. peak hour occurred from 5:00 to 6:00 p.m.. Peak hour traffic volumes derived from the intersection turning movement counts are illustrated in the Appendix.

Additionally, peak period field observations were conducted by Fehr & Peers staff during the peak period traffic counts. The field observations, including observed maximum queues, were utilized to calibrate the existing conditions traffic operations analysis described in the subsequent section.

Table 3 presents the a.m. and p.m. peak hour LOS for each study intersection under existing conditions.

During the a.m. peak hour, vehicle traffic within the study area generally progresses smoothly. Queues generally do not extend to the adjacent upstream intersection and clear within one cycle at signalized intersections.

During the p.m. peak hour, considerable delay and queuing occurs on local roadways within the vicinity of the Mace Boulevard interchange at I-80. Field observations, data collection, and analysis conducted by Fehr & Peers over the past year indicate that these conditions can be attributed to the following factors:

- Diverted local and regional traffic onto study area roadways due to extended periods of very low travel speeds on eastbound I-80 from the causeway, through Davis, and into Solano County. During congested conditions, low mainline travel speeds substantially increase travel times for motorists on eastbound I-80. Hence, diverting off of I-80 onto local roadways often provides a faster alternative to remaining on the freeway through Davis. Similarly, locally generated traffic utilizing eastbound I-80 can experience faster travel times by accessing I-80 as far east as possible (e.g., motorists departing Downtown Davis for Sacramento accessing I-80 at Mace Boulevard or CR 32A instead of Richards Boulevard). Moreover, the increased prevalence and use of navigation apps (e.g., Google Maps, WAZE, etc.) in recent years provides motorists with real-time and predictive travel time information that can influence route selection.
- Ramp metering at the eastbound I-80 on-ramps controls the amount of study area traffic that can enter the freeway from Mace Boulevard. The ramp meters are designed to improve operating conditions on eastbound I-80 by increasing or decreasing on-ramp flow rates according to

mainline traffic volumes. Therefore, when congested conditions occur on eastbound I-80, flow rates decrease for the Mace Boulevard on-ramps, causing additional delays and queueing on Mace Boulevard and connecting local roadways.

Based on field observations by Fehr & Peers staff and anecdotal information provided by City staff, these conditions are particularly prevalent on Wednesday, Thursday, and Friday afternoons and evenings.

On the day that p.m. peak period traffic counts were collected for this study (Thursday, October 16, 2019), field observations indicated that congested conditions were present on both eastbound I-80 and local roadways surrounding the Mace Boulevard interchange. Queue spillbacks were observed on southbound Mace Boulevard from the eastbound I-80 on-ramp to beyond Alhambra Drive and on northbound Mace Boulevard from the eastbound I-80 on-ramp to beyond San Marino Drive. Queue spillbacks were also observed on eastbound and westbound Chiles Road near the I-80 on-ramp. This congestion is reflected in the results in shown in Table 3.

4. Existing Plus Project Conditions

Project trips were assigned to the study intersections and driveways in accordance with the expected trip generation described in Chapter 5 of Volume 1, and the geographic distribution of project trips, which was determined based existing travel patterns, relative travel times between competing routes, and complementary land uses (i.e., likely residence locations for project employees).

Project Effects Within the Project Vicinity

Table 4 displays intersection LOS and delay under existing plus project conditions. Technical calculations are provided in the Appendix. This table indicates that the intersections along Mace Boulevard at Alhambra Boulevard and Second Street would degrade from LOS C or better under current conditions to LOS F with the project during the a.m. and p.m. peak hours. During the a.m. peak hour, vehicle queues on the I-80 EB off-ramp approach to Chiles Road would spill back onto the freeway mainline.

All project accesses along Mace Boulevard and County Road 32A would operate at LOS F during one or both peak hours. Initial micro-simulation model runs showed that motorists traveling eastbound on East Covell Boulevard toward southbound Mace Boulevard would experience considerable queuing due to this congestion along the project site. Accordingly, it is expected that some background trips as well as project trips would divert to Alhambra Boulevard (a two-lane collector street) to bypass this congestion. This traffic reassignment was incorporated into the Existing Plus Project analysis.

Table 5 displays the 95th percentile freeway off-ramp queue at the I-80/Mace Boulevard/Chiles Road and I-80/County Road 32A interchanges under Existing Plus Project conditions. Technical calculations are provided in the Appendix. This table indicates that the 95th percentile vehicle queues at the Mace Boulevard and Chiles Road off-ramps would spill back onto the freeway mainline during the a.m. peak hour.

Table 4: Peak Hour Intersection Operations – Existing Plus Project Conditions

Intersection	Traffic Control	Jurisdiction	Existing Conditions				Existing Plus Project Conditions			
			A.M. Peak Hour		P.M. Peak Hour		A.M. Peak Hour		P.M. Peak Hour	
			Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
1. E. Covell Blvd./ Pole Line Road	Signal	City of Davis	24	C	32	C	30	C	39	D
2. E. Covell Blvd./ Birch Lane	TWSC	City of Davis	12	B	14	B	14	B	14	B
3. E. Covell Blvd./ Baywood Lane	TWSC	City of Davis	2 (34)	A (D)	1 (44)	A (E)	2 (89)	A (F)	2 (102)	A (F)
4. E. Covell Blvd./ Manzanita Lane	TWSC	City of Davis	1 (26)	A (D)	1 (35)	A (D)	2 (58)	A (F)	2 (74)	A (F)
5. E. Covell Blvd./ Wright Blvd.	Signal	City of Davis	9	A	8	A	9	A	9	A
6. E. Covell Blvd./ Monarch Lane	TWSC	City of Davis	2 (23)	A (C)	1 (34)	A (D)	3 (61)	A (F)	2 (83)	A (F)
7. E. Covell Blvd./ Alhambra Drive	Signal	City of Davis	10	A	9	A	8	A	14	B
8. E. Covell Blvd./ Harper Jr. H.S.	Signal	City of Davis	11	A	5	A	45	D	14	B
9. Mace Blvd./ Alhambra Dr./ South ARC Driveway	Signal	City of Davis	17	B	21	C	**159**	**F**	**166**	**F**
10. Second Street/ Fermi Place/ Target Driveway	Signal	City of Davis	7	A	15	B	7	A	41	D
11. Mace Blvd./ Second Street/ CR 32A	Signal	City of Davis	34	C	27	C	**155**	**F**	**145**	**F**
12. CR 32A/Mace Park-and-Ride Driveway/West ARC Driveway	TWSC	Yolo County/City of Davis[2]	1 (4)	A (A)	2 (6)	A (A)	6 (18)	A (C)	**107 (605)**	**F (F)**
13. Mace Blvd./I-80 WB Ramps	Signal	Caltrans	20	C	48	D	78	E	70	E

14. Mace Blvd./ Chiles Road	Signal	City of Davis	33	C	69	E	59	E	77	E
15. Chiles Road/ I-80 EB Ramp	Signal	Caltrans	11	B	41	D	**383**	**F**	**131**	**F**
16. Mace Blvd./ Cowell Blvd.	Signal	City of Davis	21	C	68	E	22	C	65	E
17. Mace Blvd./ El Macero Drive	AWSC	City of Davis	8	A	28	D	8	A	34	D
18. CR 32A/CR 105	TWSC	Yolo County	5 (9)	A (A)	7 (10)	A (B)	8 (11)	A (B)	22 (28)	C (D)
19. CR 32A/ I-80 WB Ramps	TWSC	Caltrans	6 (10)	A (A)	4 (12)	A (B)	9 (14)	A (B)	**12 (59)**	**B (F)**
20. CR 32B/ Chiles Rd./ I-80 EB Ramps[1]	TWSC	Caltrans	4 (12)	A (B)	5 (9)	A (A)	3 (12)	A (B)	**4 (14)**	**A (B)**
21. Mace Blvd./ Central ARC Driveway	TWSC	City of Davis	-	-	-	-	59 (101)	E (F)	**32 (69)**	**D (F)**
22. Mace Blvd./ CR 30B/North ARC Driveway	TWSC	City of Davis	-	-	-	-	**143 (230)**	**F (F)**	**55 (325)**	**F (F)**
23. CR 32A/East ARC Driveway	TWSC	Yolo County/City of Davis[2]	-	-	-	-	3 (11)	A (B)	**56 (177)**	**F (F)**

Notes: For signalized intersections, average intersection delay is reported in seconds per vehicle for all approaches. For two-way stop-controlled intersections, average intersection delay is reported in seconds per vehicle for all approaches with the delay and LOS for the worst-case movement reported in parentheses.
Shaded cells indicate locations with unacceptable peak hour LOS.
Shaded and bold cells indicate locations where the project would cause adverse effects to peak hour intersection operations in accordance with the performance criteria.
TWSC = Two-Way Stop Control. AWSC = All-Way Stop Control. "-" = Does not exist.
[1] P.M. peak hour LOS does not match observed conditions due to the freeway ramp meter and on-ramp vehicle demand (Synchro traffic operations analysis software cannot capture the operational effects of ramp metering). Field observations indicate that the eastbound left-turn and westbound right-turn operate at LOS F during the p.m. peak hour under existing conditions. The addition of the project would exacerbate these conditions.
[2] The segment of CR 32A along the ARC site southern frontage would be annexed into the City of Davis along with the project site. Thus, City of Davis performance criteria related to roadway performance would apply to study intersections #12 and #23 under Existing Plus Project conditions.

Source: Fehr & Peers, 2020.

Table 5: Freeway Off-Ramp Queuing – Existing Plus Project Conditions

Off-Ramp	Off-Ramp Distance[1]	95th Percentile Queue Length[2]			
		Existing Conditions		Existing Plus Project Conditions[3]	
		A.M. Peak Hour	P.M. Peak Hour	A.M. Peak Hour	P.M. Peak Hour
Mace Boulevard/I-80 WB Off-Ramp	1,200 feet	175 feet	175 feet	1,900 feet	700 feet
Chiles Road/I-80 EB Off-Ramp	1,100 feet	100 feet	100 feet	3,300 feet	225 feet
CR 32A/I-80 WB Off-Ramp	1,200 feet	25 feet	25 feet	75 feet	175 feet
Chiles Road/CR 32B/I-80 EB Off-Ramp	1,000 feet	25 feet	75 feet	25 feet	75 feet

Notes: [1] Measured from the intersection stop bar to the gore point of the freeway off-ramp. Does not include auxiliary lane on freeway mainline.
[2] Results at the Mace Boulevard/Chiles Road interchange are based on results from SimTraffic micro-simulation model. Results at the County Road 32A interchange are based on results from Synchro traffic operations analysis software. Queues are maximum per lane, rounded to the nearest 25 feet.
[3] Shaded cells represent conditions in which the queue would spill onto the freeway mainline.

Source: Fehr & Peers, 2020.

Potential Operational Enhancements

Through an iterative process using the SimTraffic micro-simulation model, the following physical improvements and signal timing changes were identified to enhance roadway operations in the study area under Existing Plus Project conditions (see **Figure 2**):

- Southbound Mace Boulevard: Extend the second eastbound/southbound lane from Harper Junior High School to Alhambra Drive. Add a third southbound lane from Second Street to connect with the dedicated right-turn lane onto the I-80 WB on-ramps.
- Northbound Mace Boulevard: Extend the third northbound lane from the I-80 WB off-ramps to connect with a new northbound "trap" right-turn lane at the Mace Boulevard/Second Street/County Road 32A intersection. Add a second northbound/westbound lane from Alhambra Drive to the Harper Junior High School signalized intersection.
- Mace Boulevard/Chiles Road and Chiles Road/I-80 EB Off-Ramp Intersections: This pair of tightly spaced intersections (situated 450 feet apart) requires signal coordination/timing adjustments and a lane reassignment on the eastbound Chiles Road approach to Mace Boulevard due to the heavy project-related off-ramp volume during the a.m. peak hour. Modifying the eastbound through lane to a shared left/through lane would require the east and west approaches to operate with split phasing. Signal coordination (particularly critical during the a.m. peak hour) would synchronize the green interval for the I-80 off-ramp movement with the eastbound approach on Chiles Road at Mace Boulevard to facilitate the flow of motorists off of I-80. The signal would be modified to operate the southbound left-turn and westbound right-turn during a shared overlap phase. This modification would also require the prohibition of southbound U-turns.
- I-80 Eastbound Loop On-Ramp: This on-ramp consists of a single entry lane from southbound Mace Boulevard, which widens to a metered general purpose lane and an unmetered HOV bypass lane. During the p.m. peak hour, the addition of project trips would cause queue spillback from the ramp meter onto the overpass, thereby causing queue spillback to extend further upstream. The recommended modification from an unmetered HOV bypass lane to a metered general purpose lane was found to provide more ramp metering storage, and reduced effects on the surface street. Similar modifications have been considered by Caltrans elsewhere in the Sacramento region.
- Mace Boulevard/Second Street/County Road 32A Intersection: Modify the northbound approach to add a "trap" right-turn lane. Modify the westbound approach to two left-turn lanes and a shared through-right lane. Modify westbound County Road 32A between this intersection and the adjacent County Road 32A/Mace park-and-ride/West ARC Driveway intersection to two through lanes.

- Mace Boulevard/Alhambra Drive/South ARC Driveway Intersection: Modify the westbound approach to two left-turn lanes and a shared through-right lane. Provide a southbound left-turn lane, two through lanes, and a right-turn lane.
- Mace Boulevard/County Road 30B/North ARC Driveway Intersection: Install a traffic signal. Provide a southbound left-turn lane and two through lanes. Provide a northbound through lane and shared through-right lane. Provide an eastbound left-turn lane.
- County Road 32A/Mace park-and-ride/West ARC Driveway Intersection: Install a traffic signal. Provide a southbound left-turn lane and a shared through-right lane.

Table 6 displays the resulting intersection delay and LOS under Existing Plus Project conditions with these operational enhancements in place. Technical calculations are provided in the Appendix. This table indicates that the total number of intersections operating with an average intersection LOS of LOS F during one or both peak hours would be decreased from seven to zero.

Note that while the improvements listed above provide benefits to peak hour roadway operations for vehicles, they could diminish the bicycle and pedestrian environment by increasing crossing distances and bicycle and pedestrian exposure times at intersections. Moreover, the additional roadway capacity resulting from these improvements could induce additional vehicle miles traveled (VMT) on study area roadways. Existing evidence indicates that Covell Boulevard, Mace Boulevard, and connecting roadways such as Second Street and Chiles Road are utilized as regional cut-through routes when I-80 experiences significant speed reductions and delays during p.m. peak periods. Therefore, improving operations and reducing delays along these local roadways could increase the attractiveness of these routes as alternatives to I-80 and induce additional regional cut-through activity on local roadways. Parallel local routes require longer trip distances than remaining on I-80, therefore, regional travel demand use of local routes would yield more VMT than use of I-80.

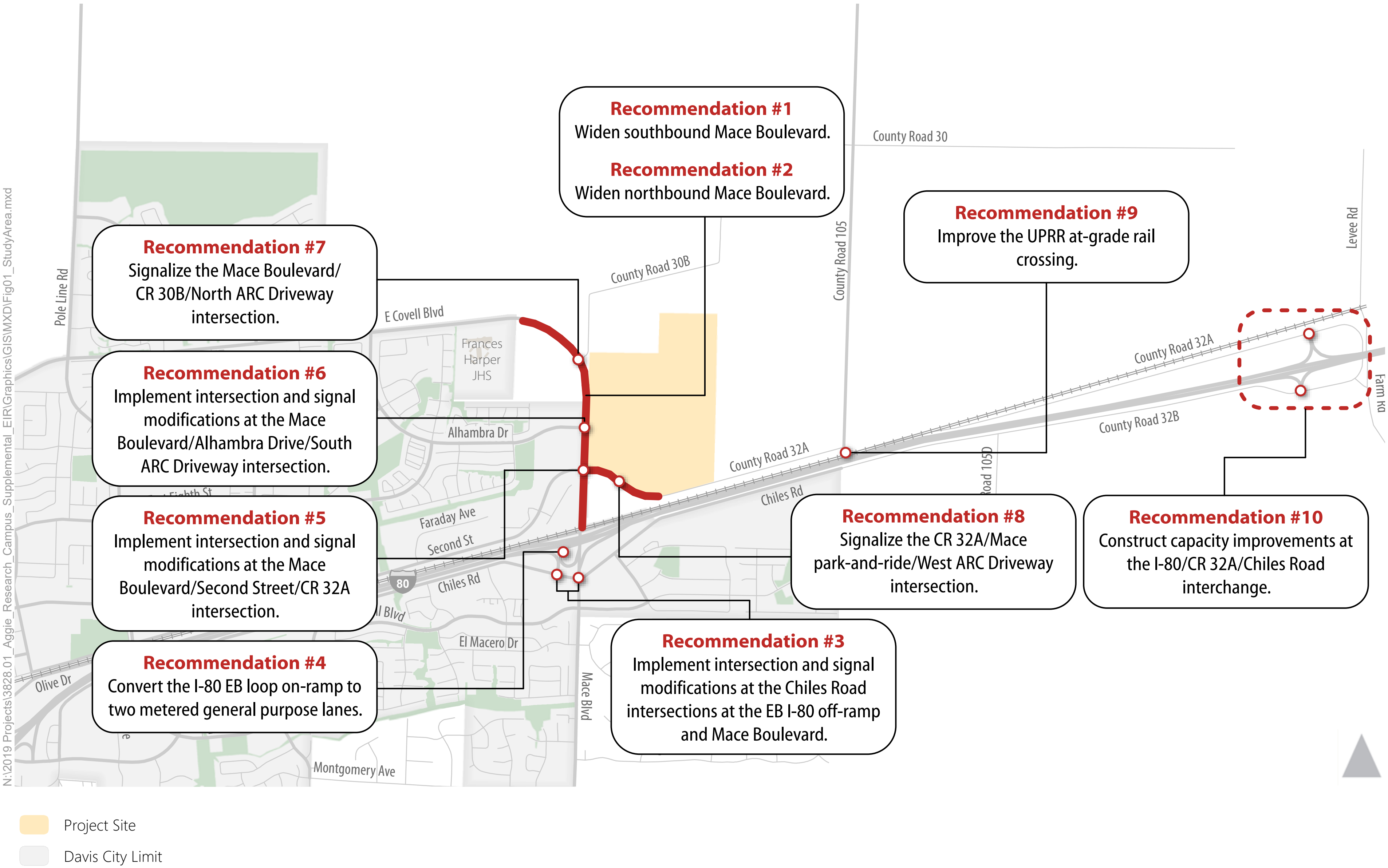

Figure 2
Proposed Operational Enhancements

Table 6: Peak Hour Intersection Operations – Existing Plus Project Conditions with Potential Operational Enhancements

Intersection	Traffic Control	Jurisdiction	Existing Conditions				Existing Plus Project Conditions				Existing Plus Project Conditions with Potential Operational Enhancements			
			A.M. Peak Hour		P.M. Peak Hour		A.M. Peak Hour		P.M. Peak Hour		A.M. Peak Hour		P.M. Peak Hour	
			Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
7. E. Covell Blvd./ Alhambra Drive	Signal	City of Davis	10	A	9	A	8	A	14	B	10	A	20	B
8. E. Covell Blvd./ Harper Jr. H.S.	Signal	City of Davis	11	A	5	A	45	D	14	B	17	B	17	B
9. Mace Blvd./ Alhambra Dr./ South ARC Driveway	Signal	City of Davis	17	B	21	C	**159**	**F**	**166**	**F**	26	C	49	D
10. Second Street/ Fermi Place/ Target Driveway	Signal	City of Davis	7	A	15	B	7	A	41	D	7	A	18	B
11. Mace Blvd./ Second Street/ CR 32A	Signal	City of Davis	34	C	27	C	**155**	**F**	**145**	**F**	60	E	67	E
12. CR 32A/Mace Park-and-Ride Driveway/West ARC Driveway	TWSC/ Signal	Yolo County/City of Davis[1]	1 (4)	A (A)	2 (6)	A (A)	6 (18)	A (C)	**107 (605)**	**F (F)**	17	B	21	C
13. Mace Blvd./I-80 WB Ramps	Signal	Caltrans	20	C	48	D	78	E	70	E	51	D	38	D

14. Mace Blvd./ Chiles Road	Signal	City of Davis	33	C	69	E	59	E	77	E	50	D	59	E
15. Chiles Road/ I-80 EB Ramp	Signal	Caltrans	11	B	41	D	**383**	**F**	**131**	**F**	23	C	71	E
16. Mace Blvd./ Cowell Blvd.	Signal	City of Davis	21	C	68	E	22	C	65	E	38	D	33	C
17. Mace Blvd./ El Macero Drive	AWSC	City of Davis	8	A	28	D	8	A	34	D	10	A	9	A
21. Mace Blvd./ Central ARC Driveway	TWSC	City of Davis	-	-	-	-	59 (101)	E (F)	**32 (69)**	**D (F)**	3 (4)	A (A)	3 (7)	A (A)
22. Mace Blvd./ CR 30B/North ARC Driveway	TWSC/ Signal	Yolo County	-	-	-	-	**143 (230)**	**F (F)**	**55 (325)**	**F (F)**	21	C	4	A
23. CR 32A/East ARC Driveway	TWSC	Yolo County/City of Davis[1]	-	-	-	-	3 (11)	A (B)	**56 (177)**	**F (F)**	4 (12)	A (B)	16 (42)	C (E)

Notes: For signalized intersections, average intersection delay is reported in seconds per vehicle for all approaches. For two-way stop-controlled intersections, average intersection delay is reported in seconds per vehicle for all approaches with the delay and LOS for the worst-case movement reported in parentheses.
Shaded cells indicate locations with unacceptable peak hour LOS.
Shaded and bold cells indicate locations where the project would cause adverse effects to peak hour intersection operations in accordance with the performance criteria.
TWSC = Two-Way Stop Control. AWSC = All-Way Stop Control. "-" = Does not exist.
[1] The segment of CR 32A along the ARC site southern frontage would be annexed into the City of Davis along with the project site. Thus, City of Davis performance criteria related to roadway performance would apply to study intersections #12 and #23 under Existing Plus Project conditions.
Source: Fehr & Peers, 2020.

Table 7 summarizes how the percentage of peak hour travel demand is able to be served within the portion of the study area covered by the micro-simulation model (i.e., along Mace Boulevard from east of Harper Junior High School southerly to El Macero Drive and including the connections to I-80, Chiles Road, and County Road 32A). When the percent demand served drops well below 100 percent, the demand for travel cannot be served within a single hour due to either upstream or downstream bottlenecks. This can lead to 'peak hour spreading', which is generally defined as more than one hour of congested, stop-and-go conditions. As shown in the table, the project causes the system-wide percent demand served to decrease to 82 percent during the a.m. peak hour and 85 percent during the p.m. peak hour. With the potential operational enhancements, these percentages increase to 99 percent during the a.m. peak hour and 97 percent during the p.m. peak hour, a substantial improvement. This table also shows the substantial benefit these improvements would offer at individual intersections.

Lastly, **Table 8** illustrates how the operational enhancements would benefit freeway off-ramp queuing at the I-80/Mace Boulevard interchange. As shown, vehicle queues would no longer spill back onto the I-80 mainline with implementation of these enhancements.

Table 7: Percent of Peak Hour Demand Served – Existing Plus Project Conditions with Potential Operational Enhancements

Location	Existing Conditions[1]				Existing Plus Project Conditions[1]				Existing Plus Project Conditions with Potential Operational Enhancements[1,2]			
	A.M. Peak Hour		P.M. Peak Hour		A.M. Peak Hour		P.M. Peak Hour		A.M. Peak Hour		P.M. Peak Hour	
	Hourly Demand	Vehicles Served (%)	Hourly Demand	Vehicles Served (%)	Hourly Demand	Vehicles Served (%)	Hourly Demand	Vehicles Served (%)	Hourly Demand	Vehicles Served (%)	Hourly Demand	Vehicles Served (%)
Overall System[3]	14,246	14,231 (100%)	15,332	14,844 (97%)	20,185	16,526 (82%)	20,538	17,555 (85%)	20,192	19,923 (99%)	20,551	20,014 (97%)
Mace Boulevard/ Alhambra Drive	1,767	1,750 (99%)	1,746	1,725 (99%)	2,959	2,383 (81%)	2,928	2,513 (86%)	2,959	2,925 (99%)	2,928	2,869 (98%)
Mace Boulevard/ Second Street	2,655	2,652 (100%)	2,917	2,899 (99%)	4,040	3,288 (81%)	4,207	3,534 (84%)	4,040	3,989 (99%)	4,207	4,081 (97%)
Mace Boulevard/ I-80 WB Ramps	3,172	3,169 (100%)	3,066	2,983 (97%)	4,409	3,669 (83%)	4,066	3,503 (86%)	4,409	4,322 (98%)	4,066	3,933 (97%)
Mace Boulevard/ Chiles Road	2,529	2,535 (100%)	2,746	2,558 (93%)	3,138	2,496 (80%)	3,078	2,681 (87%)	3,145	3,072 (98%)	3,091	3,011 (97%)

Notes: [1] Based on results of SimTraffic micro-simulation model.
[2] Refer to Figure 2 for an illustration of potential operational enhancements.
[3] Includes study intersections 9 through 17.

Source: Fehr & Peers, 2020.

Table 8: Freeway Off-Ramp Queuing – Existing Plus Project Conditions with Potential Operational Enhancements

Off-Ramp	Off-Ramp Distance[1]	95th Percentile Queue Length[2]					
		Existing Conditions		Existing Plus Project Conditions[3]		Existing Plus Project Conditions with Potential Operational Enhancements[3]	
		A.M. Peak Hour	P.M. Peak Hour	A.M. Peak Hour	P.M. Peak Hour	A.M. Peak Hour	P.M. Peak Hour
Mace Boulevard/ I-80 WB Off-Ramp	1,200 feet	175 feet	175 feet	1,900 feet	700 feet	825 feet	175 feet
Chiles Road/I-80 EB Off-Ramp	1,100 feet	100 feet	100 feet	3,300 feet	225 feet	250 feet	175 feet

Notes: [1] Measured from the intersection stop bar to the gore point of the freeway off-ramp. Does not include auxiliary lane on freeway mainline.
[2] Results at the Mace Boulevard/Chiles Road interchange are based on results from SimTraffic micro-simulation model.
[3] Shaded cells represent conditions in which the queue would spill onto the freeway mainline.

Source: Fehr & Peers, 2020.

Project Effects Beyond the Project Vicinity

The proposed project would add several hundred new peak hour vehicle trips between the project site and the I-80/County Road 32A interchange located to the east of the project site. These trips would be generated by project employees and residents traveling between the project site and Sacramento (and surrounding communities) via the I-80 causeway. These trips are expected to utilize the I-80/County Road 32A interchange instead of the I-80/Mace Boulevard interchange due to delays on Mace Boulevard within the interchange vicinity that would make use of the I-80/County Road 32A interchange more attractive from a travel time standpoint.

These additional project vehicle trips would primarily use County Road 32A to travel between the project site and the I-80/County Road 32A interchange. This would have the following adverse effects on multimodal operations:

- <u>Adverse effects to the UPRR at-grade rail crossing:</u> UPRR operates an at-grade rail crossing of County Road 32A immediately south of the County Road 32A/County Road 105 stop-controlled intersection. It is not uncommon for trespassing events (i.e., vehicles on the tracks) and vehicle-train collisions to occur at this location due to the current physical configuration of the crossing. Yolo County, together with Union Pacific and the City of Davis, is currently evaluating potential modifications to this at-grade crossing to reduce the potential for conflicts with rail operations. The addition of several hundred peak hour project vehicle trips could increase the potential for conflicts with rail operations at this location.
- <u>Adverse effects to the I-80/County Road 32A interchange:</u> The I-80/County Road 32A interchange experiences high volumes of vehicle trips during the p.m. peak hour, particularly on days when regional cut-through activity is prevalent. The combination of high travel demand and the ramp meter at the Chiles Road/I-80 EB on-ramp causes substantial peak hour delay and queuing on roadways within the interchange vicinity, particularly on eastbound and westbound Chiles Road near the I-80 EB ramps (near the Yolo Fruit Stand) and eastbound County Road 32A (due to queue spillback from the I-80 EB on-ramp). The addition of several hundred peak hour project trips would exacerbate these conditions.

Potential Operational Enhancements

The following operational improvements would lessen the adverse effects of the project described above:

- <u>UPRR at-grade rail crossing improvements:</u> The UPRR track/County Road 32A crossing should be converted from an at-grade crossing to a grade-separated crossing. A near-term improvement prior to provision of the grade separation would consist of relocating the County Road 32A/County Road 105 intersection about 200 feet to the north and installing double gates on the south approach to the grade crossing in order to improve safety and traffic functionality at the grade crossing.

- I-80/County Road 32A interchange improvements: Construct capacity improvements at the County Road 32 interchange and along County Road 32A to allow this interchange to serve more project traffic, including:
    - Reconstruction, widening, and potential relocation to the west, of the eastbound and westbound on- and off-ramps to provide more storage capacity, and to provide traffic signals or roundabouts at the ramp terminal intersections. Provision of an auxiliary lane between the relocated eastbound on-ramp merge and the causeway structure.
    - Re-configuration of the County Road 32A/County Road 105 intersection to provide uninterrupted County Road 32A flow with County Road 105 under stop control.

The improvements described above would require coordination with and approvals by Yolo County, UPRR, and Caltrans. The timing of each improvement relative to the ARC project should be addressed in the focused transportation impact studies prepared for each phase of development of the ARC project. The project should make a fair share funding contribution towards each improvement.

Project Effects on Freeways

Regional and corridor analysis by SACOG, MTC, and Caltrans have already evaluated I-80 within the vicinity of the project site. These analyses include the following documents:

- 2016 SACOG MTP/SCS (SACOG 2016). This document is the RTP for the six-county Sacramento region, which includes Yolo County.
- District System Management and Development Plan, Caltrans District 3 (Caltrans 2013).
- I-80 and Capital City Freeway Corridor System Management Plan (Caltrans 2009).
- Transportation Concept Report I-80, District 3 (Caltrans 2017).
- Transportation Concept Report SR 113, District 3 (Caltrans 2014).
- Interstate 80/United States 50 Davis to Downtown Sacramento Preliminary Investigation (Caltrans 2014).
- I-80/Richards Blvd Interchange Project Study Report – Project Development Support (PSR-PDS) (Caltrans 2017).
- Plan Bay Area 2040 (MTP and ABAG 2017). This document is the RTP/SCS for the nine-county Bay Area region, which includes Solano County.
- Caltrans District 4 Transportation System Development Plan (Caltrans 2011).
- I-80 East Corridor System Management Plan District 4 (Caltrans 2017).

Of the various studies, Caltrans analysis tends to be the most detailed with regards to roadway operations performance. According to the I-80/United States US 50 Davis to Downtown Sacramento Preliminary Investigation, District 3 (Caltrans 2014), much of the I-80 corridor in the study area has low travel speeds during the p.m. peak period while the a.m. peak period has a few isolated areas of low travel speeds (see graphic below). As shown in the graphic below, I-80 travelers experience slow speeds (i.e., LOS F conditions) for select westbound locations during the morning peak period and more severe and extended areas of slow speeds in the eastbound direction during the evening peak period. More recent observed conditions reveal that a.m. and p.m. traffic speeds have continued to degrade such that more segments of I-80 perform poorly over extended periods of time.

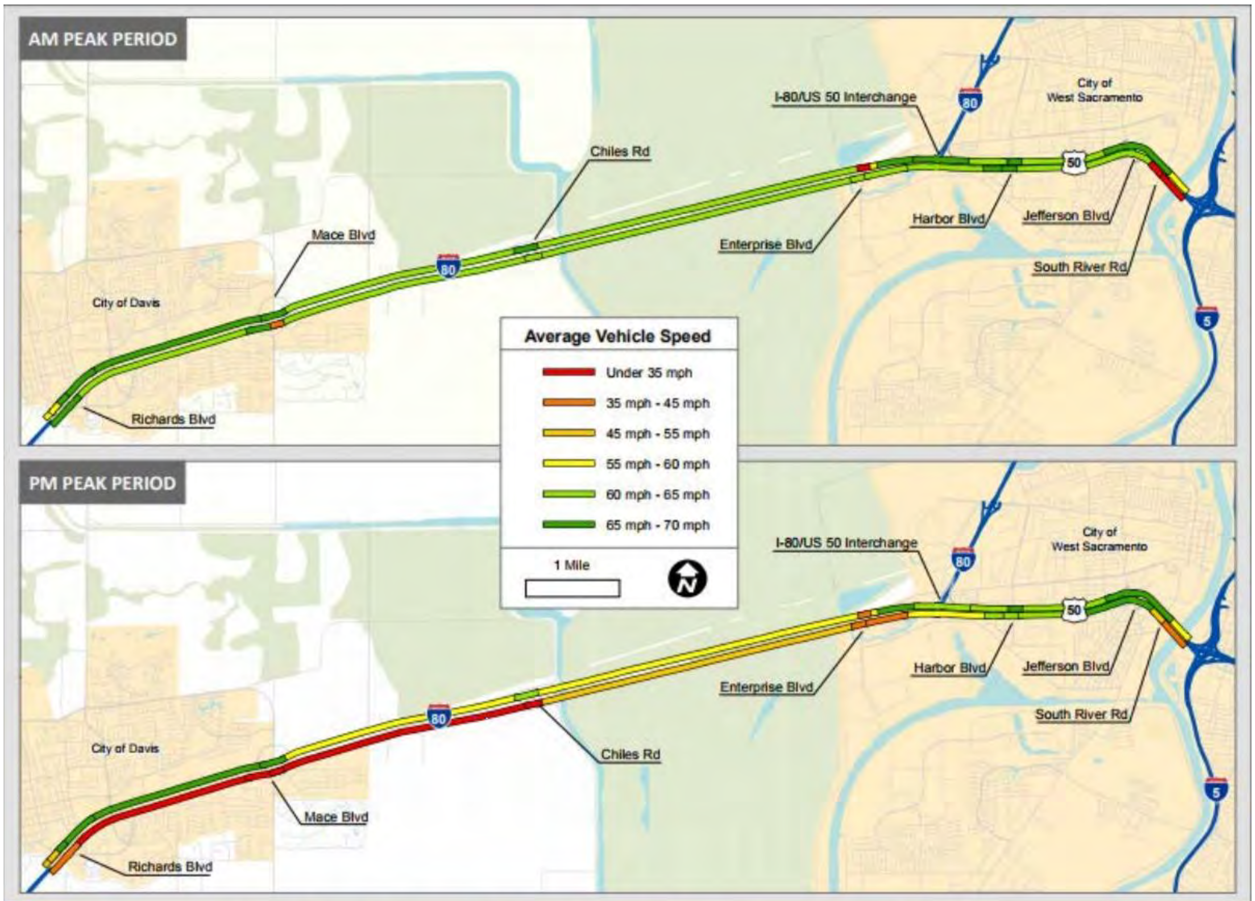

FIGURE 5: Existing Conditions - Segmental Travel Speed (from microsimulation model)

The Caltrans District 3 Interstate 80 Transportation Concept Report (Caltrans 2017) describes existing and anticipated future operating conditions on I-80 throughout the greater Sacramento area. As documented in the I-80 TCR, the segment of I-80 between Mace Boulevard and West Sacramento (Post Mile 2.68 to 9.55) operates at LOS F (see table image below).

SYSTEM CHARACTERISTICS, CONCEPT FACILITY, AND CORRIDOR PERFORMANCE

Figure 2

SYSTEM CHARACTERISTICS AND CONCEPT FACILITY															BASIC SYSTEM OPERATIONS						
				Existing Facility Base Year					Concept Facility Horizon Year						Level of Service (LOS)				Average Daily Traffic (ADT)		
				Base Year (BY)					Build Facility-Horizon Year (HY)					Ultimate Facility (HY)							
Segment	County	Post Miles (Begin/End)		Facility Type	General Purpose Lanes	Centerline Miles	Lane Miles	Designated Lane	Facility Type	General Purpose Lanes	Centerline Miles	Lane Miles	Designated Lane	General Purpose Lane/ Facility Type (project to achieve LOS - Ultimate concept)	Base Year (BY) 2014	No Build Horizon Year (HY) 2035	Build (HY)	Ultimate Concept	(BY) 2014	No Build (HY) 2035	Build (HY)
1	YOL	0.000	2.680	6	F	2.68	16.08	-	6	F	2.68	16.08	-	6F	E	F	F	D	122,000	145,000	150,000
2	YOL	2.68	9.55	6	F	6.870	41.22	-	6	F	6.870	41.22	-	6F	F	F	F	E	149,000	177,000	189,000
3	YOL	9.55	R11.718	6	F	2.168	11.72	-	6	F	2.170	11.72	-	6F	C	D	D	E	86,000	108,000	109,000

A review of similar information for I-80 in Solano County (e.g., (I-80 East Corridor System Management Plan District 4, [Caltrans 2017]) revealed evidence that slow freeway speeds (i.e., LOS F conditions) occur near the Yolo/Solano County line in the eastbound direction during the evening peak period.

The combination of SACOG and MTC region growth, including that associated with the proposed ARC project, would exacerbate the current I-80 performance problems related to slow speeds and unreliable travel times described above. In response, Caltrans, in cooperation with SACOG, developed the carpool lane project on I-80 between Davis and Downtown Sacramento, which is included in the SACOG MTP/SCS as shown below (SACOG 2016). This project would extend between Richards Boulevard in Davis to the I-5/US 50 interchange in Sacramento.

Project ID	Included in DPS	COUNTY	LEAD AGENC	TITLE	PROJECT DESCRIPTION	Completion Timing	TOTAL COST (2015 Dollars)	Status
CAL18812	Yes	Multiple Counties	Caltrans D3	I-80 / U.S. 50 Bus/Carpool Lanes in both directions	Bus/Carpool Lanes in both directions from Richards Blvd. (in Davis) to the I-5/US 50 Interchange. Inc. new bike bridge across the Yolo Causeway.	2021-2036	$300,000,000	Planned

In addition, as shown below, the SACOG MTP/SCS includes expansion of the Capitol Corridor service from two round trips to ten round trips between Sacramento and Roseville. This expansion would improve the viability of using transit for longer distance trips to/from Davis that would otherwise be using I-80.

Project ID	Included in DPS	COUNTY	LEAD AGENCY	TITLE	PROJECT DESCRIPTION	Completion Timing	TOTAL COST (2015 Dollars)	Status
CAL18320	Yes	Multiple Counties	Capitol Corridor JPA	Sacramento to Roseville Third Main Track - Phase 1	On the Union Pacific mainline, from near the Sacramento and Placer County boarder to the Roseville Station area in Placer County: Construct a layover facility, install various Union Pacific Railroad Yard track improvements, required signaling, and construct the most northern eight miles of third mainline track between Sacramento and Roseville (largely all in Placer County), which will allow up to two additional round trips (for a total of three round trips) between Sacramento and Roseville.	2021	$82,980,000	Programmed
VAR56199	Yes	Multiple Counties	Capitol Corridor JPA	Sacramento to Roseville Third Main Track - Phase 2	On the UP mainline, from Sacramento Valley Station approximately 9.8 miles toward the Placer County line: Construct third mainline track including all bridges and required signaling. Project improvements will permit service capacity increases for Capitol Corridor in Placer County, with up to seven additional round trips added to Phase 1-CAL18320 (for a total of ten round trips) between Sacramento to Roseville including track and station improvements.	2021	$167,820,000	Programmed

The Capitol Corridor projects are already programmed according to the SACOG MTP/SCS and the carpool lane project is projected to have sufficient funding for implementation by 2036. These projects are not expected to eliminate the LOS F conditions on I-80 in the study area but will reduce the severity of congestion and provide more reliable travel options for those opting to carpool or use Capitol Corridor service.

A review of similar information for I-80 in Solano County (e.g., (I-80 East Corridor System Management Plan District 4 [Caltrans 2017]) revealed evidence that slow freeway speeds (i.e., LOS F conditions) near the Yolo/Solano County line in the eastbound direction during the evening peak period will continue to occur under 2030 conditions.

Caltrans analysis of this location contained in the I-80 East Corridor System Management Plan District 4, Caltrans, June 2017, does not include specific improvements to address this problem location. The plan does include the planned expansion of I-80 between Dixon and Davis, as shown in the highlighted text in the graphic labeled "Solano County Table," which is a location that could experience an increase in traffic from the proposed ARC project.

SOLANO COUNTY TABLE

CO	RTE	Beg PM	End PM	Project Description/Location	Improv. Type	Project Cost (millions)*	T-2040 Status	RTP #	Facility Type	IRRS Status	Delivery Status	Compl. By (year)	Comments
SOL	080	25.30	28.40	Extend the EB HOV-2 lane from Alamo Dr. to I-505.	HWY	$19.2	na	na	F	HE	Planned	na	I-80 East CSMP
SOL	080	25.30	28.40	Extend the WB HOV-2 lane from Alamo Dr. to I-505.	HWY	$32.8	na	na	F	HE	Planned	na	I-80 East CSMP
SOL	080	26.50	27.00	Provide an EB auxiliary lane between Cliffside Dr. and Allison Dr. with a 2-lane off-ramp at Allison Dr.	HWY	$3.5	na	na	F	HE	Planned	na	I-80 East CSMP
SOL	080	28.40	28.40	I-80/I-505 I/C redesign to accommodate express lane and eliminate lane drop from WB I-80 at I505.	HWY	na	na	na	F	HE	Planned	na	Solano 2040 Additional
SOL	080	30.00	40.00	Provide a 4th EB general purpose lane extending from E. of Leisure Town Rd. to W. of Kidwell Rd. Potentially HOV/HOT lane.	HWY	$78.0	na	na	F	HE	Planned	na	I-80 East CSMP
SOL	080	30.00	40.00	Provide a 4th WB general purpose lane between W. of Kidwell Rd. and E. of Leisure Town Rd. Potentially HOV/HOT lane.	HWY	$132.3	na	na	F	HE	Planned	na	I-80 East CSMP
SOL	080	30.90	40.70	Widen I-80 from 6 to 8 lanes, from West of Meridian Rd. to West of Kidwell Road	HWY	$83.0	na	na	F	HE	Planned	na	
SOL	080	35.35	35.68	I-80/West A Street Interchange Improvements - Ramp and eventually bridge improvements to increase capacity.	HWY	$25.0	New Com	240248	F	HE		2022	MIS/ Corridor Study
SOL	080	39.74	39.98	I-80/Pedrick Road Interchange Improvements - Ramp and eventually bridge improvements to increase capacity. Roadway provides access to northeast area business park of Dixon	HWY	$25.0	New Com	240178	F	HE	Planned	2022	
SOL	080	R11.40	19.17	Install ITS gap between Red Top Road and Air Base Parkway. This will consist of CCTV cameras, Highway Advisory Radio and communications infrastructure	HWY	$6.0	na	na	F	HE	Planned	na	I-80 East CSMP
SOL	080	R11.98	12.85	Provide WB braided ramp configurations as necessary between SR-12 West and I-680 to improve weave and merge maneuvers	HWY	$4.2	na	na	F	HE	Planned	na	I-80 East CSMP
SOL	080	R25.30	R28.34	Extend ITS in EB direction between Alamo Drive and I-505	HWY	$2.3	na	na	F	HE	Planned	na	I-80 East CSMP
SOL	080	R25.30	R28.34	Extend ITS in the WB direction between I-505 and Alamo Drive	HWY	$2.0	na	na	F	HE	Planned	na	I-80 East CSMP

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Despite this information, MTC did not include any capacity expansion projects for the I-80 corridor in eastern Solano County as part of Plan Bay Area 2040. As such, regional growth (including the ARC Project) would likely exacerbate the congested conditions previously identified by Caltrans.

Additional employee and residential growth with the ARC Project would generate new peak period vehicle trips that would contribute to existing and future LOS F conditions on the I-80 mainline. For example, approximately one-third of peak hours trips generated by the ARC Project are estimated to travel to/from the Sacramento vicinity on I-80 on the Yolo Causeway (east of Davis), equal to approximately 820 and 870 additional vehicle trips during the a.m. and p.m. peak hours, respectively, under Existing Plus Project conditions. According to the I-80 TCR, this segment of I-80 served 12,200 peak hour trips during the base year (2014). Therefore, the project would increase I-80 mainline volumes on the Yolo Causeway by more than five percent.

Potential Operational Enhancements

The following actions would lessen anticipated project-related effects on I-80 mainline operations:

- At the time of the issuance of the first certificate of occupancy and as a component of the ARC TDM program, the Master Owners' Association (MOA) for the Project should establish the baseline peak hour I-80 mainline vehicle trips by which to determine the project's change to peak hour I-80 vehicle trips. Baseline a.m. and p.m. peak hour vehicle trips on I-80 shall be calculated on the following segments:
    1. Between Pedrick Road and Kidwell Road
    2. Between Richards Boulevard and Mace Boulevard
    3. East of Chiles Road (i.e., the Yolo Causeway)

  During the annual TDM reporting, the MOA should determine the number of a.m. and p.m. peak hour project vehicle trips that utilize I-80 on the segments listed above. In instances where these figures exceed baseline levels by five percent or more, the MOA should institute TDM strategies to reduce project-related peak hour vehicle trips on I-80. The implementation of TDM strategies should reduce peak hour project vehicle trips on I-80 to an amount less than five percent of baseline levels, to the extent feasible.

  TDM strategies that would reduce peak hour vehicle trips on I-80 include strategies to reduce commute and business vehicle trips to and from ARC using I-80. If these TDM strategies are not sufficient to reduce peak hour trips to baseline levels, additional TDM measures or adjustments to existing measures should be implemented, as needed to reduce peak hour trips to an amount less than five percent of baseline levels.
- The MOA for the Project should contribute a proportional share to the local contribution portion of freeway improvement projects to construct carpool lanes on I-80 between Richards Boulevard and West Sacramento.

5. Cumulative Plus Project Conditions

The cumulative analysis assumes the same roadway system and intersection improvements as is currently present. This is because the City's Capital Improvement Program (CIP) does not include any specific improvements within the study area. Additionally, there are no plans to upgrade the I-80/Mace Boulevard interchange. A high-occupancy-vehicle (HOV) or carpool lane is planned to be added on the adjacent segment of I-80, which has been considered in the traffic forecasts. Consistent with standard practice, traffic signal timings were optimized due to changes in travel demand between current and cumulative conditions.

Table 9 displays intersection LOS and delay under cumulative conditions, without and with the project. Note that the analysis is focused only on the study intersections along the project frontage and near the I-80/Mace Boulevard interchange. Technical calculations are provided in the Appendix. This table indicates that many of the study intersections would operate at LOS F without the project. The addition of the project would cause LOS F conditions or worsen already projected LOS F conditions by five seconds or more at 11 study intersections.

Table 10 displays the 95th percentile freeway off-ramp queue at the I-80/Mace Boulevard interchange off-ramps under cumulative conditions, without and with the project. This table indicates that vehicle queues would spill back out of both off-ramps onto I-80 under cumulative no project conditions during the a.m. peak hour. The project would exacerbate these queue spillbacks during the a.m. peak hour and also cause the queue to spill back to the freeway during the p.m. peak hour.

Table 11 displays roadway segment LOS under cumulative conditions, without and with the project. All study roadway segments would operate acceptably under both Cumulative No Project and Cumulative Plus Project conditions except for Pole Line Road north of Covell Boulevard, which would operate at LOS F during the p.m. peak hour under both Cumulative No Project and Cumulative Plus Project conditions. The project would not cause an increase in p.m. peak hour volume by more than 10 percent, therefore, in accordance with the roadway segment performance thresholds, the project would not have a cumulatively considerable effect on this unacceptable condition.

Table 9: Peak Hour Intersection Operations – Cumulative Plus Project Conditions

Intersection	Traffic Control	Jurisdiction	Cumulative Conditions				Cumulative Plus Project Conditions			
			A.M. Peak Hour		P.M. Peak Hour		A.M. Peak Hour		P.M. Peak Hour	
			Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
9. Mace Blvd./ Alhambra Dr./ South ARC Driveway	Signal	City of Davis	100	F	242	F	**191**	**F**	**301**	**F**
10. Second Street/ Fermi Place/ Target Driveway	Signal	City of Davis	16	B	118	F	17	B	102	F
11. Mace Blvd./ Second Street/ CR 32A	Signal	City of Davis	110	F	115	F	**133**	**F**	**204**	**F**
12. CR 32A/Mace Park-and-Ride Driveway/West ARC Driveway	TWSC	Yolo County/City of Davis[1]	1 (4)	A (A)	2 (6)	A (A)	**19 (40)**	**A (E)**	**133 (674)**	**F (F)**
13. Mace Blvd./I-80 WB Ramps	Signal	Caltrans	168	F	100	F	145	F	**137**	**F**
14. Mace Blvd./ Chiles Road	Signal	City of Davis	97	F	146	F	**122**	**F**	125	F
15. Chiles Road/ I-80 EB Ramp	Signal	Caltrans	271	F	219	F	**359**	**F**	**275**	**F**
16. Mace Blvd./ Cowell Blvd.	Signal	City of Davis	62	E	200	F	**89**	**F**	190	F
17. Mace Blvd./ El Macero Drive	AWSC	City of Davis	27	D	299	F	44	E	**314**	**F**
21. Mace Blvd./ Central ARC Driveway	TWSC	City of Davis	-	-	-	-	**62 (107)**	**F (F)**	**61 (200)**	**F (F)**
22. Mace Blvd./ CR 30B/North ARC Driveway	TWSC	Yolo County	-	-	-	-	**151 (249)**	**F (F)**	**144 (769)**	**F (F)**
23. CR 32A/East ARC Driveway	TWSC	Yolo County/City of Davis[1]	-	-	-	-	3 (10)	A (A)	**97 (285)**	**F (F)**

Notes: For signalized intersections, average intersection delay is reported in seconds per vehicle for all approaches. For two-way stop-controlled intersections, average intersection delay is reported in seconds per vehicle for all approaches with the delay and LOS for the worst-case movement reported in parentheses.

Results provided only for intersections analyzed using micro-simulation.
Shaded cells indicate locations with unacceptable peak hour LOS.
Shaded and bold cells indicate locations where the project would cause adverse effects to peak hour intersection operations in accordance with the performance criteria.
TWSC = Two-Way Stop Control. AWSC = All-Way Stop Control. "-" = Does not exist.
[1] The segment of CR 32A along the ARC site southern frontage would be annexed into the City of Davis along with the project site. Thus, City of Davis performance criteria related to roadway performance would apply to study intersections #12 and #23 under Cumulative Plus Project conditions.

Source: Fehr & Peers, 2020.

Table 10: Freeway Off-Ramp Queuing – Cumulative Plus Project Conditions

Off-Ramp	Off-Ramp Distance[1]	95th Percentile Queue Length[2]			
		Cumulative Conditions		Cumulative Plus Project Conditions[3]	
		A.M. Peak Hour	P.M. Peak Hour	A.M. Peak Hour	P.M. Peak Hour
Mace Boulevard/I-80 WB Off-Ramp	1,200 feet	2,600 feet[4]	450 feet	2,600 feet[4]	2,600 feet[4]
Chiles Road/I-80 EB Off-Ramp	1,100 feet	2,175 feet	1,050 feet	3,050 feet	2,375 feet

Notes: [1] Measured from the intersection stop bar to the gore point of the freeway off-ramp. Does not include auxiliary lane on freeway mainline.
[2] Results at the Mace Boulevard/Chiles Road interchange are based on results from SimTraffic micro-simulation model.
[3] Shaded cells represent conditions in which the queue would spill onto the freeway mainline.
[4] Results are identical for these scenarios and time periods because queue spills out of model network.

Source: Fehr & Peers, 2020.

Table 11: Peak Hour Roadway Segment Operations – Cumulative Conditions

Study Roadway Segment	Functional Classification (# of Lanes)	Jurisdiction	Cumulative Conditions				Cumulative Plus Project Conditions			
			A.M. Peak Hour		P.M. Peak Hour		A.M. Peak Hour		P.M. Peak Hour	
			Two-Way Volume	LOS	Two-Way Volume	LOS	Two-Way Volume	LOS	Two-way Volume	LOS
1. East Covell Boulevard: west of Pole Line Road	Arterial (4)	City of Davis	1,710	C	2,200	D	1,990	C	2,570	D
2. East Covell Boulevard: east of Pole Line Road	Arterial (4)	City of Davis	1,460	C	1,740	C	1,890	C	2,270	D
3. Pole Line Road: north of East Covell Boulevard	Arterial (2)	City of Davis	1,460	E	1,730	F	1,610	E	1,890	F
4. Pole Line Road: south of East Covell Boulevard	Arterial (2)	City of Davis	1,090	D	1,270	D	1,090	D	1,270	D
5. East Covell Boulevard: west of Alhambra Drive	Arterial (4)	City of Davis	1,490	C	1,710	C	1,950	C	2,290	D
6. East Covell Boulevard: east of Harper Junior High School	Arterial (4)	City of Davis	1,460	C	1,430	C	1,750	C	1,940	C
7. Alhambra Drive: south of East Covell Boulevard	Arterial (2)	City of Davis	350	C	350	C	540	C	420	C
8. Alhambra Drive: west of Mace Boulevard	Arterial (2)	City of Davis	830	C	910	C	1,150	D	1,180	D
9. Second Street: west of the Fermi Place	Arterial (2)	City of Davis	1,080	D	1,280	D	1,190	D	1,410	D
10. CR 32A: east of project site	Highway (2)	Yolo County	170	C	320	C	500	D	900	D

11. Chiles Road: west of I-80 EB Off-Ramp	Arterial (2)	City of Davis	1,120	D	1,000	D	1,230	D	1,250	D
12. Chiles Road: east of Mace Boulevard	Arterial (2)	City of Davis	1,070	D	1,390	D	1,100	D	1,440	D
13. Cowell Boulevard: west of Mace Boulevard	Arterial (2)	City of Davis	480	C	680	C	500	C	700	C
14. Mace Boulevard: south of El Macero Drive	Arterial (2)	City of Davis	490	C	590	C	500	C	610	C

Notes: Shaded cells indicate locations with unacceptable peak hour LOS.
Shaded and bold cells indicate locations where the project would cause adverse effects to peak hour roadway segment operations in accordance with the performance criteria.
Source: Fehr & Peers, 2020.

Potential Operational Enhancements

The potential operational enhancements illustrated on Figure 2 were tested under cumulative plus project conditions. **Table 12** displays the resulting intersection LOS and delay under cumulative plus project conditions with these operational enhancements in place. **Table 13** summarizes how the percentage of peak hour travel demand is able to be served within the portion of the study area covered by the micro-simulation model. **Table 14** summarizes illustrates how the operational enhancements would affect freeway off-ramp queues at the I-80/Mace Boulevard interchange.

The results in these tables reveal several important conclusions:

- Background traffic growth will require improvements within this portion of the study area regardless of whether the project is developed.
- The project would further worsen operations in this area, though the operational enhancements would provide some benefit. For instance, in the p.m. peak hour, the percent demand served under cumulative plus project conditions would increase from 65 percent to 83 percent with the enhancements. However, the operational enhancements are not sufficient, in and of themselves, to improve conditions to LOS E or better.

Table 12: Peak Hour Intersection Operations – Cumulative Plus Project Conditions with Potential Operational Enhancements

Intersection	Traffic Control	Jurisdiction	Cumulative Conditions				Cumulative Plus Project Conditions				Cumulative Plus Project Conditions with Potential Operational Enhancements			
			A.M. Peak Hour		P.M. Peak Hour		A.M. Peak Hour		P.M. Peak Hour		A.M. Peak Hour		P.M. Peak Hour	
			Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay	LOS
9. Mace Blvd./ Alhambra Dr./ South ARC Driveway	Signal	City of Davis	100	F	242	F	**191**	**F**	**301**	**F**	**136**	**F**	**266**	**F**
10. Second Street/ Fermi Place/ Target Driveway	Signal	City of Davis	16	B	118	F	17	B	102	F	16	B	33	C
11. Mace Blvd./ Second Street/ CR 32A	Signal	City of Davis	110	F	115	F	**133**	**F**	**204**	**F**	97	F	117	F
12. CR 32A/Mace Park-and-Ride Driveway/West ARC Driveway	TWSC/ Signal	Yolo County/City of Davis[1]	1 (4)	A (A)	2 (6)	A (A)	**19 (40)**	**A (E)**	**133 (674)**	**F (F)**	12	B	96	F
13. Mace Blvd./I-80 WB Ramps	Signal	Caltrans	168	F	100	F	145	F	**137**	**F**	144	F	**114**	**F**
14. Mace Blvd./ Chiles Road	Signal	City of Davis	97	F	146	F	**122**	**F**	125	F	**133**	**F**	57	E
15. Chiles Road/ I-80 EB Ramp	Signal	Caltrans	271	F	219	F	**359**	**F**	**275**	**F**	**303**	**F**	157	F
16. Mace Blvd./ Cowell Blvd.	Signal	City of Davis	62	E	200	F	**89**	**F**	190	F	**224**	**F**	109	F

17. Mace Blvd./ El Macero Drive	AWSC	City of Davis	27	D	299	F	44	E	**314**	**F**	**334**	**F**	116	F
21. Mace Blvd./ Central ARC Driveway	TWSC	City of Davis	-	-	-	-	**62 (107)**	**F (F)**	**61 (200)**	**F (F)**	**58 (93)**	**F (F)**	**54 (167)**	**F (F)**
22. Mace Blvd./ CR 30B/North ARC Driveway	TWSC/ Signal	Yolo County	-	-	-	-	**151 (249)**	**F (F)**	**144 (769)**	**F (F)**	**136 (214)**	**F (F)**	**175 (764)**	**F (F)**
23. CR 32A/East ARC Driveway	TWSC	Yolo County/City of Davis[1]	-	-	-	-	3 (10)	A (A)	**97 (285)**	**F (F)**	3 (9)	A (A)	**67 (263)**	**F (F)**

Notes: For signalized intersections, average intersection delay is reported in seconds per vehicle for all approaches. For two-way stop-controlled intersections, average intersection delay is reported in seconds per vehicle for all approaches with the delay and LOS for the worst-case movement reported in parentheses.
Results provided only for intersections analyzed using micro-simulation.
Shaded cells indicate locations with unacceptable peak hour LOS.
Shaded and bold cells indicate locations where the project would cause adverse effects to peak hour intersection operations in accordance with the performance criteria.
TWSC = Two-Way Stop Control. AWSC = All-Way Stop Control. "-" = Does not exist.
[1] The segment of CR 32A along the ARC site southern frontage would be annexed into the City of Davis along with the project site. Thus, City of Davis performance criteria related to roadway performance would apply to study intersections #12 and #23 under Cumulative Plus Project conditions.

Source: Fehr & Peers, 2020.

Table 13: Percent of Peak Hour Demand Served – Cumulative Plus Project Conditions with Potential Operational Enhancements

Location	Cumulative Conditions[1]				Cumulative Plus Project Conditions[1]				Cumulative Plus Project Conditions with Potential Operational Enhancements[1,2]			
	A.M. Peak Hour		P.M. Peak Hour		A.M. Peak Hour		P.M. Peak Hour		A.M. Peak Hour		P.M. Peak Hour	
	Hourly Demand	Vehicles Served (%)	Hourly Demand	Vehicles Served (%)	Hourly Demand	Vehicles Served (%)	Hourly Demand	Vehicles Served (%)	Hourly Demand	Vehicles Served (%)	Hourly Demand	Vehicles Served (%)
Overall System[3]	18,350	15,964 (87%)	20,035	14,646 (73%)	24,289	17,051 (70%)	25,265	16,431 (65%)	24,289	17,823 (73%)	25,265	21,054 (83%)

Notes: [1] Based on results of SimTraffic micro-simulation model.
[2] Refer to Figure 2 for an illustration of potential operational enhancements.
[3] Includes study intersections 9 through 17.

Source: Fehr & Peers, 2020.

Table 14: Freeway Off-Ramp Queuing – Cumulative Plus Project Conditions with Potential Operational Enhancements

Off-Ramp	Off-Ramp Distance[1]	95th Percentile Queue Length[2]					
		Cumulative Conditions		Cumulative Plus Project Conditions[3]		Cumulative Plus Project Conditions with Potential Operational Enhancements[3]	
		A.M. Peak Hour	P.M. Peak Hour	A.M. Peak Hour	P.M. Peak Hour	A.M. Peak Hour	P.M. Peak Hour
Mace Boulevard/ I-80 WB Off-Ramp	1,200 feet	2,600 feet	450 feet	2,600 feet	2,600 feet	2,275 feet	2,600 feet
Chiles Road/I-80 EB Off-Ramp	1,100 feet	2,175 feet	1,050 feet	3,050 feet	2,375 feet	3,050 feet	500 feet

Notes: [1] Measured from the intersection stop bar to the gore point of the freeway off-ramp. Does not include auxiliary lane on freeway mainline.
[2] Results at the Mace Boulevard/Chiles Road interchange are based on results from SimTraffic micro-simulation model.
[3] Shaded cells represent conditions in which the queue would spill onto the freeway mainline.

Source: Fehr & Peers, 2020.

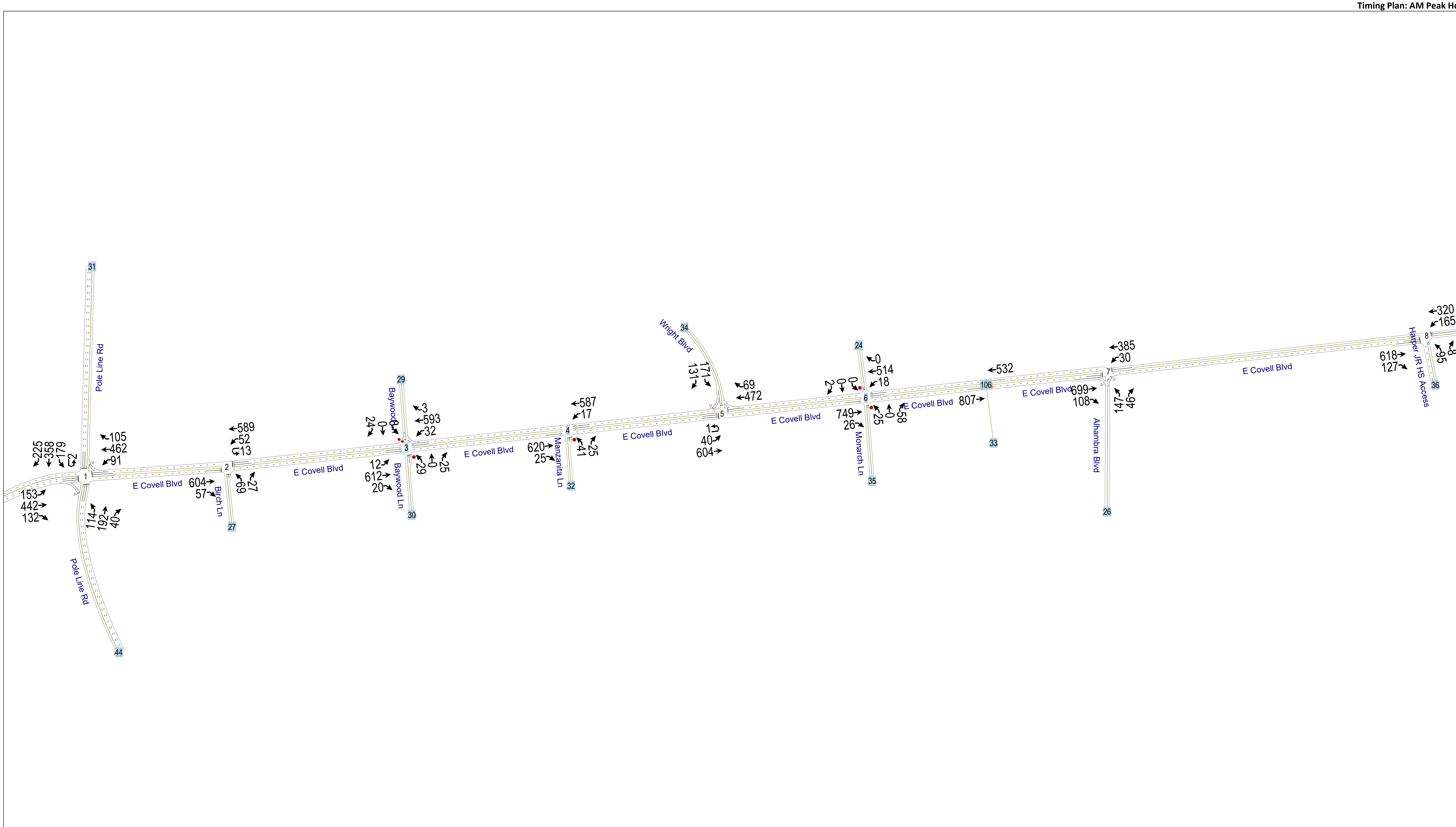
Aggie Research Campus

Technical Appendix

March 2020

RS19-3828.01

FEHR & PEERS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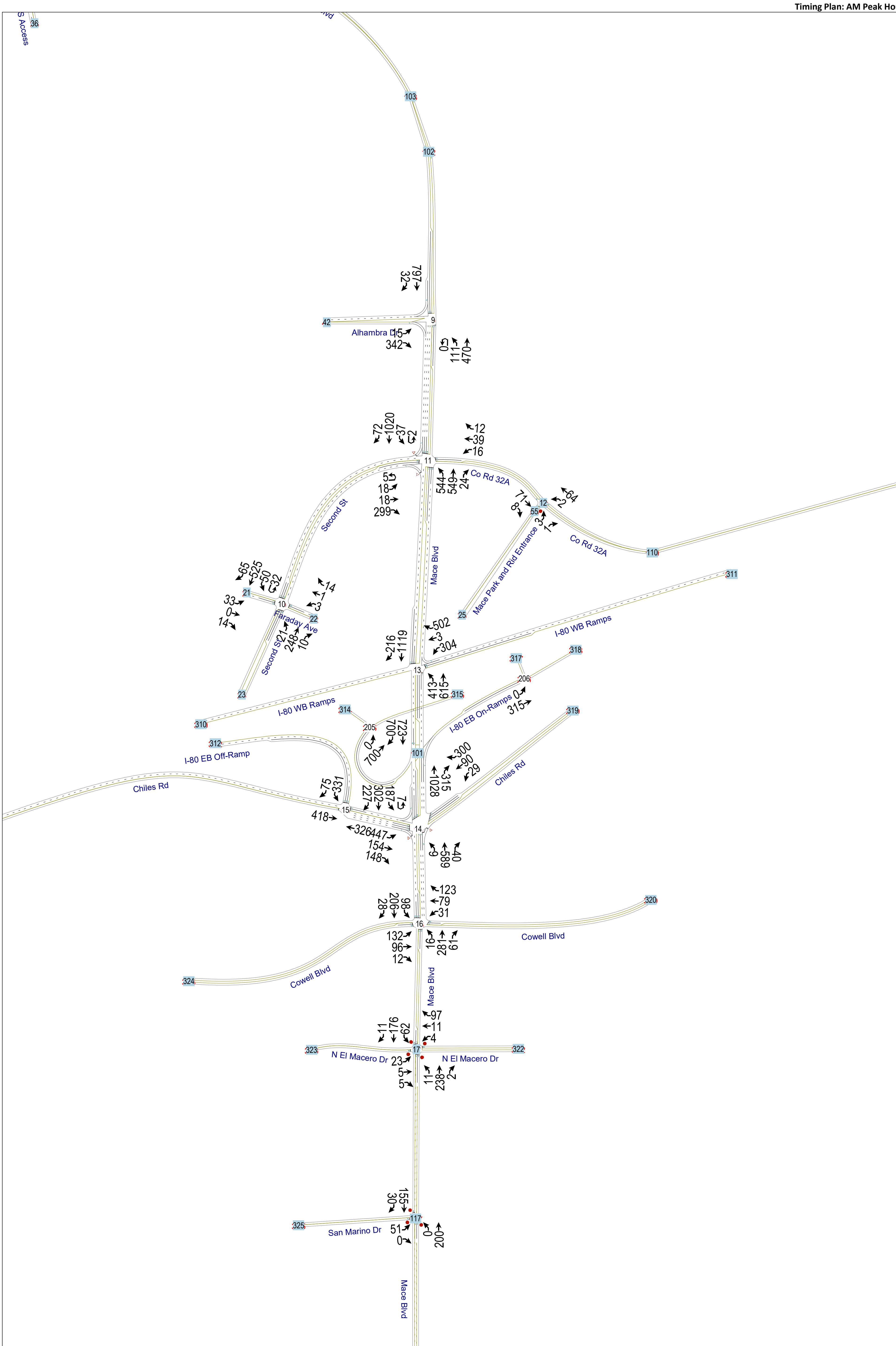
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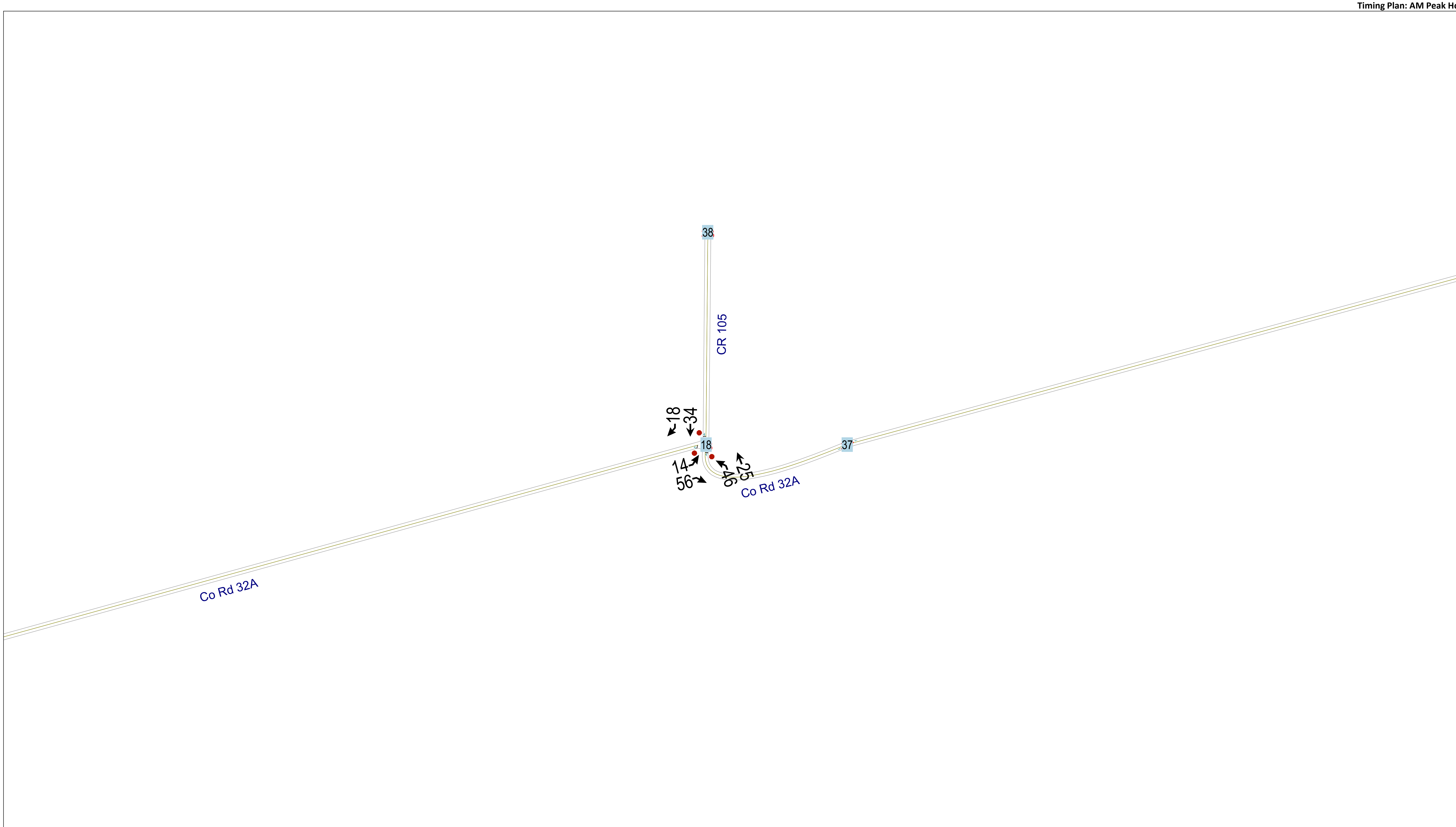
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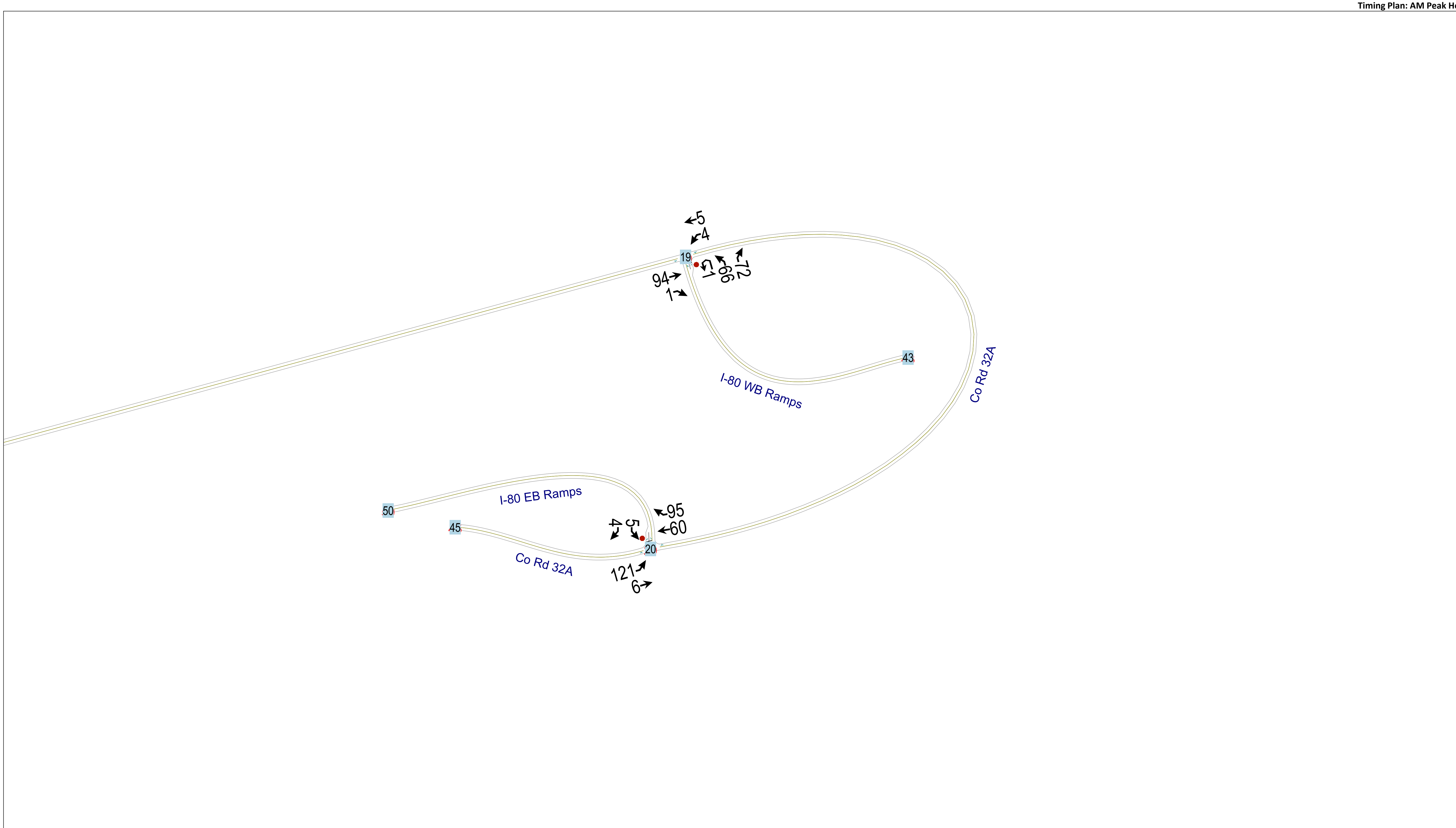
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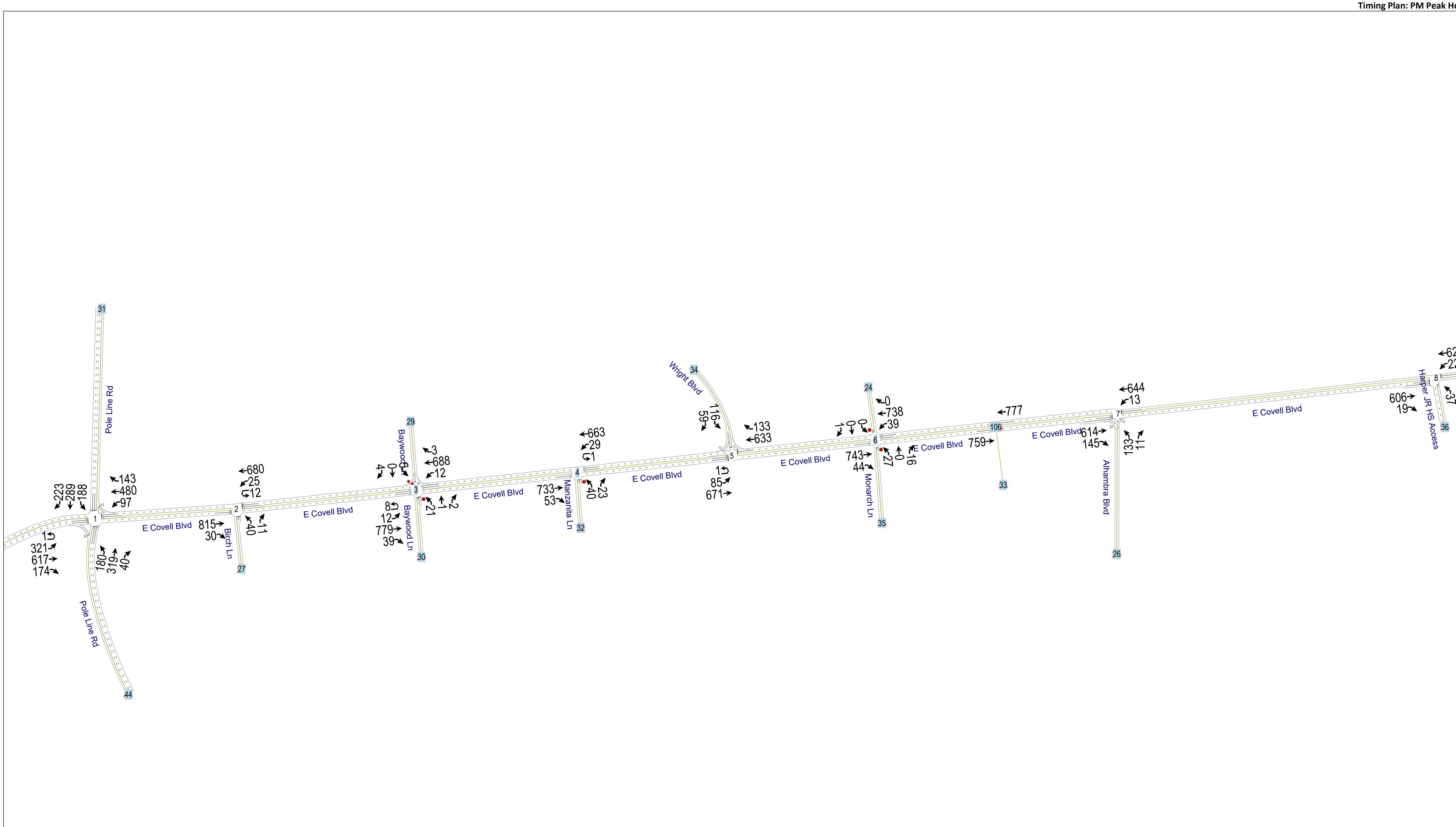
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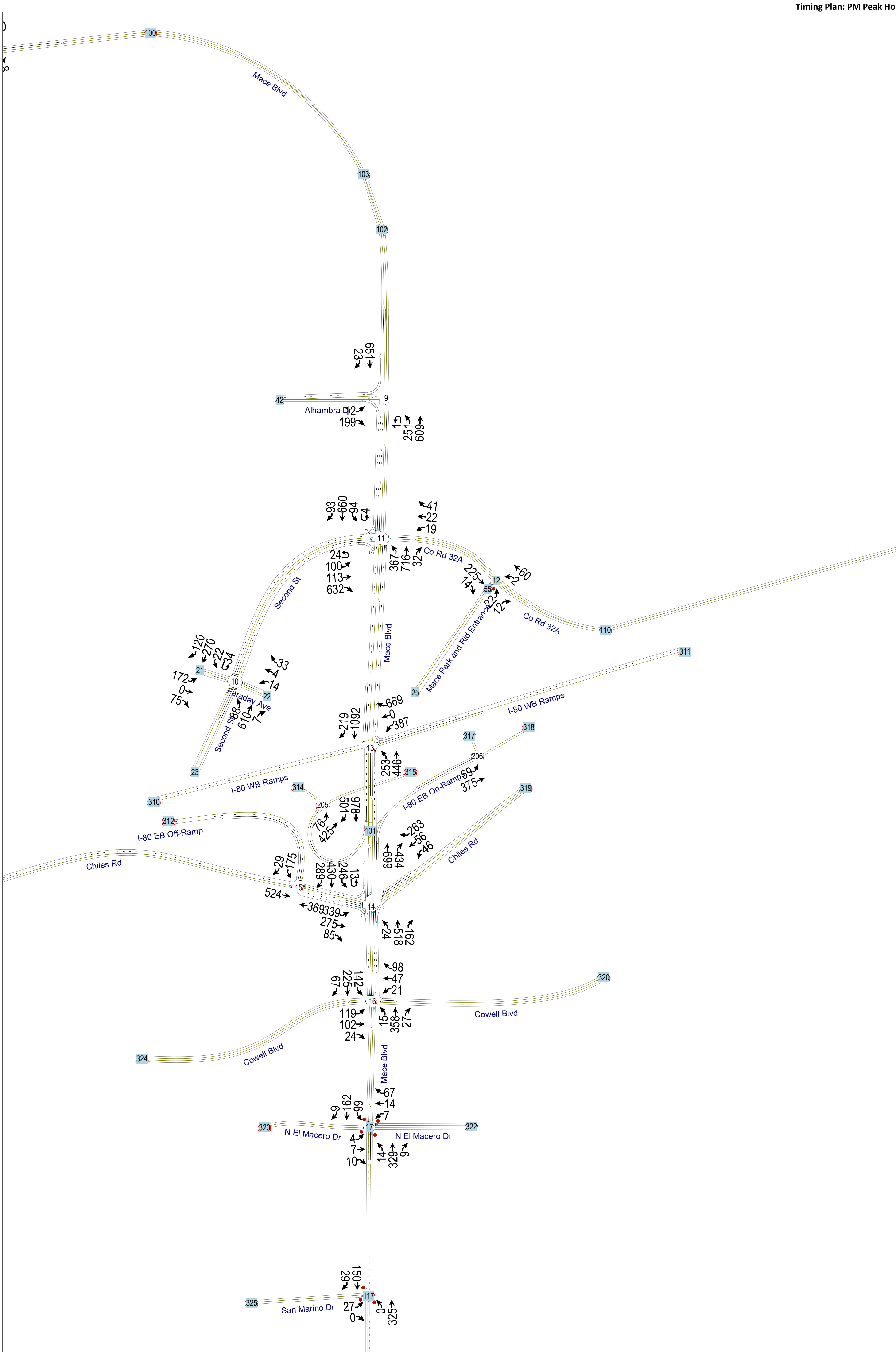
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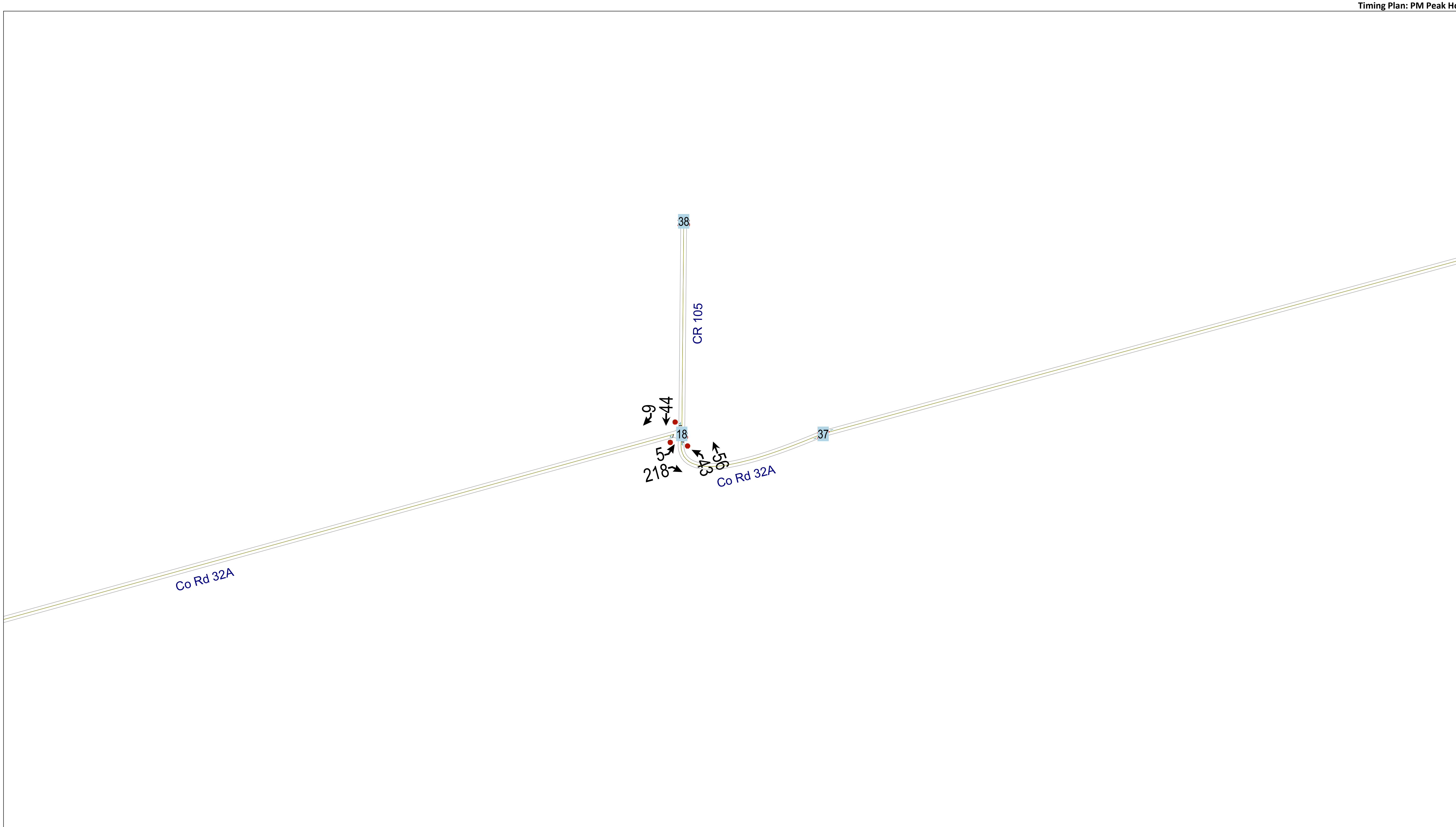
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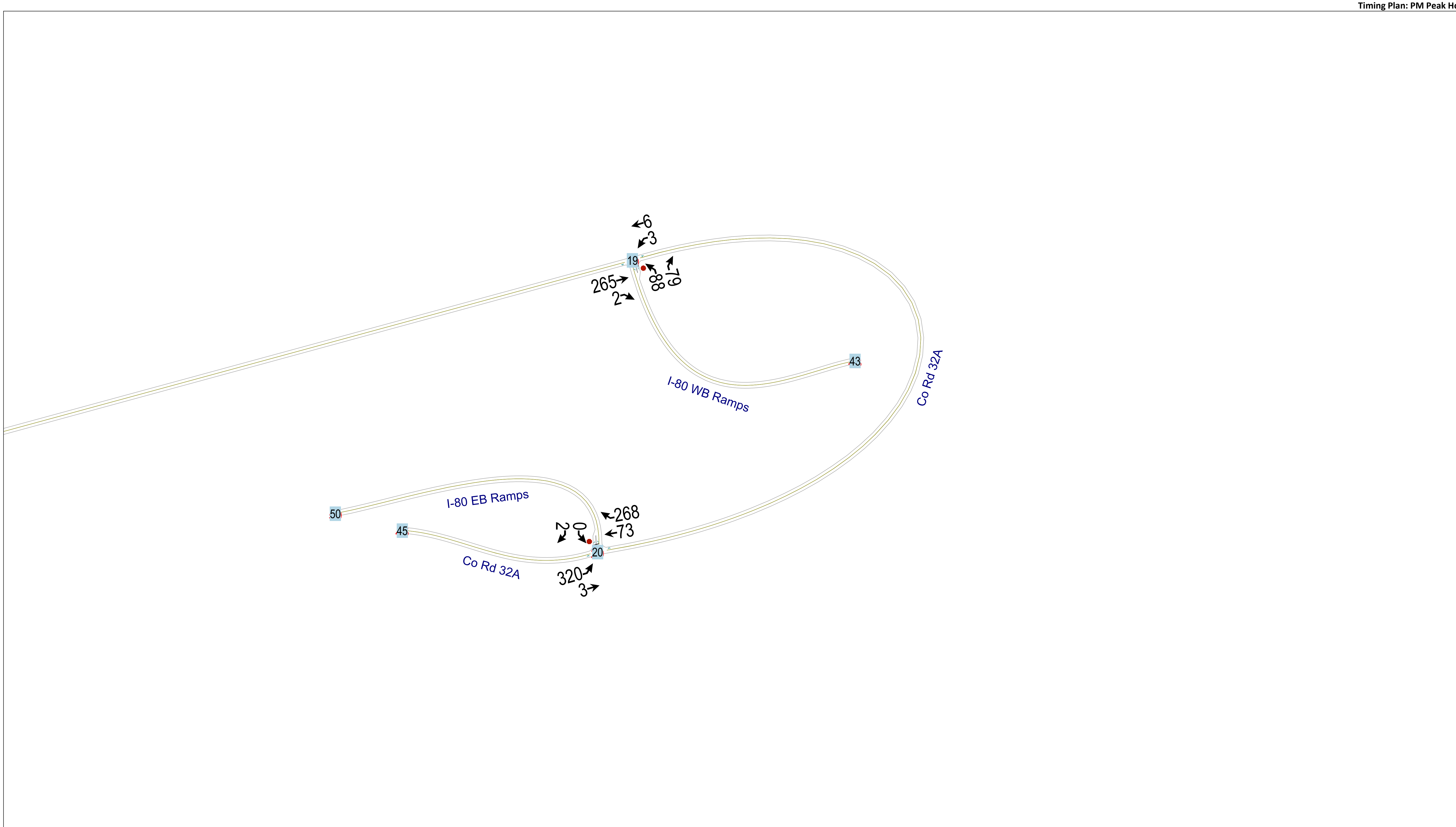
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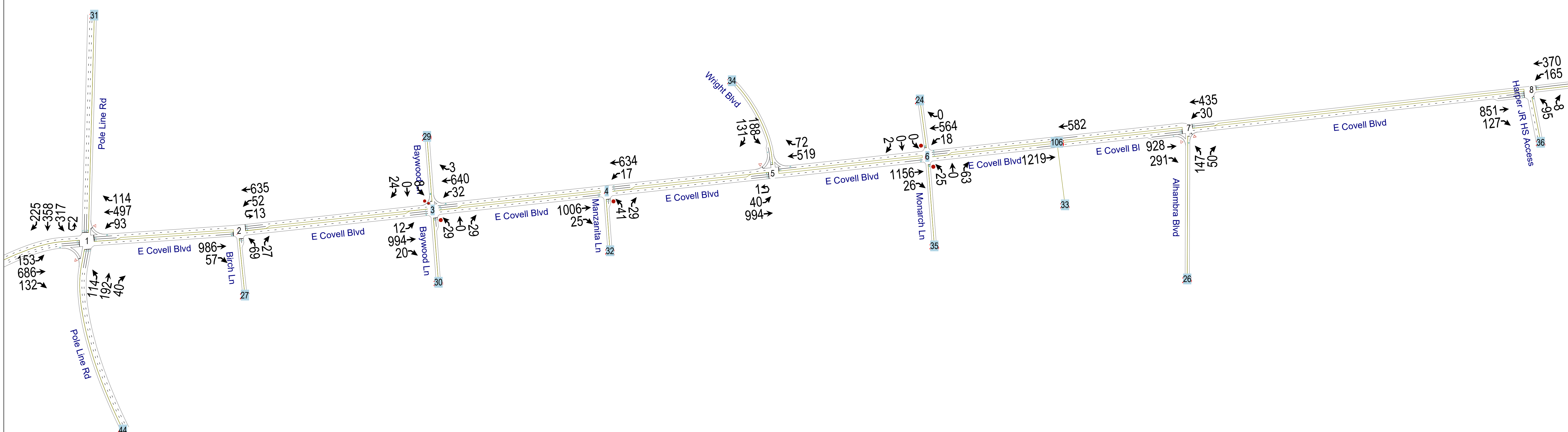
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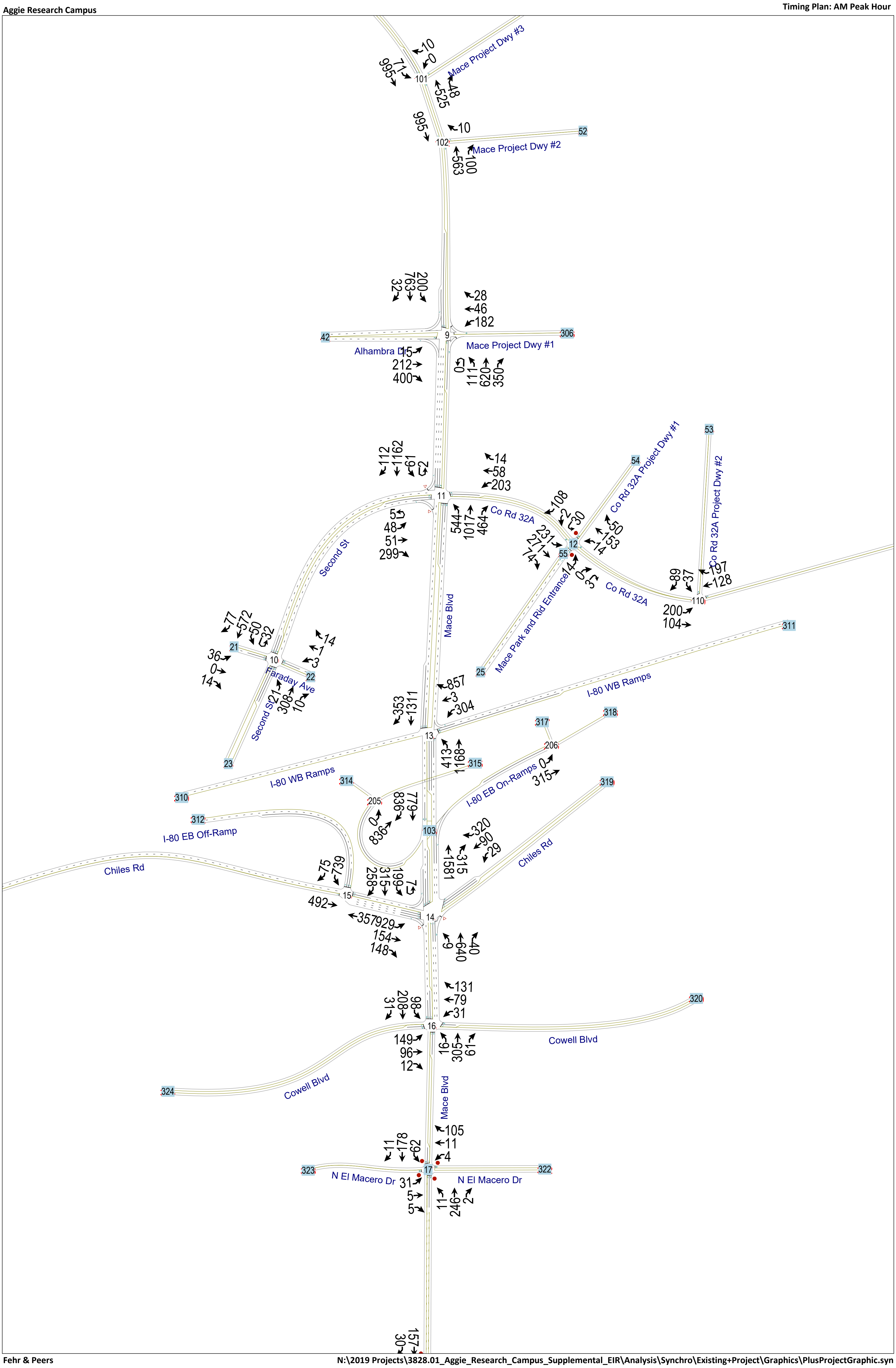
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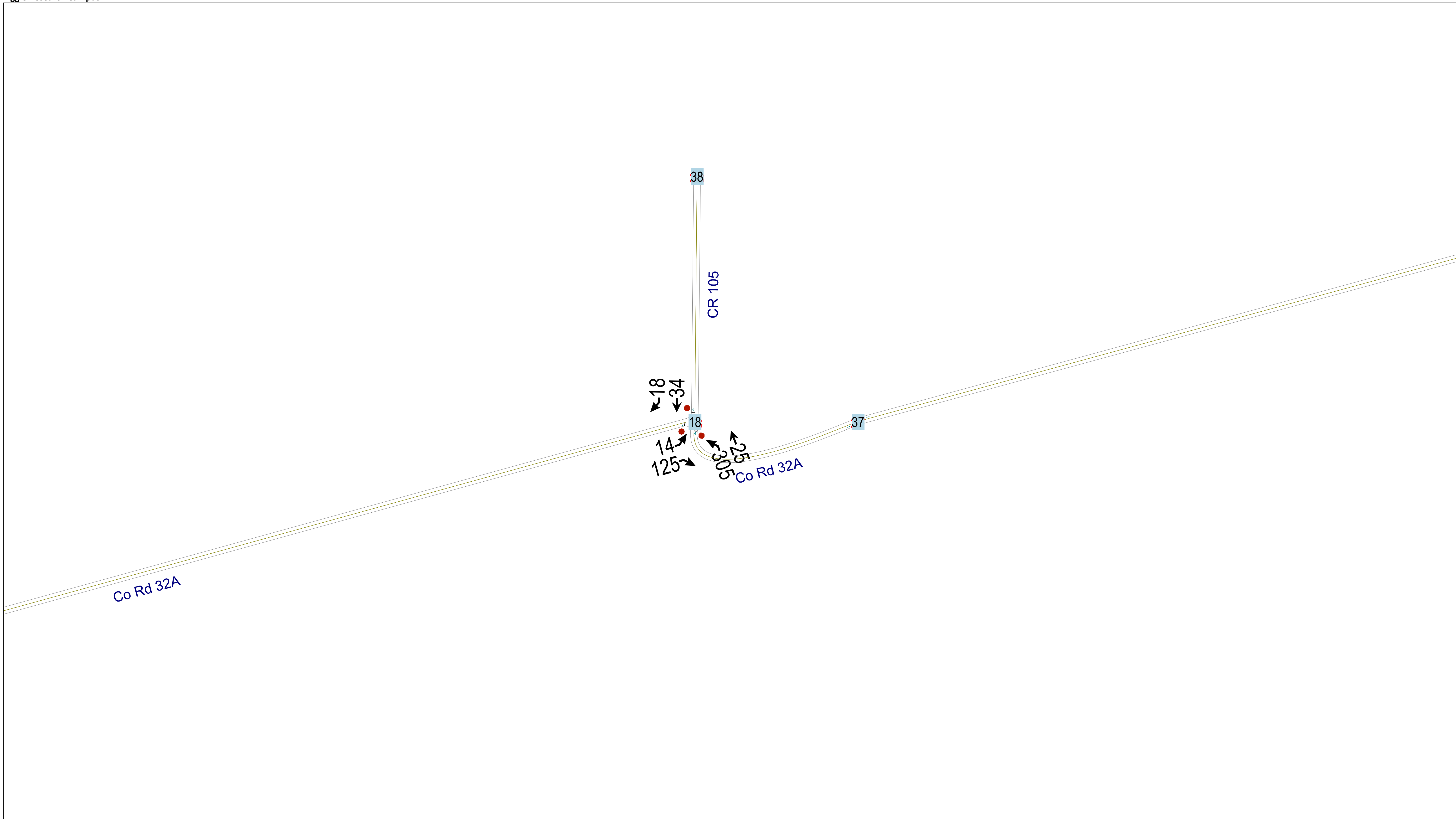
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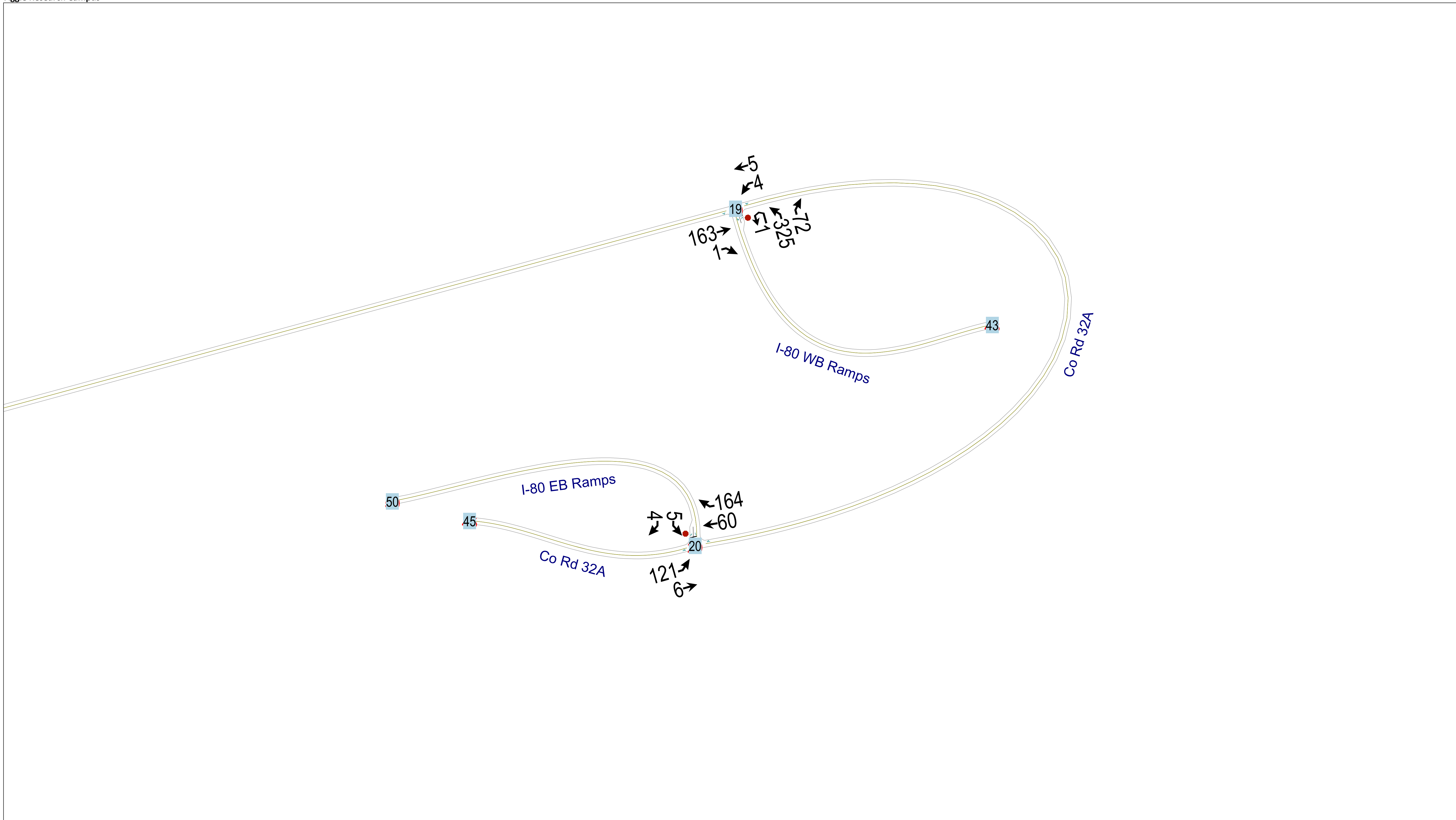
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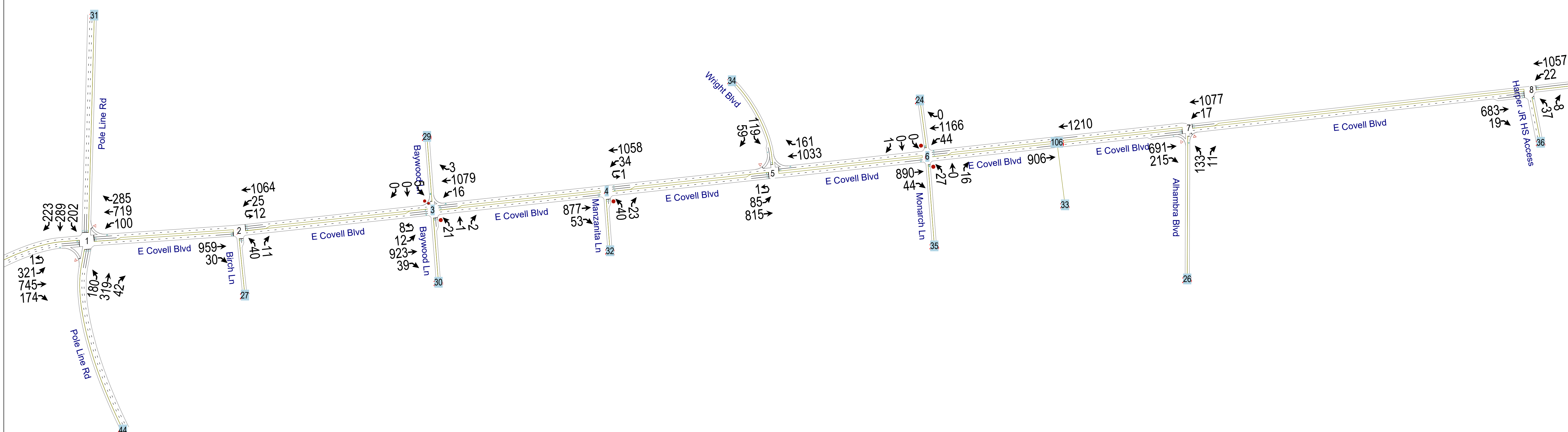
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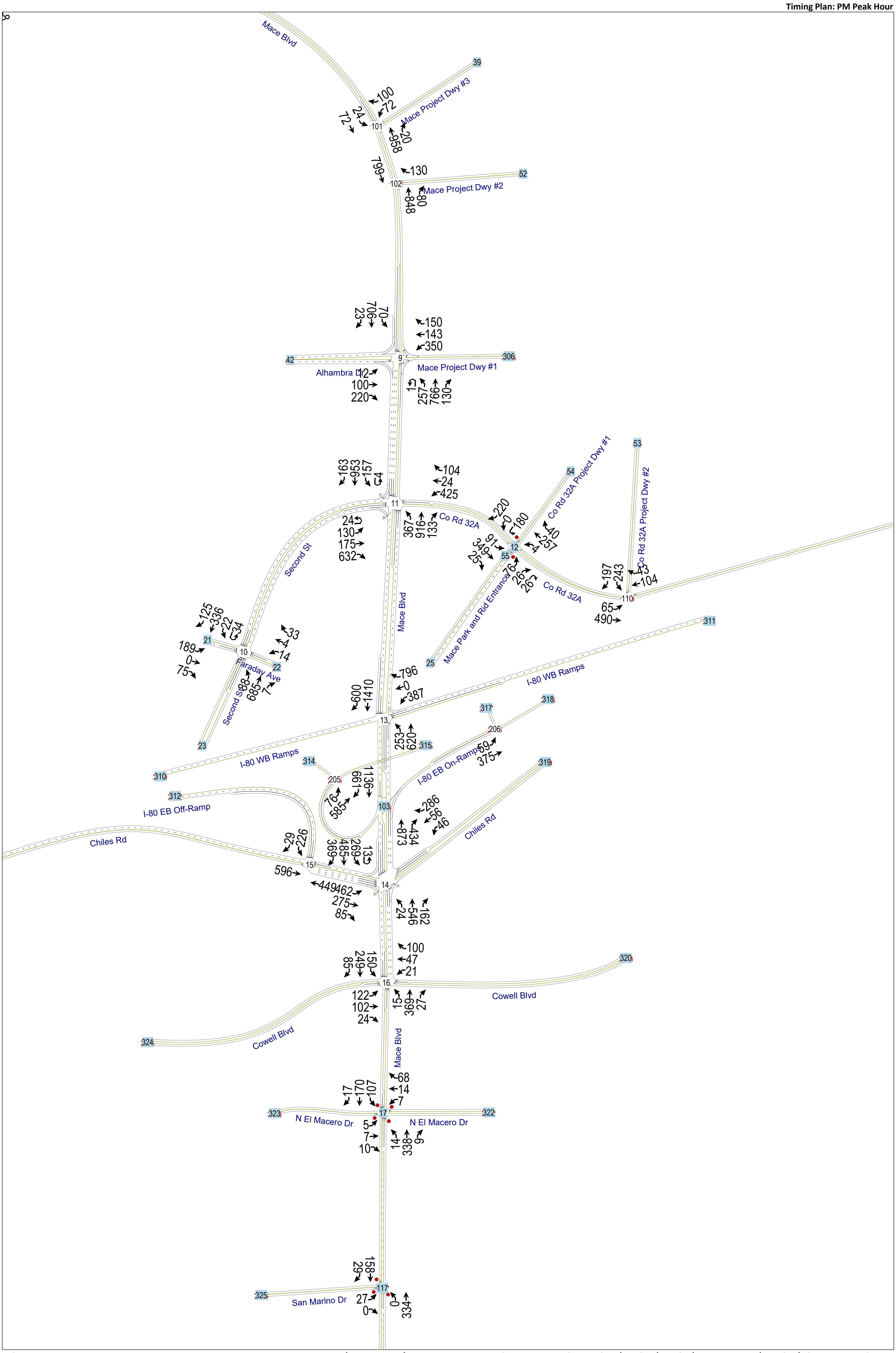
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Faraday Ave
Mace Park and Rid Entrance
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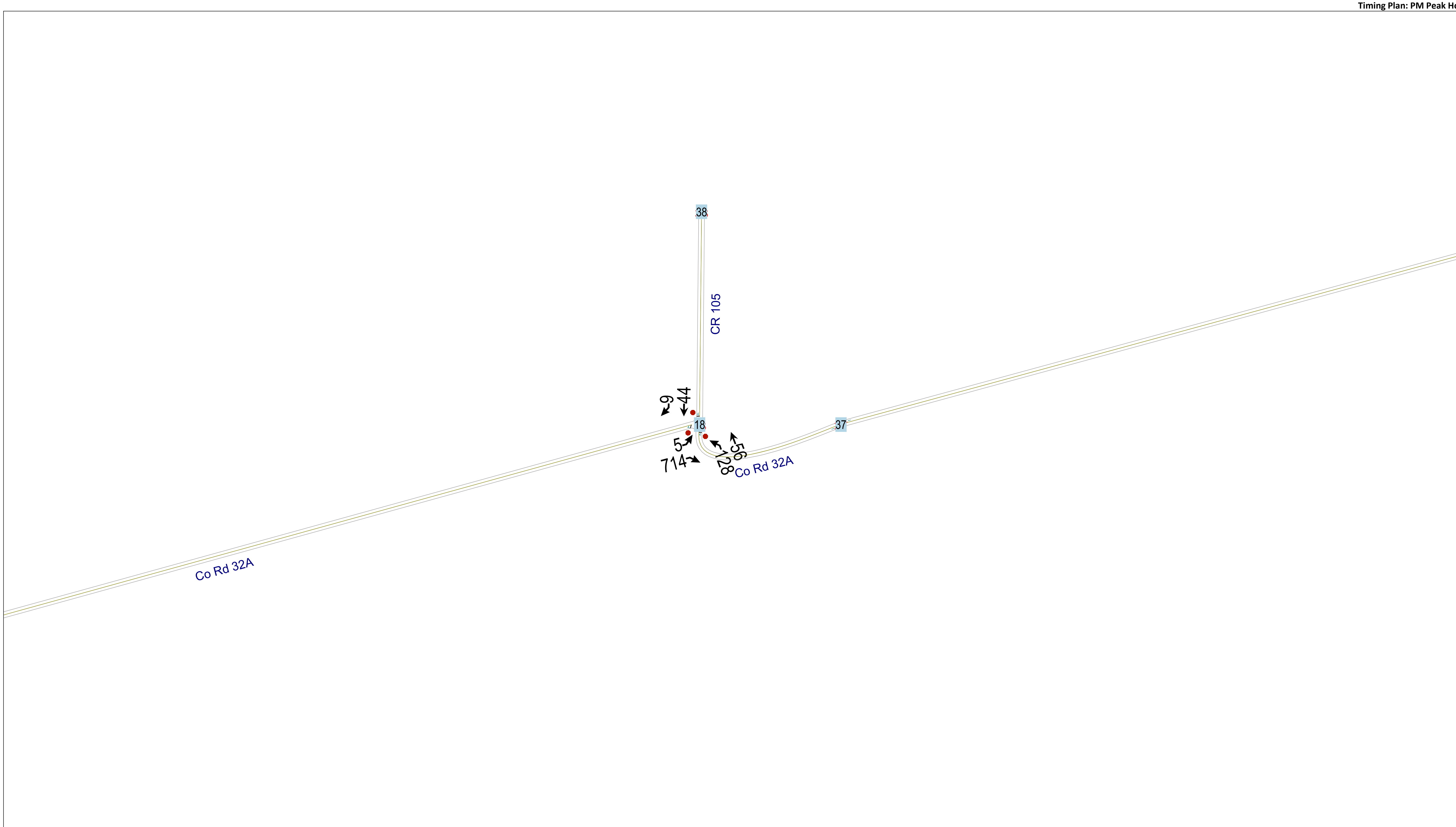
I-80 EB On-Ramp
I-80 EB Off-Ramp
Chiles Rd
Cowell Blvd
N El Macero Dr
San Marino Dr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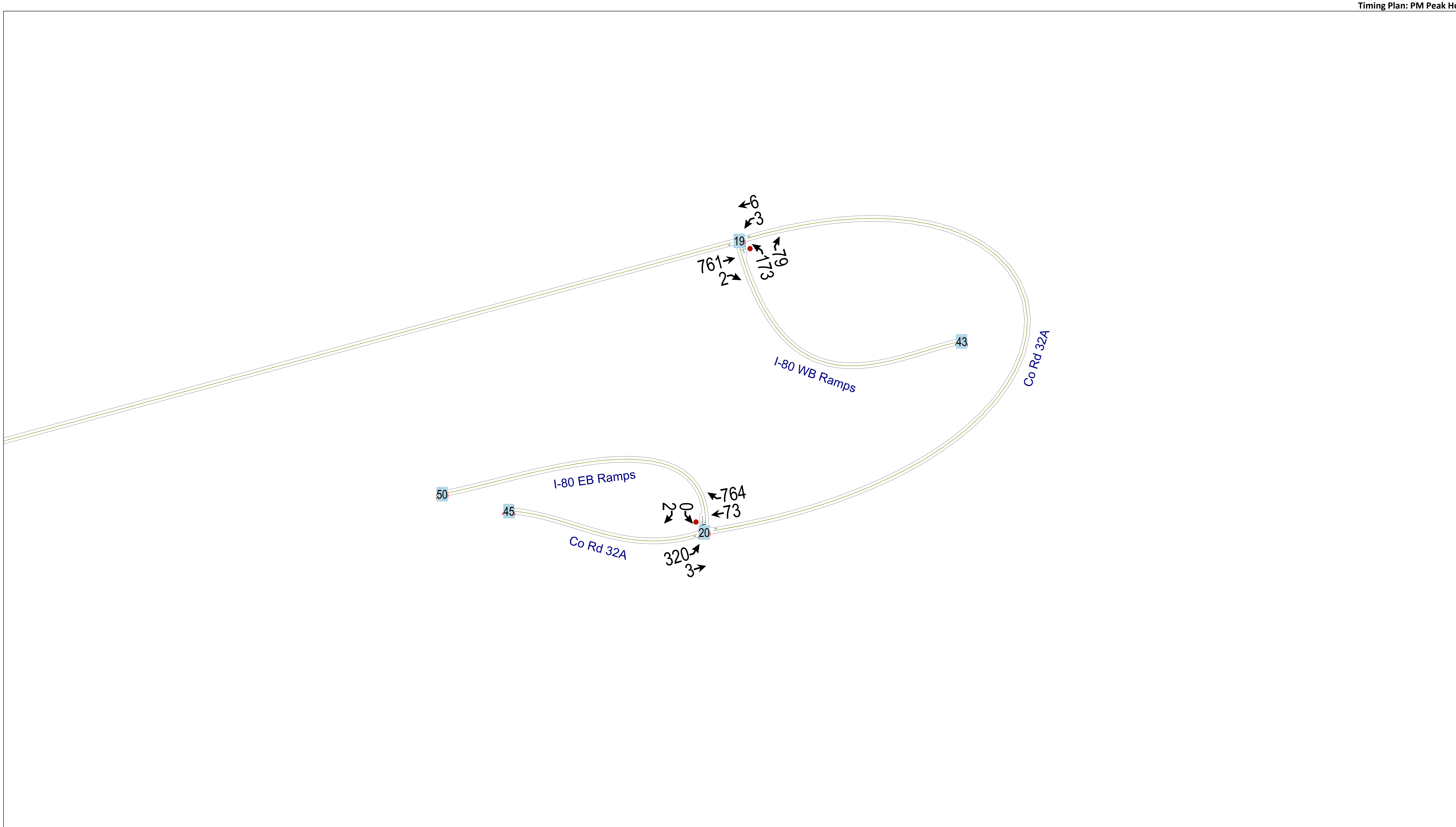
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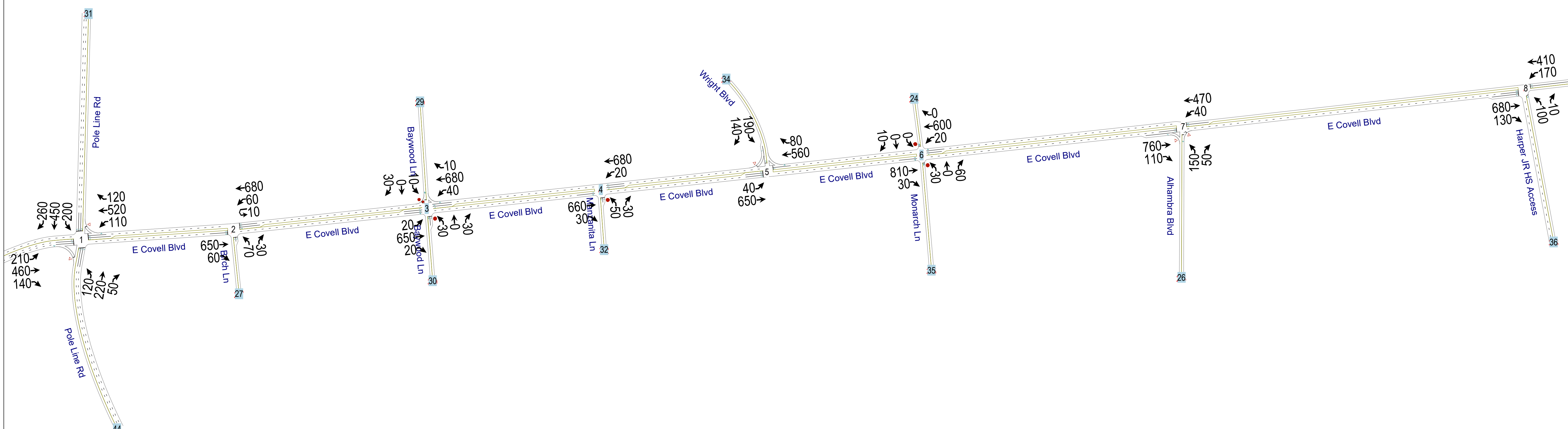
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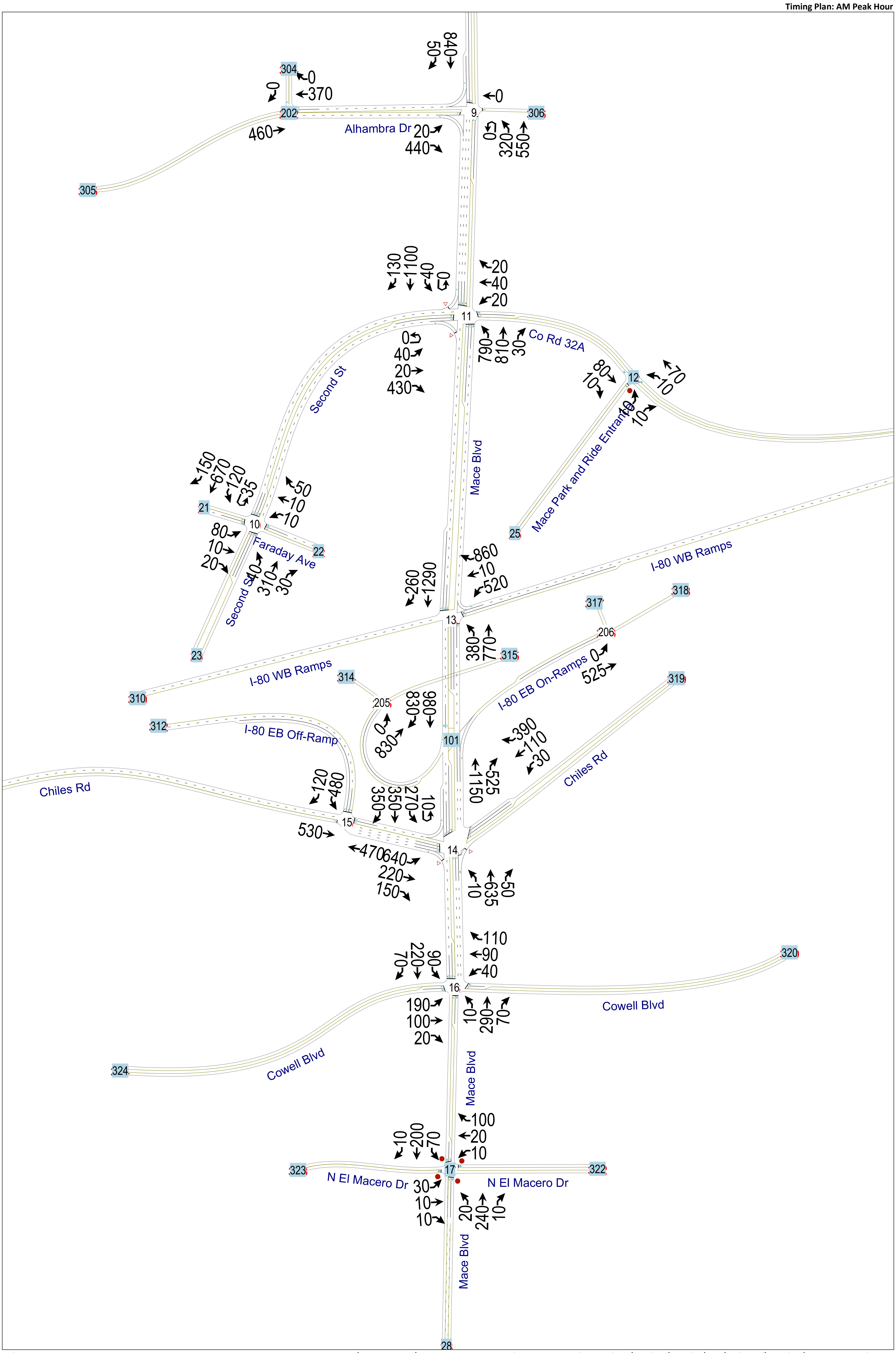
Manzanita Ln
Wright Blvd
Monarch Ln
Alhambra Blvd
Harper JR HS Access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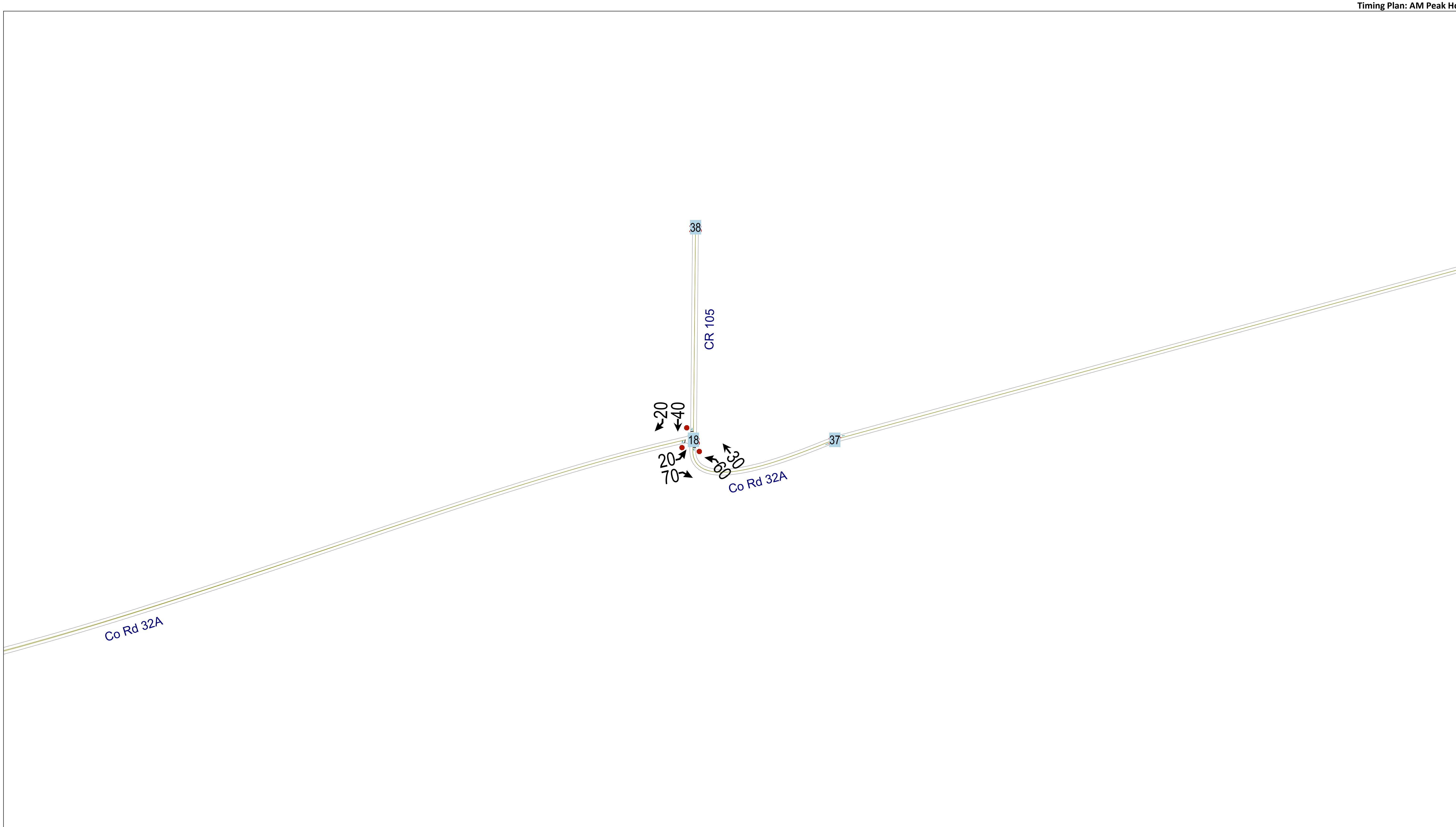
N El Macero Dr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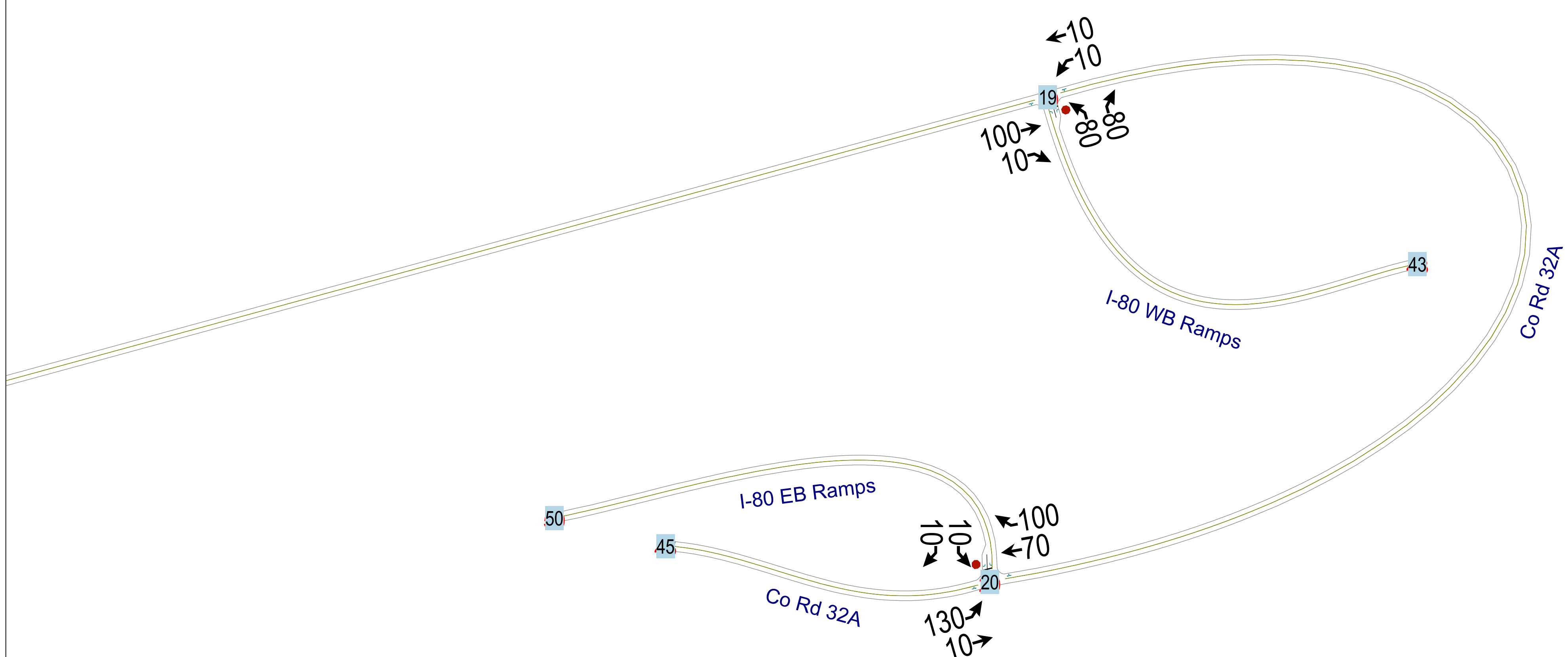
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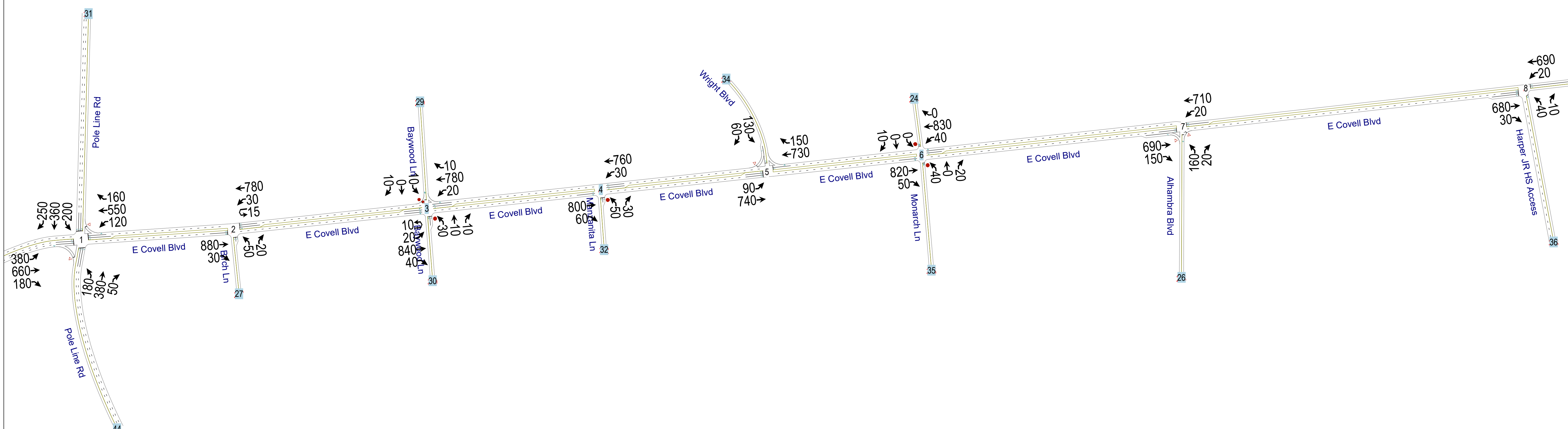

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Baywood Ln
Manzanita Ln
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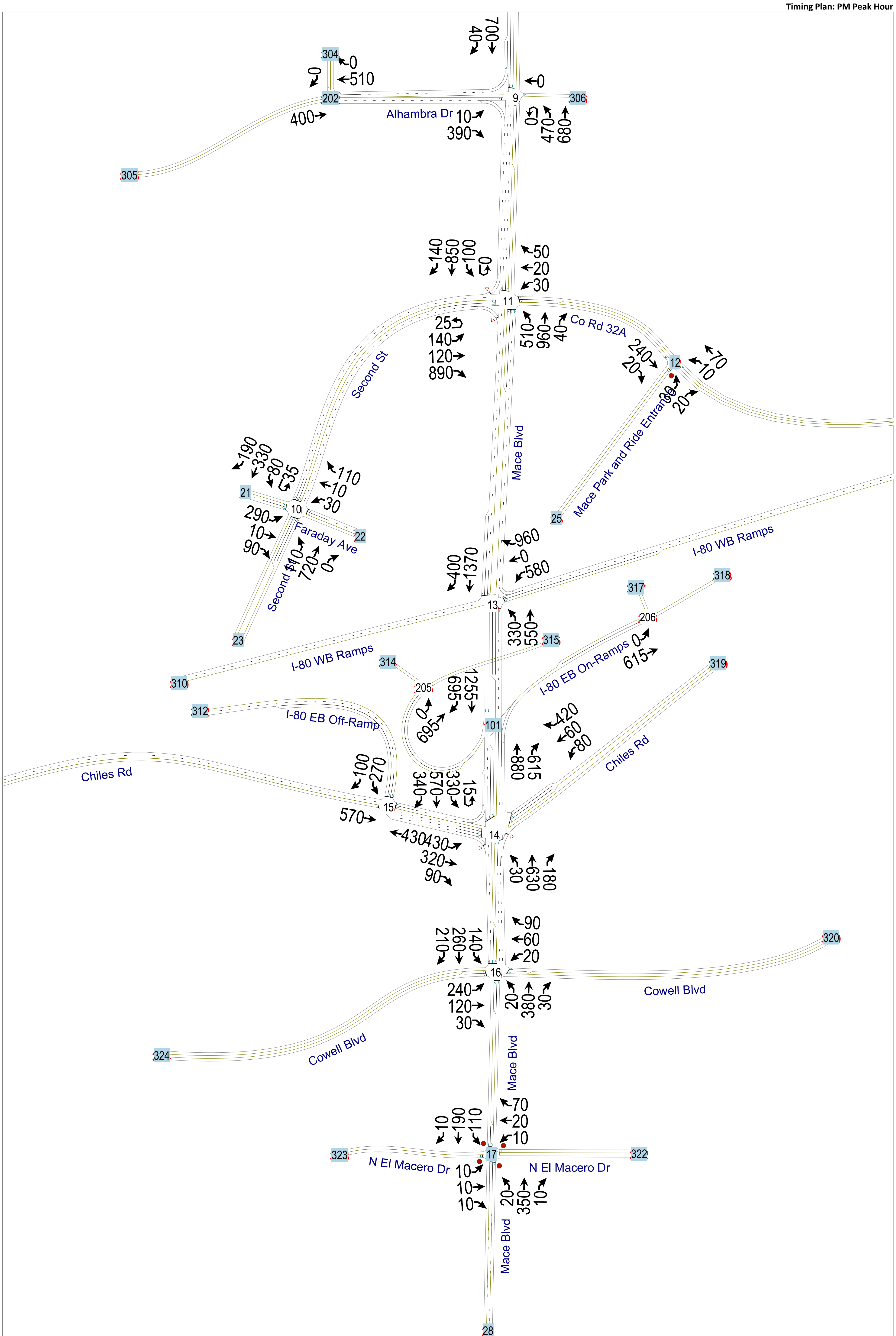
Monarch Ln
Alhambra Blvd
Harper JR HS Access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I-80 EB Off-Ramp
Chiles Rd
Cowell Blvd
N El Macero Dr
304
202
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306
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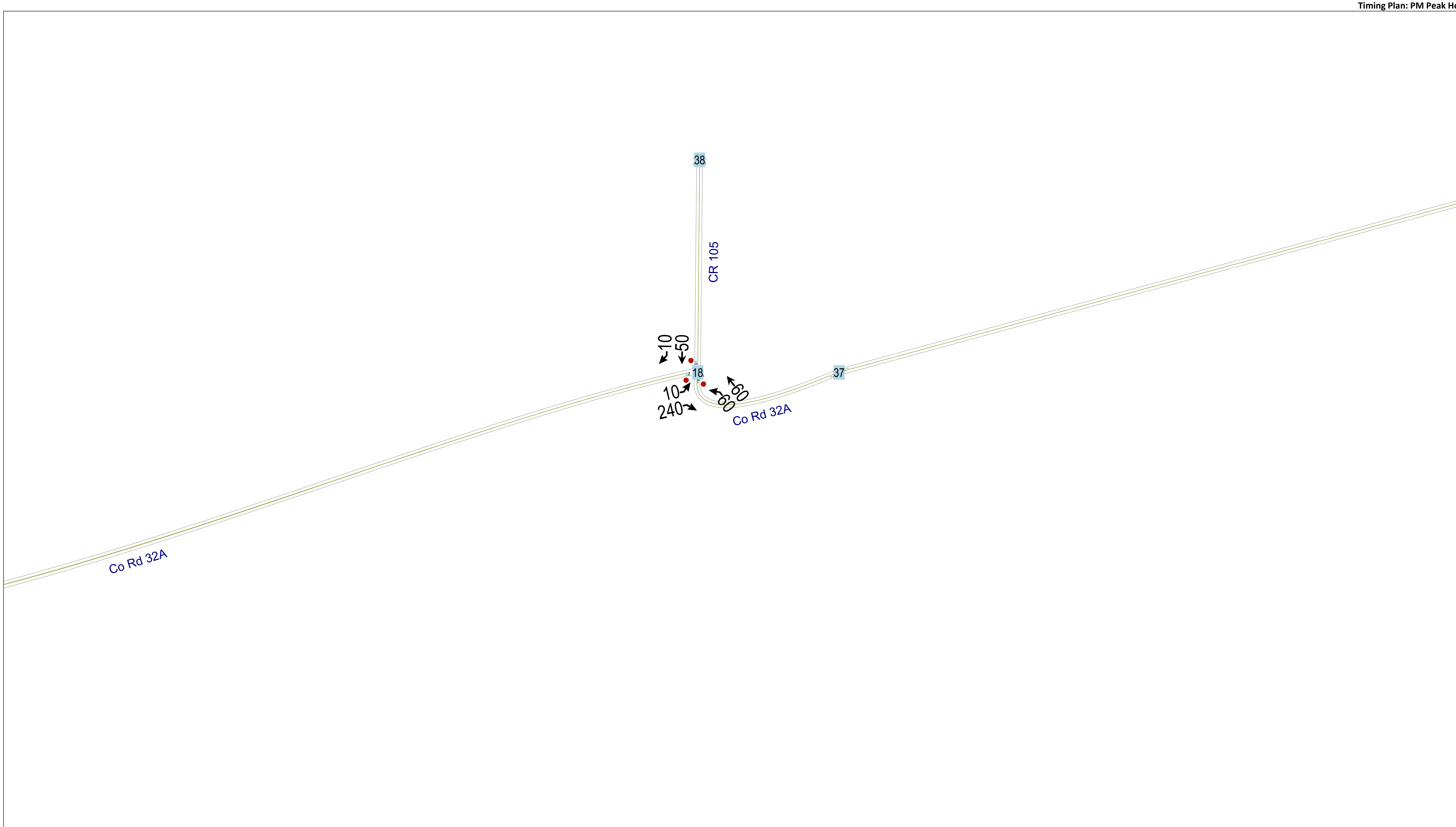
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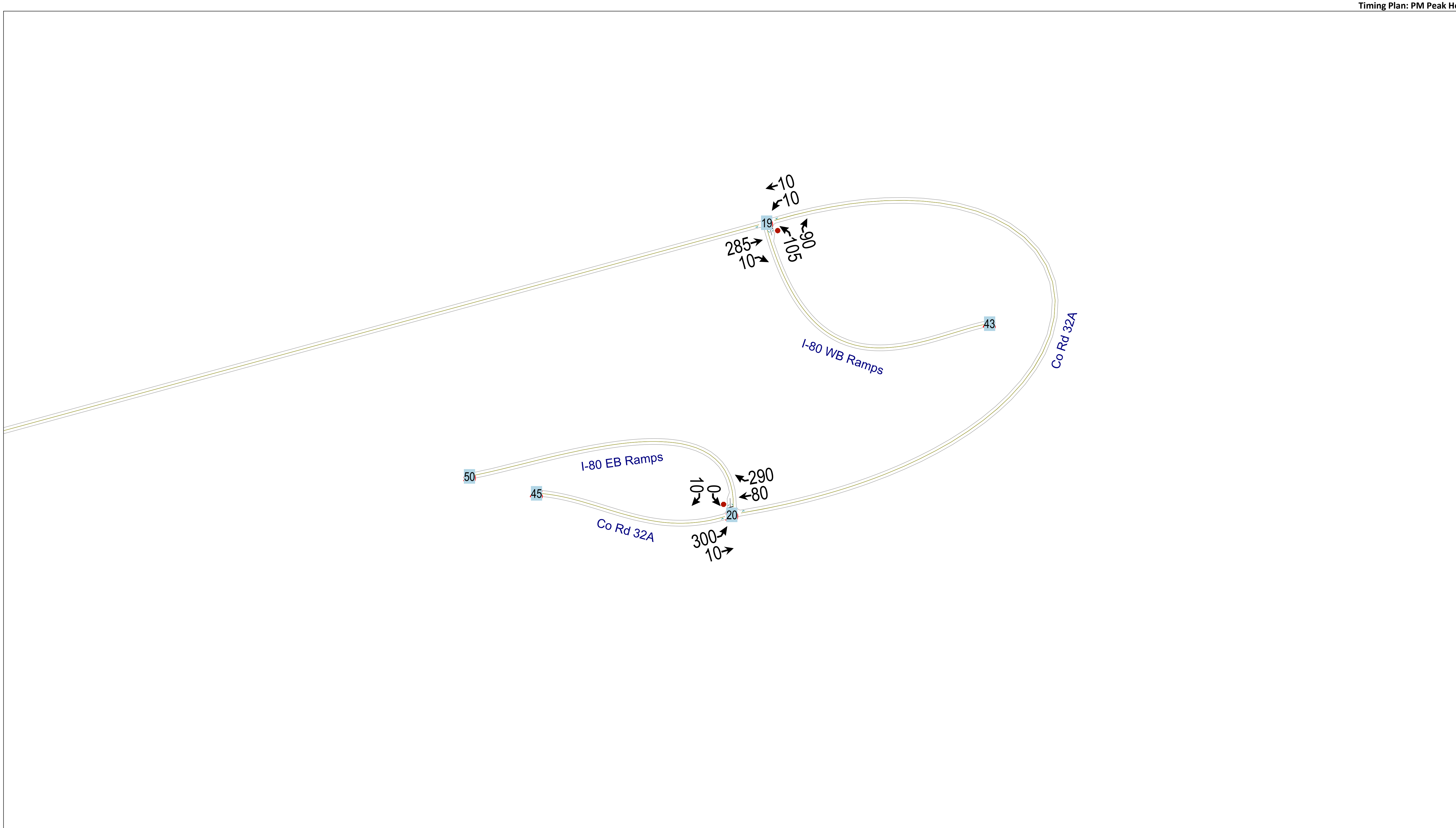
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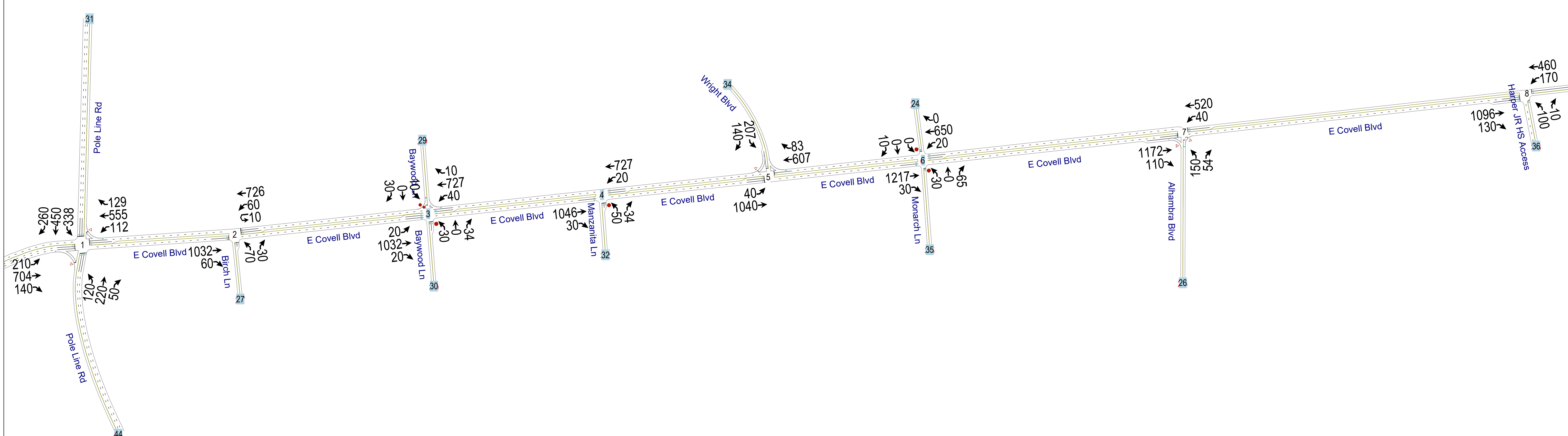
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Birch Ln
Baywood Ln
Baywood Ln
Manzanita Ln
Wright Blvd
Monarch Ln
Alhambra Blvd
Harper JR HS Access
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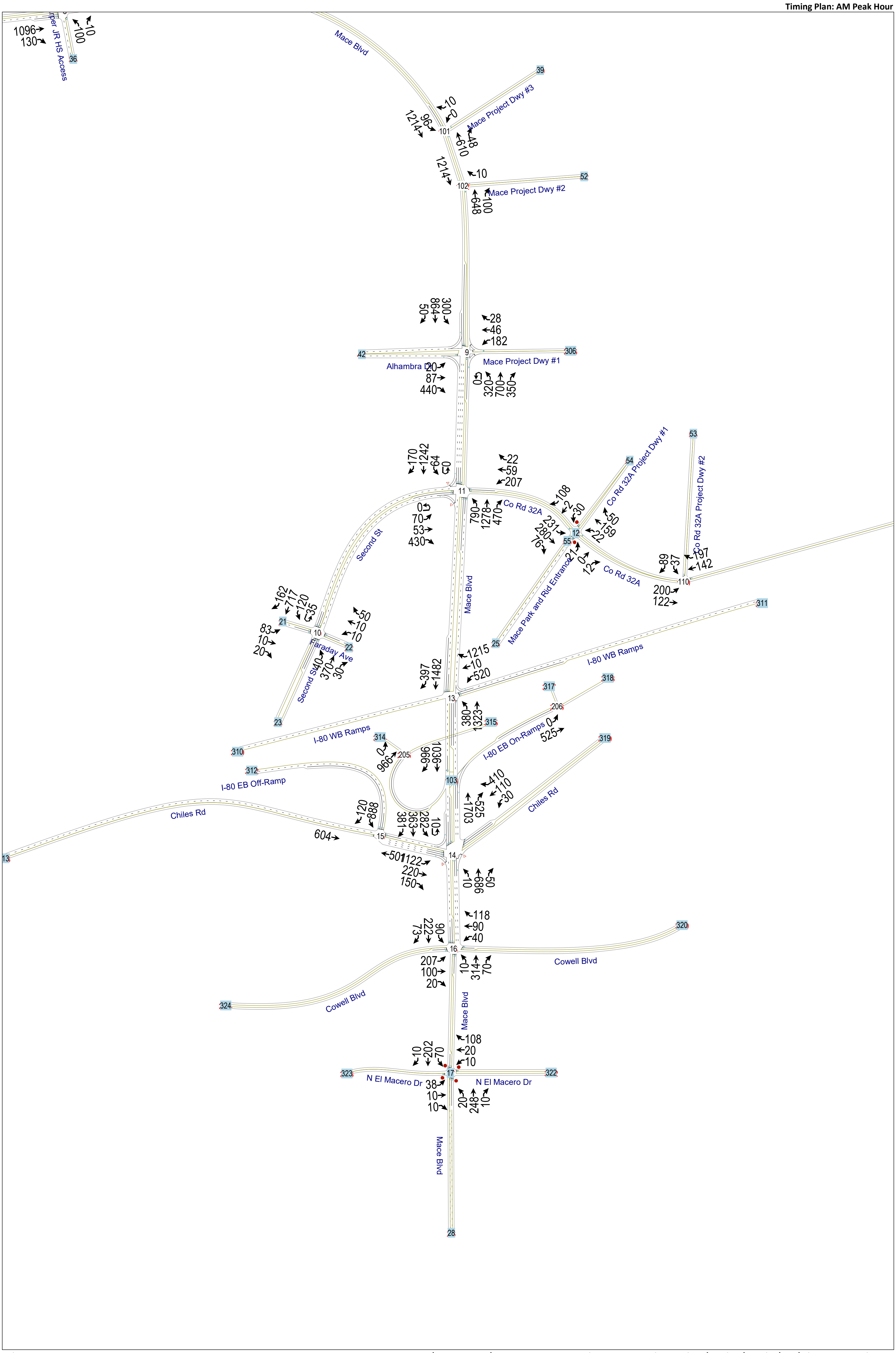
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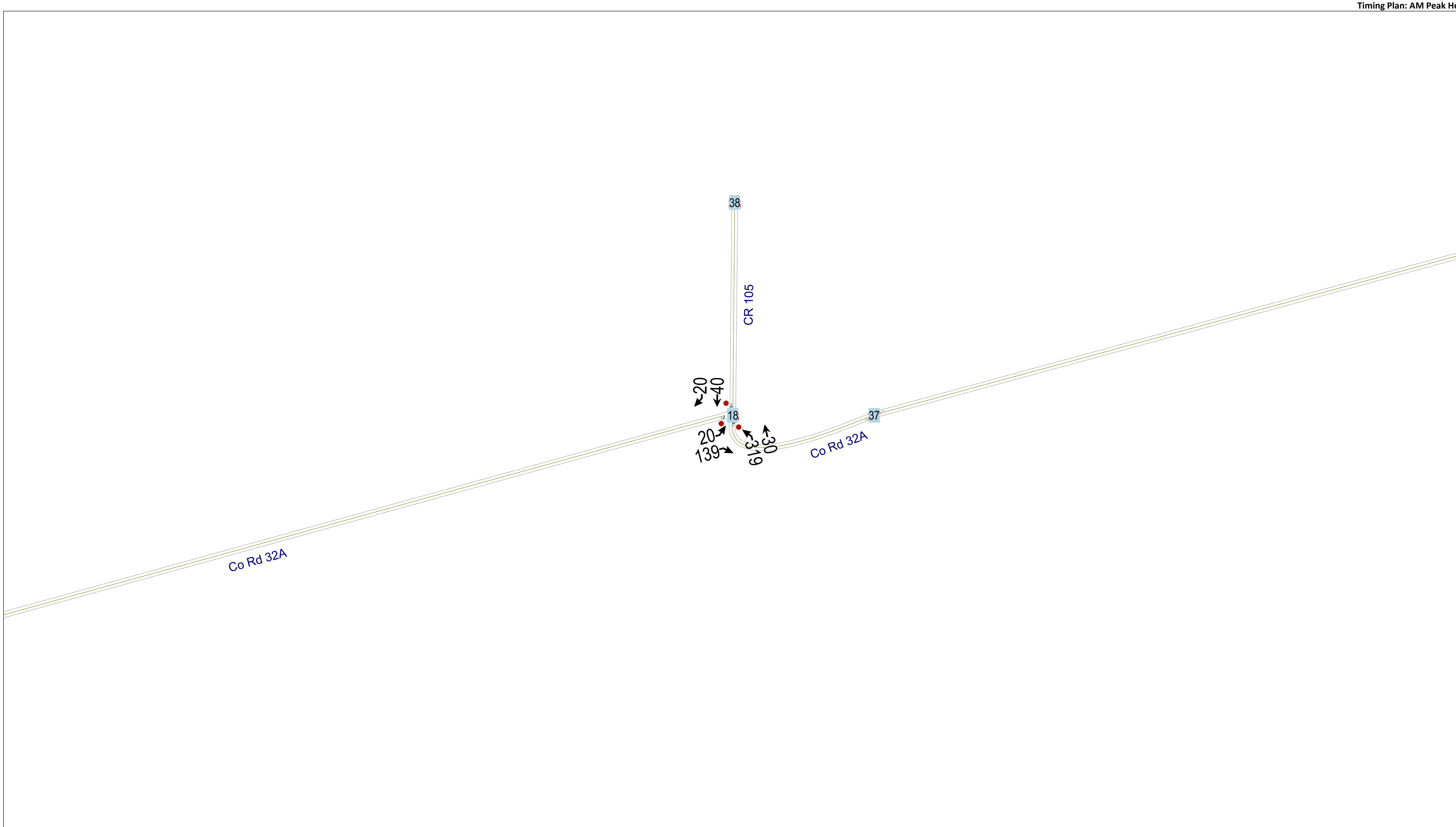
Mace Project Dwy #2
Alhambra Dr
Mace Project Dwy #1
Co Rd 32A Project Dwy #1
Co Rd 32A Project Dwy #2
Co Rd 32A
Second St
Faraday Ave
Mace Park and Rid Entrance
I-80 WB Ramps
I-80 EB On-Ramps
I-80 EB Off-Ramp
Chiles Rd
Cowell Blvd
N El Macero Dr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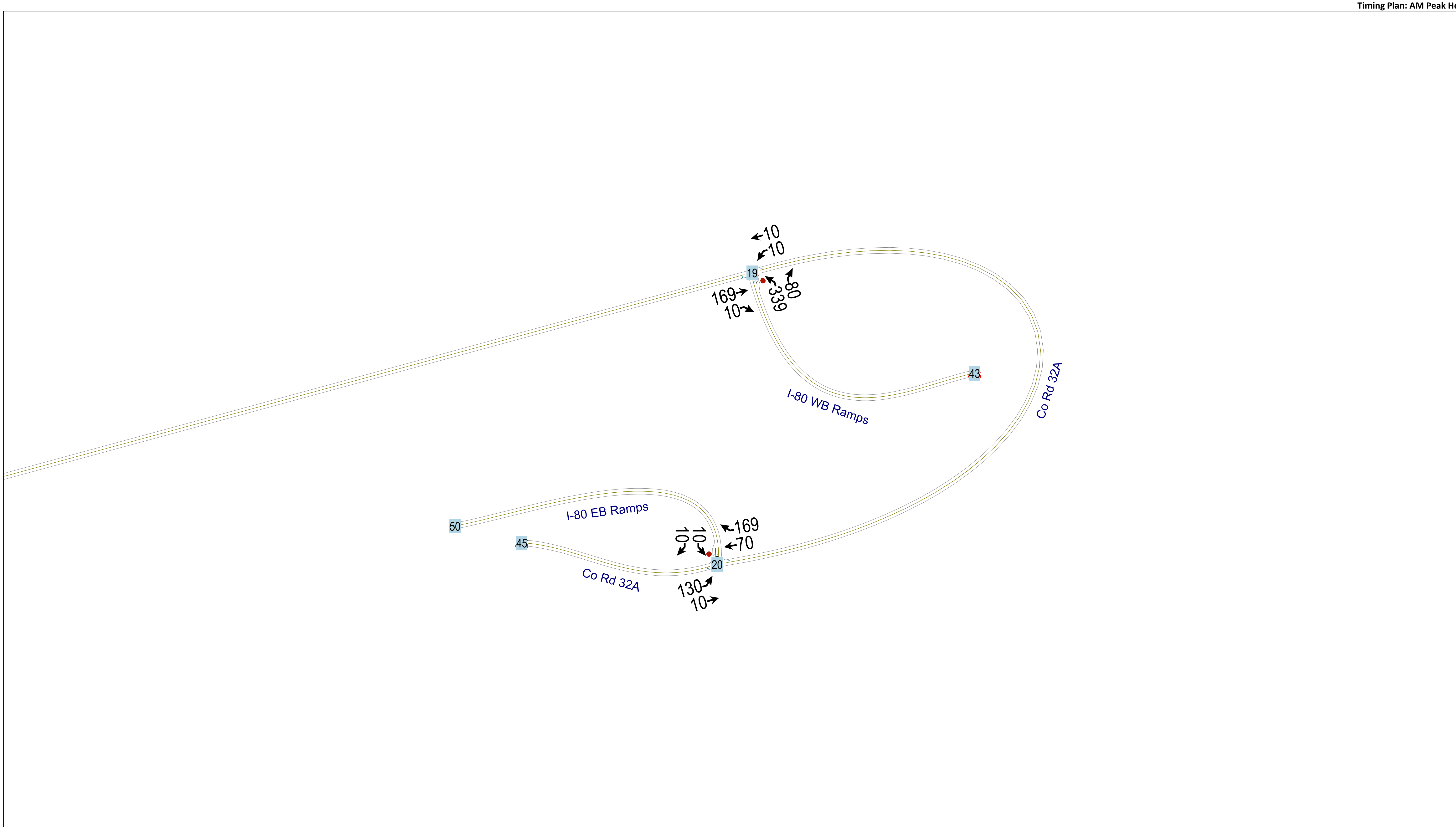
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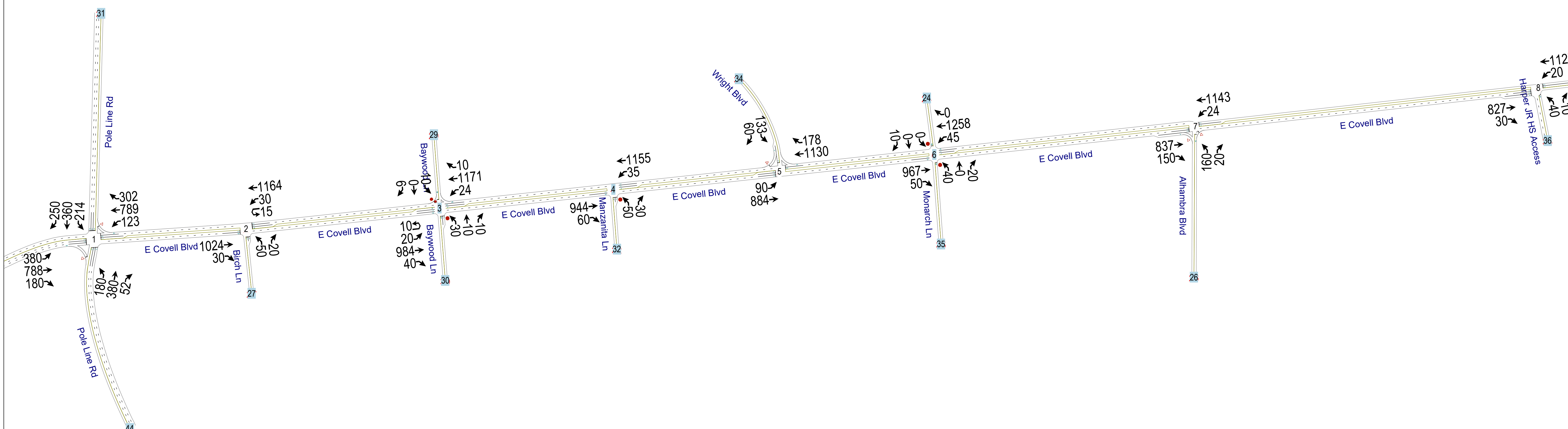
Co Rd 32A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Baywood Ln
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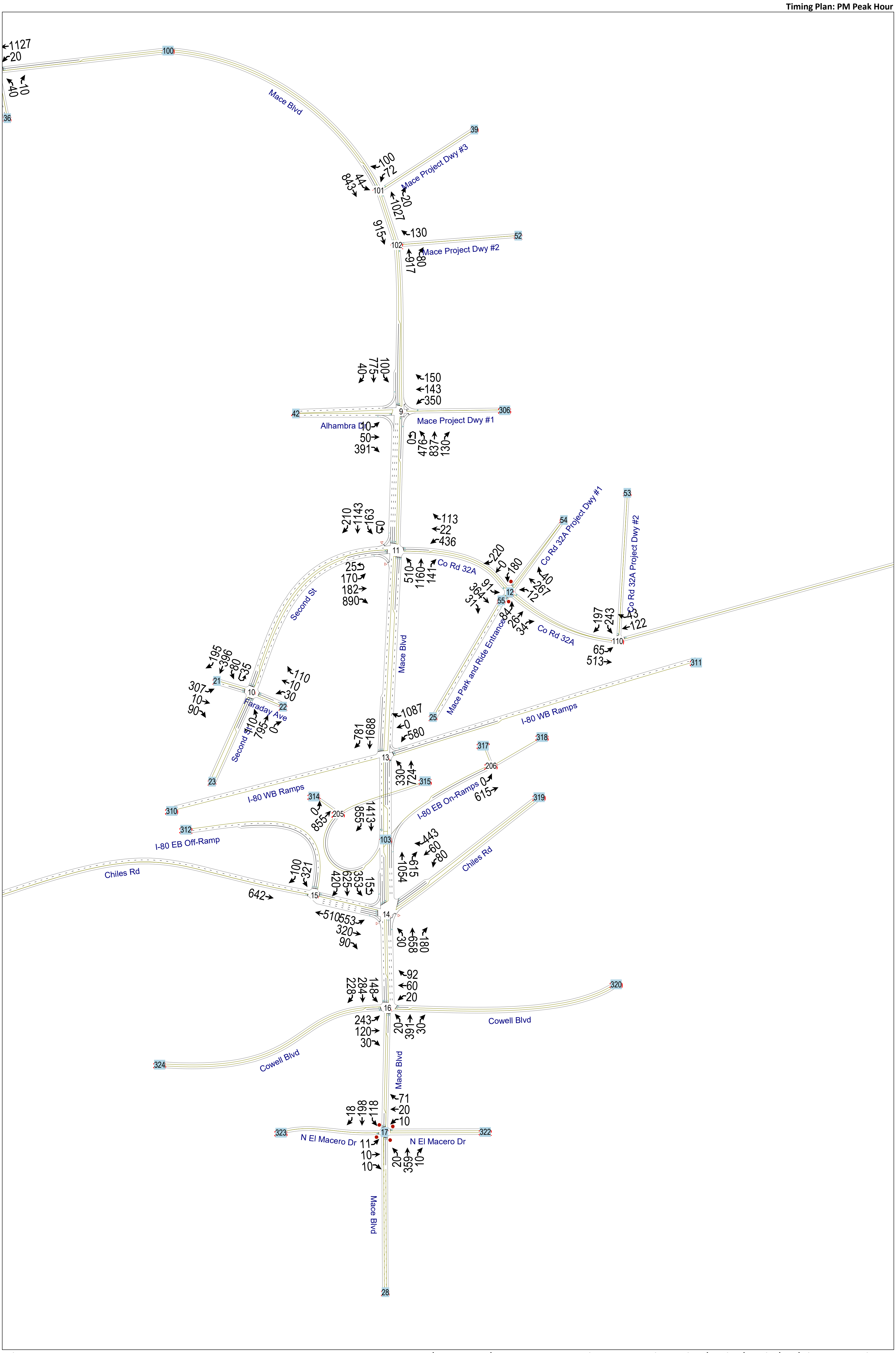
Alhambra Blvd
Harper JR HS Access
Pole Line Rd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Mace Project Dwy #1
Co Rd 32A
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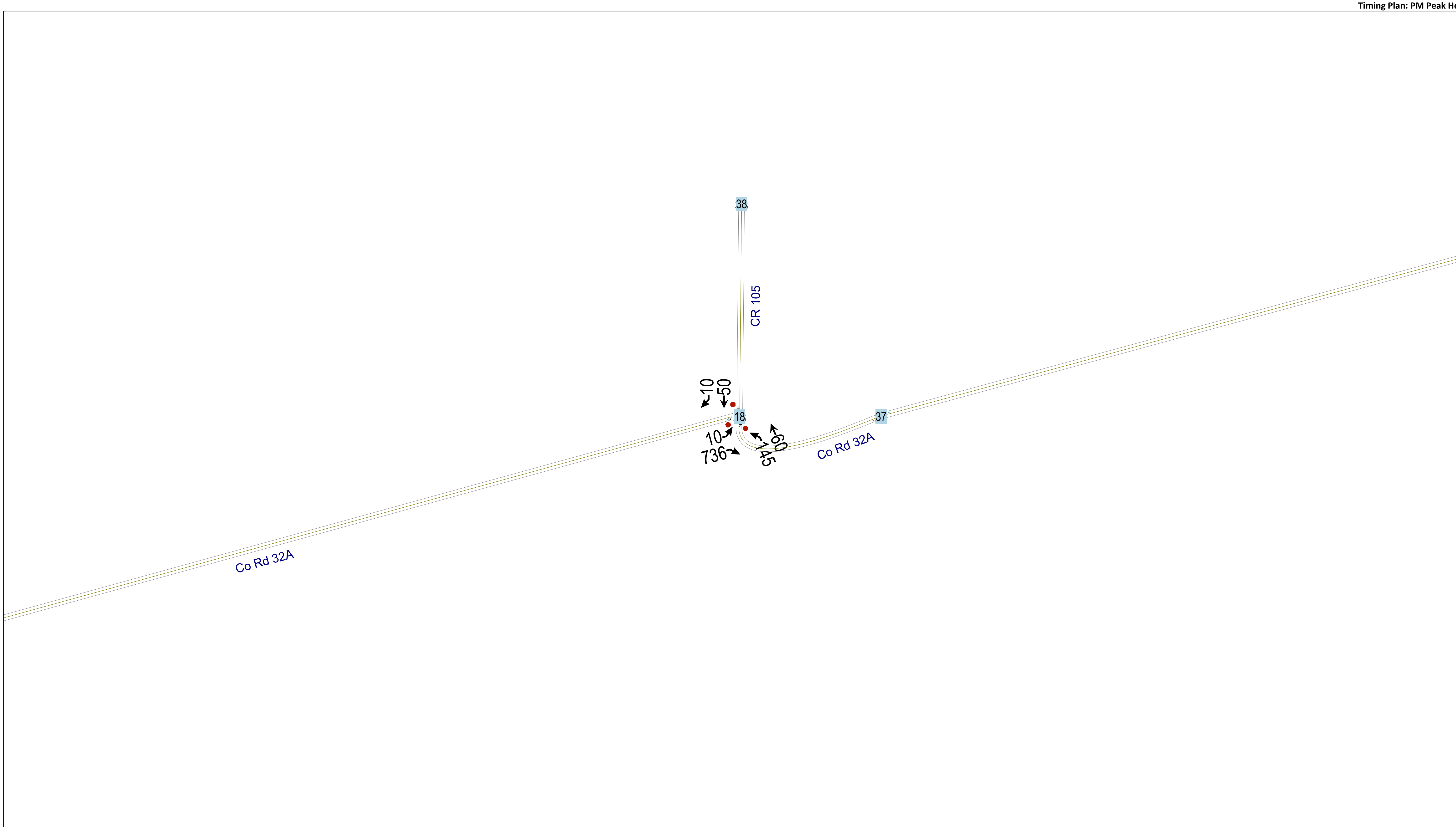
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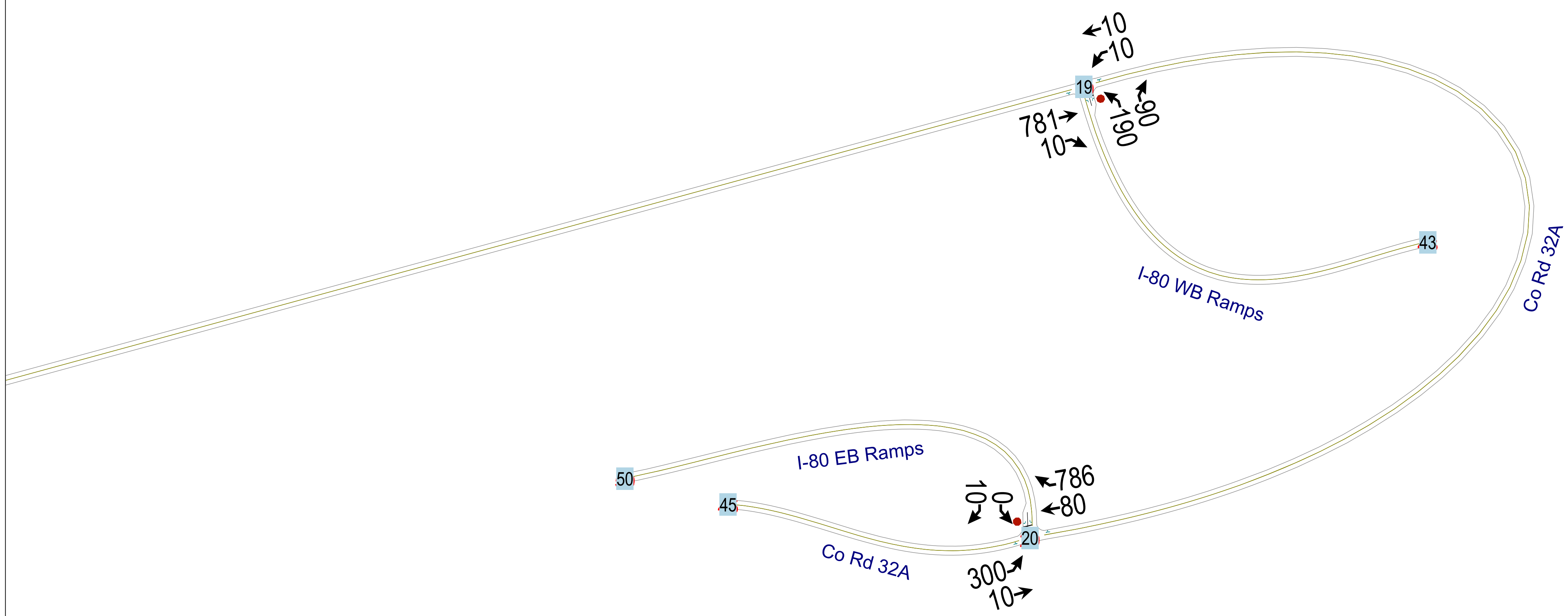
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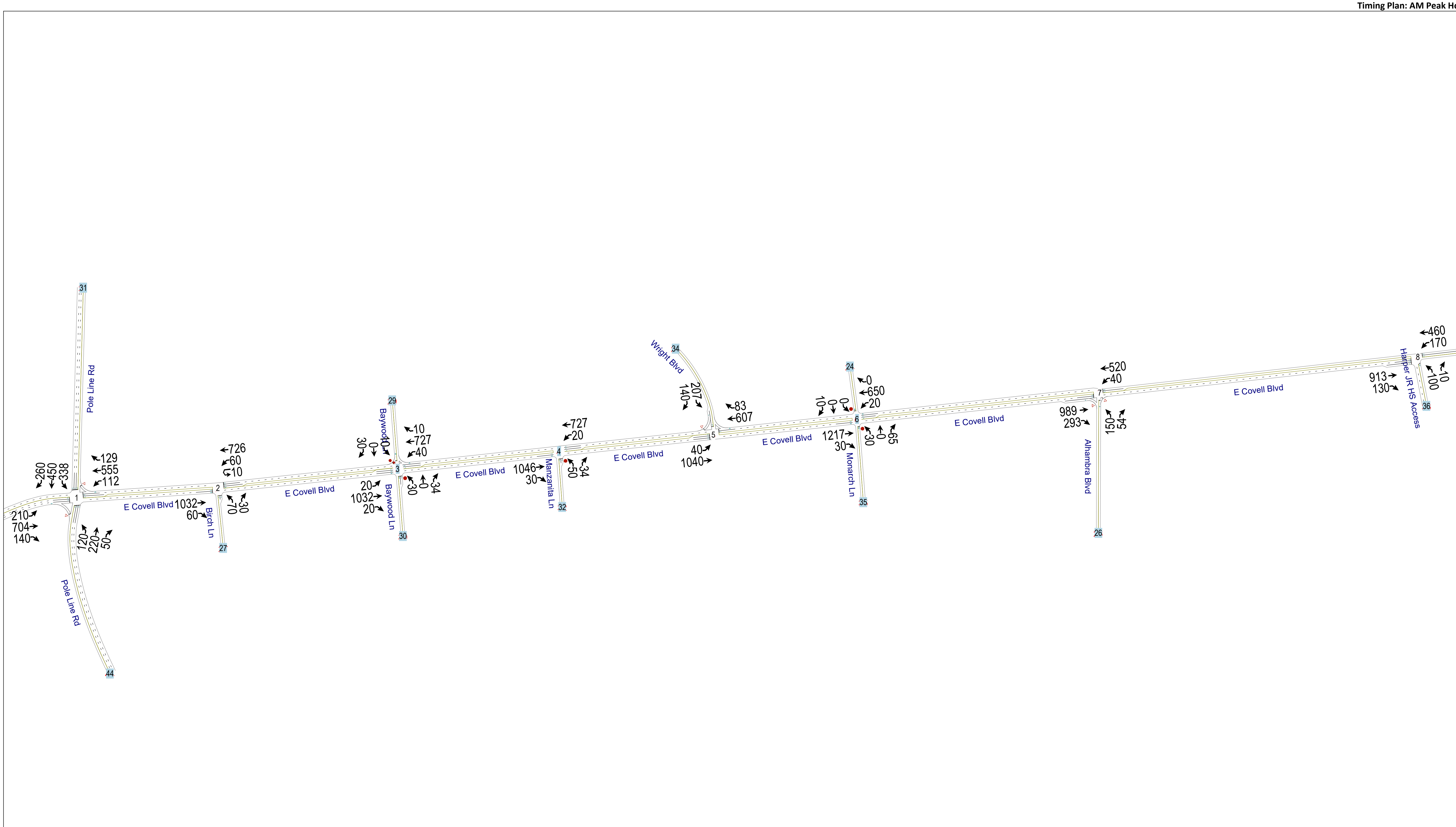
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Baywood Ln
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607
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1040
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650
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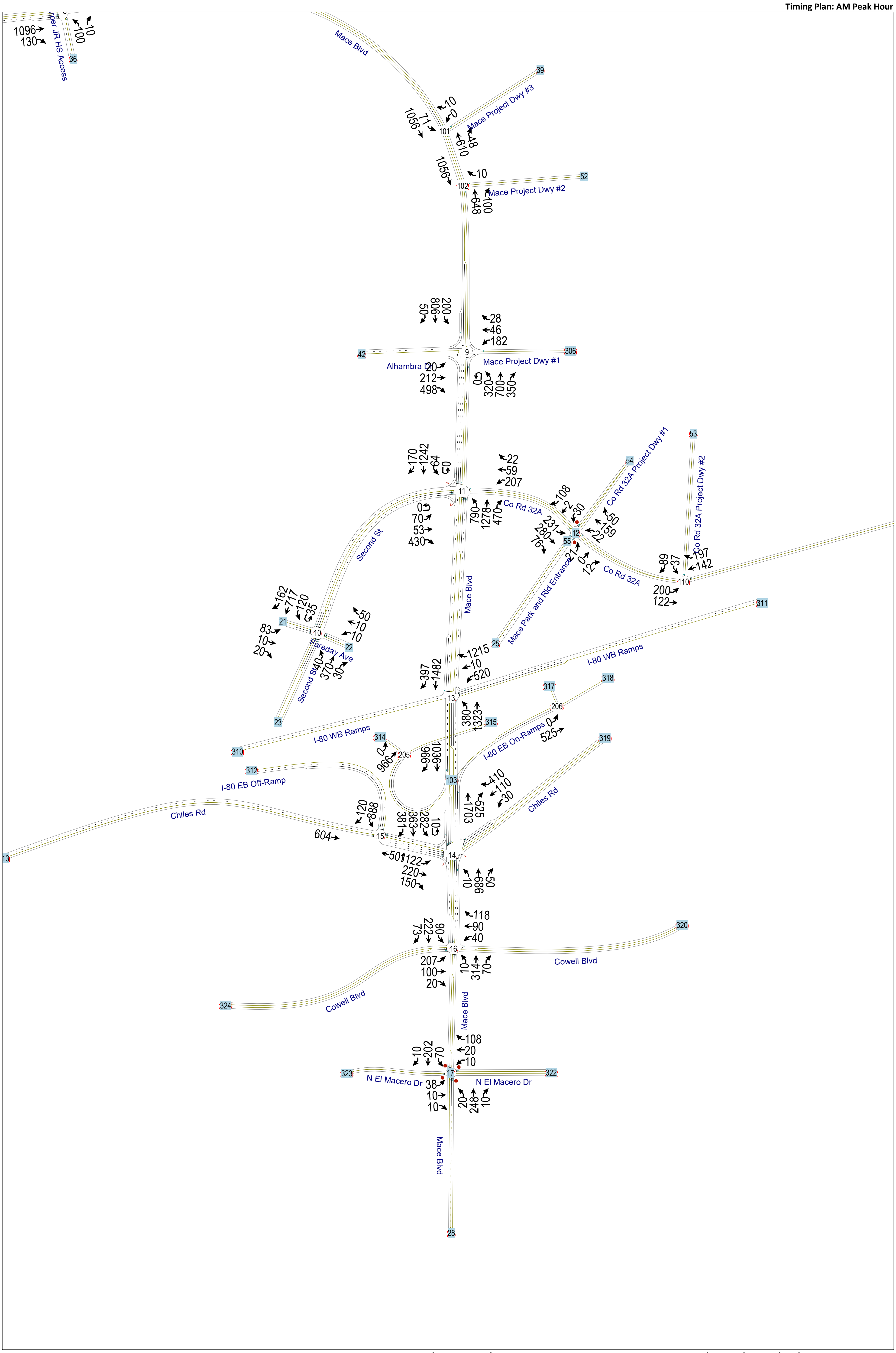
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Co Rd 32A
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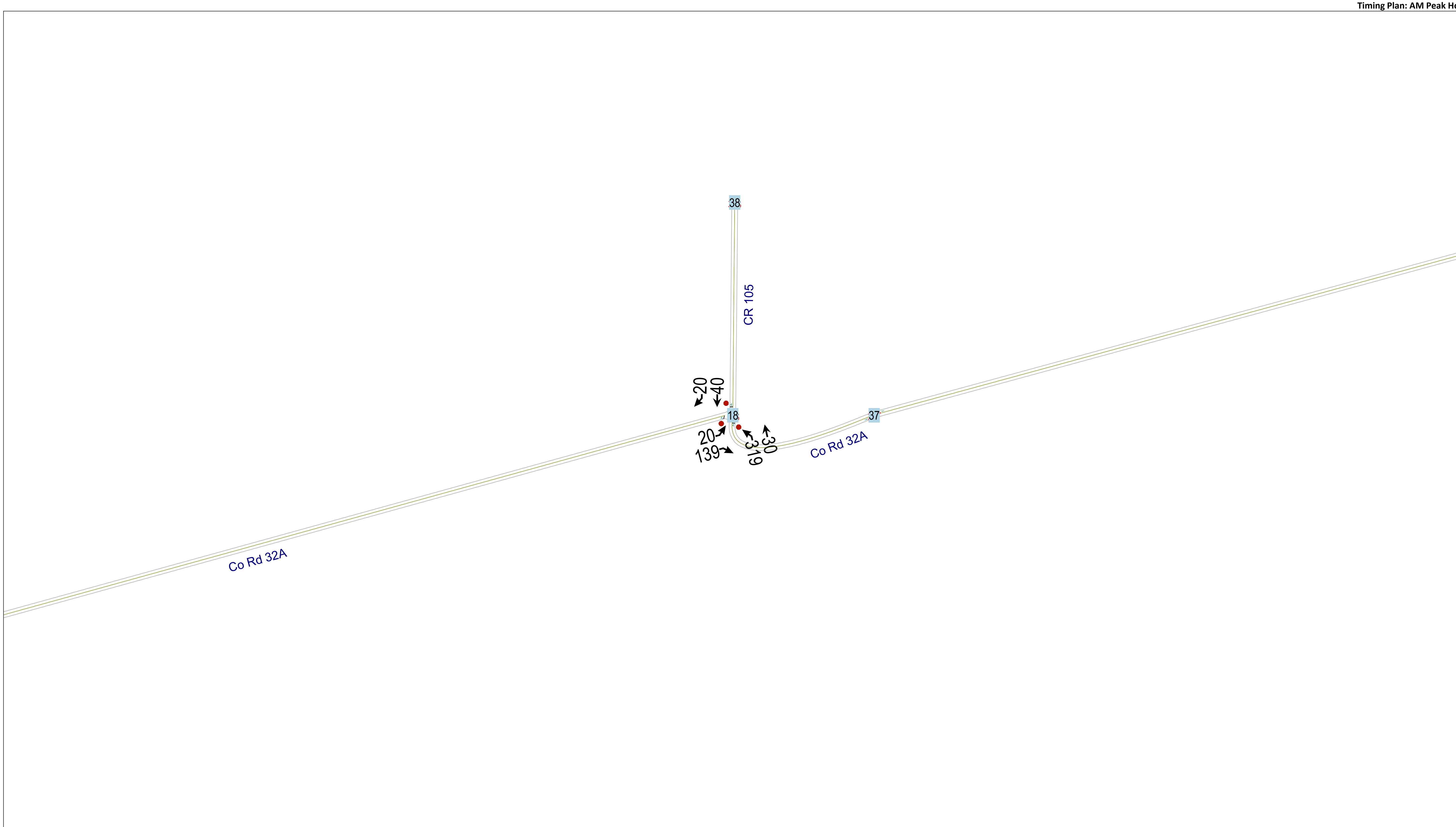
I-80 WB Ramps
I-80 EB On-Ramps
I-80 EB Off-Ramp
Chiles Rd
Cowell Blvd
N El Macero Dr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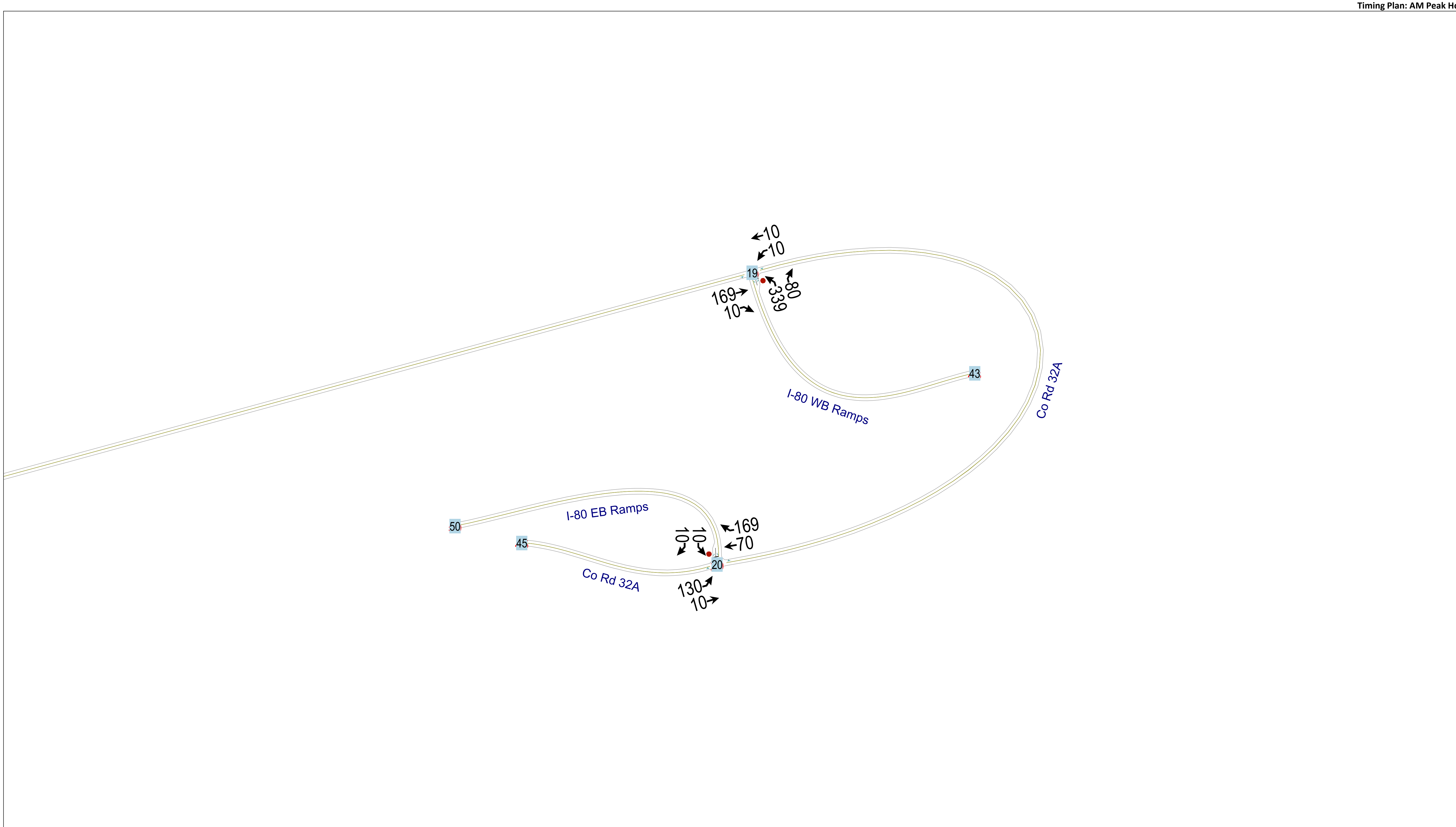
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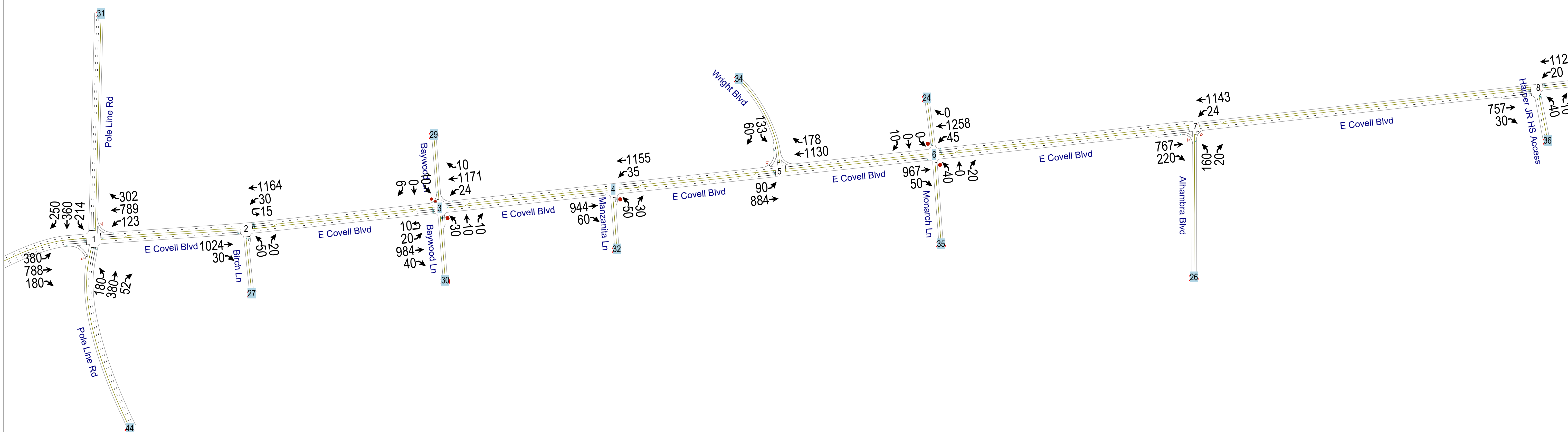
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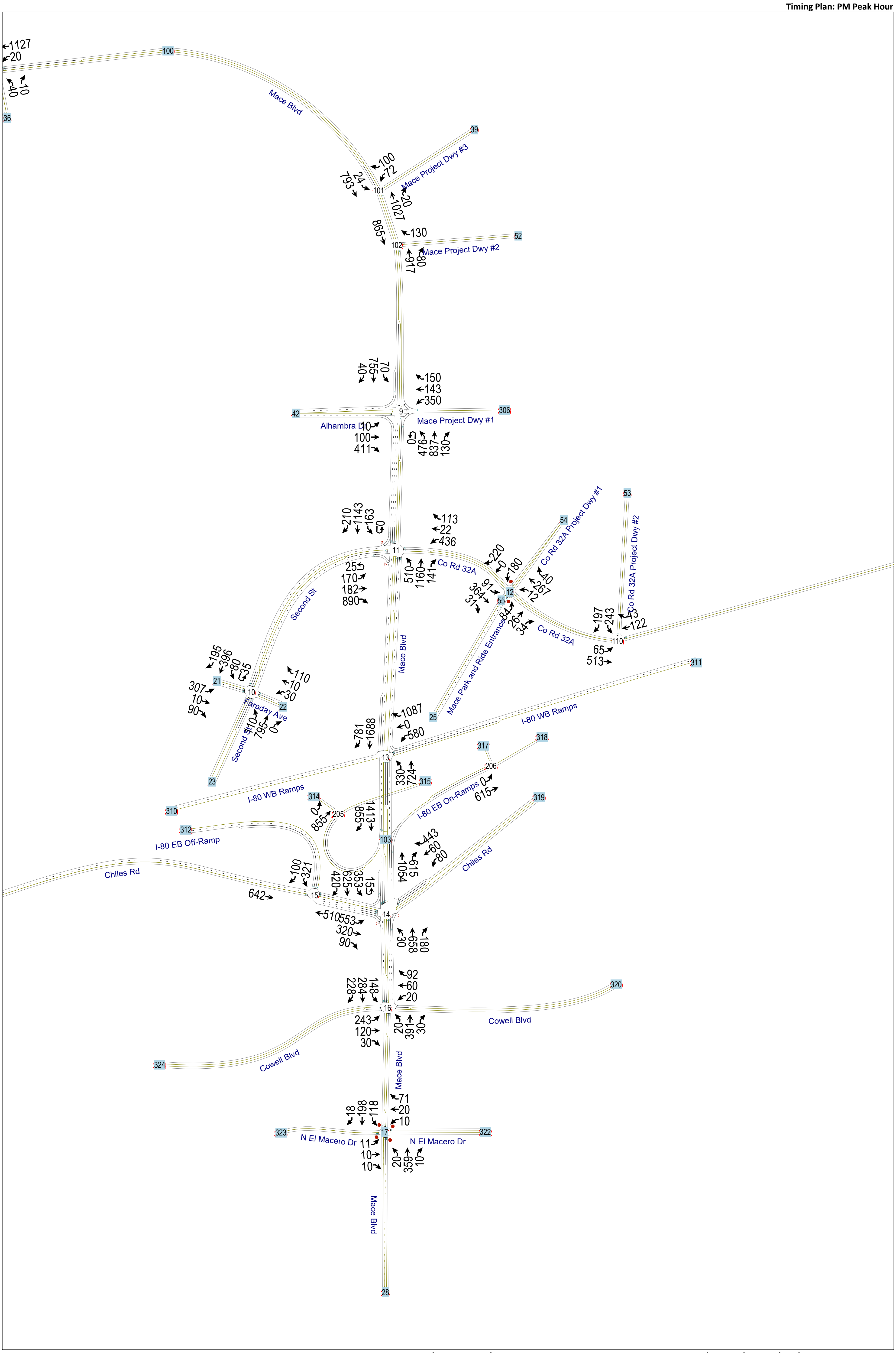
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Second St
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I-80 EB On-Ramps
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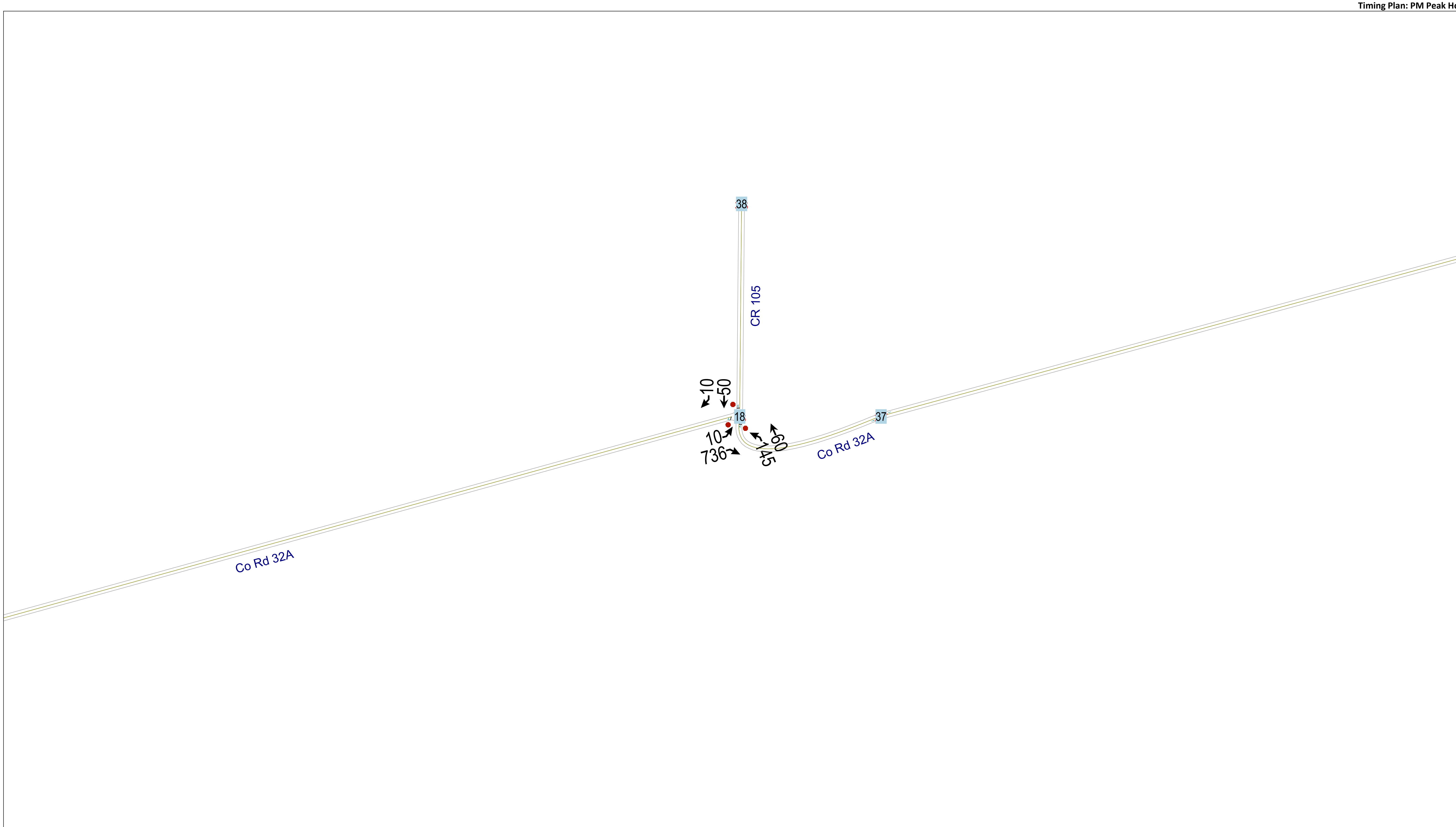
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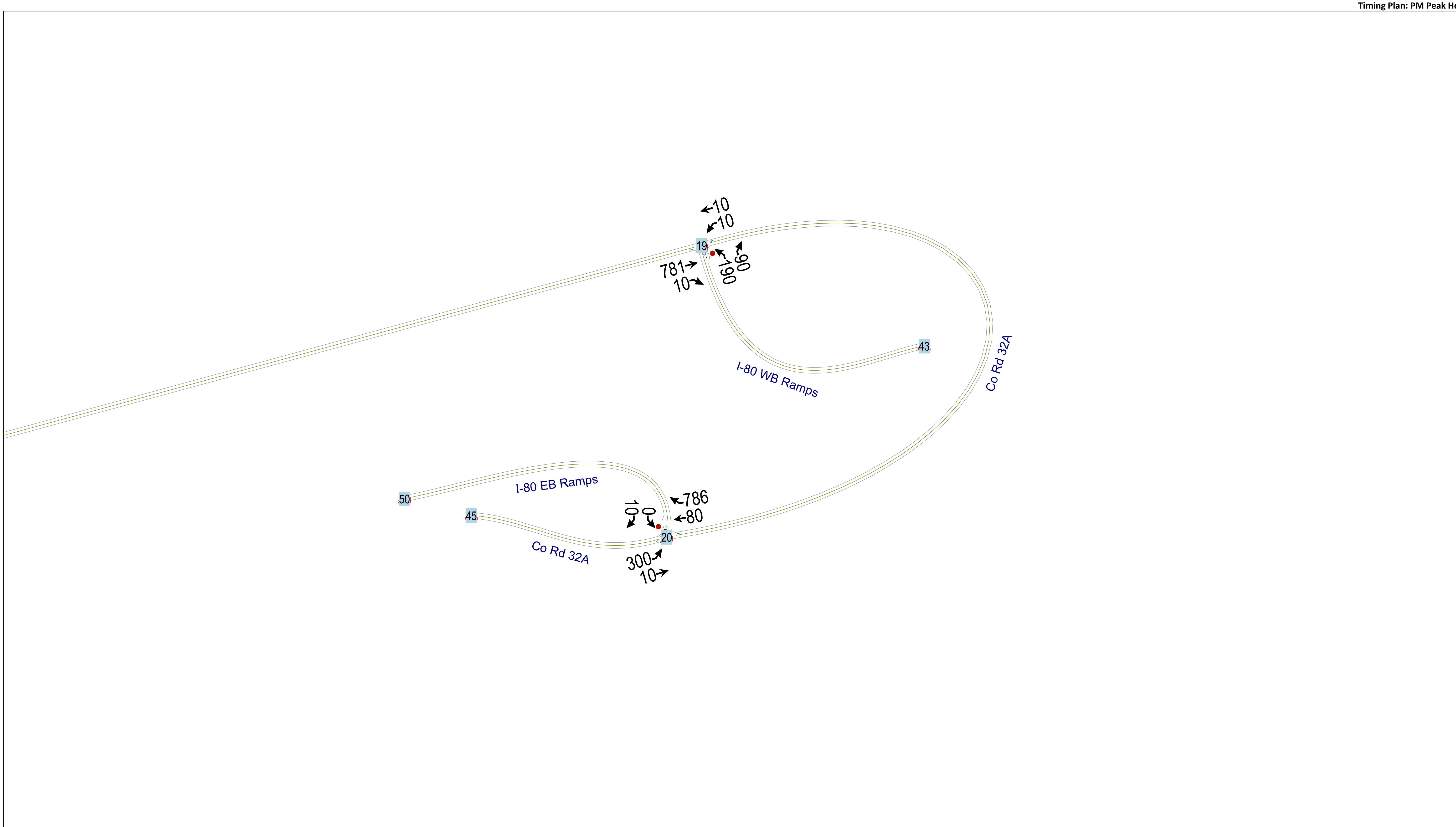
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Co Rd 32A
300
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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Lane Configurations												
Traffic Volume (veh/h)	153	442	132	91	462	105	114	192	40	2	179	358
Future Volume (veh/h)	153	442	132	91	462	105	114	192	40	2	179	358
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0		0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.96		1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00
Work Zone On Approach		No			No			No				No
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870		1870	1870
Adj Flow Rate, veh/h	168	486	0	100	508	0	125	211	4		197	393
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91		0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2		2	2
Cap, veh/h	221	949		133	773		166	395	323		254	486
Arrive On Green	0.12	0.27	0.00	0.07	0.22	0.00	0.09	0.21	0.21		0.14	0.26
Sat Flow, veh/h	1781	3647	0	1781	3647	0	1781	1870	1529		1781	1870
Grp Volume(v), veh/h	168	486	0	100	508	0	125	211	4		197	393
Grp Sat Flow(s),veh/h/ln	1781	1777	0	1781	1777	0	1781	1870	1529		1781	1870
Q Serve(g_s), s	5.4	6.9	0.0	3.3	7.7	0.0	4.0	5.9	0.1		6.3	11.6
Cycle Q Clear(g_c), s	5.4	6.9	0.0	3.3	7.7	0.0	4.0	5.9	0.1		6.3	11.6
Prop In Lane	1.00		0.00	1.00		0.00	1.00		1.00		1.00	
Lane Grp Cap(c), veh/h	221	949		133	773		166	395	323		254	486
V/C Ratio(X)	0.76	0.51		0.75	0.66		0.75	0.53	0.01		0.78	0.81
Avail Cap(c_a), veh/h	1055	2346		905	1745		754	728	595		694	728
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00		1.00	1.00
Uniform Delay (d), s/veh	25.0	18.4	0.0	26.8	21.1	0.0	26.1	20.7	18.4		24.4	20.5
Incr Delay (d2), s/veh	5.3	0.4	0.0	8.2	1.0	0.0	6.7	1.1	0.0		5.1	4.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
%ile BackOfQ(50%),veh/ln	2.4	2.6	0.0	1.6	3.0	0.0	1.9	2.5	0.0		2.8	5.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	30.3	18.8	0.0	34.9	22.1	0.0	32.8	21.9	18.4		29.5	24.6
LnGrp LOS	C	B		C	C		C	C	B		C	C
Approach Vol, veh/h		654	A		608	A		340				630
Approach Delay, s/veh		21.8			24.2			25.8				25.6
Approach LOS		C			C			C				C

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	11.3	17.9	9.5	20.4	8.4	20.8	12.4	17.5
Change Period (Y+Rc), s	4.0	5.0	4.0	5.0	4.0	5.0	4.0	5.0
Max Green Setting (Gmax), s	35.0	29.0	25.0	23.0	30.0	39.0	23.0	23.0
Max Q Clear Time (g_c+I1), s	7.4	9.7	6.0	13.6	5.3	8.9	8.3	7.9
Green Ext Time (p_c), s	0.5	3.1	0.3	1.7	0.2	3.4	0.5	1.0

Intersection Summary	
HCM 6th Ctrl Delay	24.1
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

User approved ignoring U-Turning movement.

Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Movement	SBR
Lane Configurations	
Traffic Volume (veh/h)	225
Future Volume (veh/h)	225
Initial Q (Qb), veh	0
Ped-Bike Adj(A_pbT)	1.00
Parking Bus, Adj	1.00
Work Zone On Approach	
Adj Sat Flow, veh/h/ln	1870
Adj Flow Rate, veh/h	40
Peak Hour Factor	0.91
Percent Heavy Veh, %	2
Cap, veh/h	412
Arrive On Green	0.26
Sat Flow, veh/h	1585
Grp Volume(v), veh/h	40
Grp Sat Flow(s),veh/h/ln	1585
Q Serve(g_s), s	1.1
Cycle Q Clear(g_c), s	1.1
Prop In Lane	1.00
Lane Grp Cap(c), veh/h	412
V/C Ratio(X)	0.10
Avail Cap(c_a), veh/h	617
HCM Platoon Ratio	1.00
Upstream Filter(I)	1.00
Uniform Delay (d), s/veh	16.6
Incr Delay (d2), s/veh	0.1
Initial Q Delay(d3),s/veh	0.0
%ile BackOfQ(50%),veh/ln	0.4
Unsig. Movement Delay, s/veh	
LnGrp Delay(d),s/veh	16.7
LnGrp LOS	B
Approach Vol, veh/h	
Approach Delay, s/veh	
Approach LOS	

Timer - Assigned Phs

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	604	57	65	589	0	69	0	27	0	69	0
Future Volume (veh/h)	0	604	57	65	589	0	69	0	27	0	69	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	0	1870	0	1870	0	1870	0
Adj Flow Rate, veh/h	0	657	62	71	640	0	75	0	29	0	75	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	2	2	0	2	0	2	0	2	0
Cap, veh/h	0	1028	97	118	1674	0	159	0	0	0	307	0
Arrive On Green	0.00	0.31	0.31	0.07	0.47	0.00	0.09	0.00	0.00	0.00	0.16	0.00
Sat Flow, veh/h	0	3376	309	1781	3647	0	1781	75		0	1870	0
Grp Volume(v), veh/h	0	355	364	71	640	0	75	21.0		0	75	0
Grp Sat Flow(s),veh/h/ln	0	1777	1815	1781	1777	0	1781	C		0	1870	0
Q Serve(g_s), s	0.0	7.5	7.5	1.7	5.1	0.0	1.7			0.0	1.5	0.0
Cycle Q Clear(g_c), s	0.0	7.5	7.5	1.7	5.1	0.0	1.7			0.0	1.5	0.0
Prop In Lane	0.00		0.17	1.00		0.00	1.00			0.00		0.00
Lane Grp Cap(c), veh/h	0	557	569	118	1674	0	159			0	307	0
V/C Ratio(X)	0.00	0.64	0.64	0.60	0.38	0.00	0.47			0.00	0.24	0.00
Avail Cap(c_a), veh/h	0	1141	1165	653	2118	0	1062			0	901	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00			1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00	1.00			0.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	12.9	12.9	19.8	7.4	0.0	18.9			0.0	15.9	0.0
Incr Delay (d2), s/veh	0.0	1.2	1.2	4.9	0.1	0.0	2.1			0.0	0.4	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	2.5	2.6	0.8	1.3	0.0	0.7			0.0	0.6	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	14.1	14.1	24.7	7.6	0.0	21.0			0.0	16.3	0.0
LnGrp LOS	A	B	B	C	A	A	C			A	B	A
Approach Vol, veh/h		719			711						75	
Approach Delay, s/veh		14.1			9.3						16.3	
Approach LOS		B			A						B	

Timer - Assigned Phs	1	2	3	4		6
Phs Duration (G+Y+Rc), s	6.9	17.7	7.9	11.2		24.6
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	16.0	28.0	26.0	21.0		26.0
Max Q Clear Time (g_c+I1), s	3.7	9.5	3.7	3.5		7.1
Green Ext Time (p_c), s	0.1	4.2	0.2	0.3		4.1

Intersection Summary	
HCM 6th Ctrl Delay	12.4
HCM 6th LOS	B

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	12	612	20	32	593	3	29	0	25	8	0	24
Future Vol, veh/h	12	612	20	32	593	3	29	0	25	8	0	24
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	Free	-	-	None	-	-	Stop
Storage Length	100	-	-	100	-	-	-	-	50	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	13	665	22	35	645	3	32	0	27	9	0	26

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	645	0	0	687	0	0	1095	1417	344	1074	1428	323
Stage 1	-	-	-	-	-	-	702	702	-	715	715	-
Stage 2	-	-	-	-	-	-	393	715	-	359	713	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	936	-	-	903	-	0	168	136	652	174	134	673
Stage 1	-	-	-	-	-	0	395	439	-	388	433	-
Stage 2	-	-	-	-	-	0	603	433	-	632	434	-
Platoon blocked, %		-	-		-							
Mov Cap-1 Maneuver	936	-	-	903	-	-	155	129	652	160	127	673
Mov Cap-2 Maneuver	-	-	-	-	-	-	155	129	-	160	127	-
Stage 1	-	-	-	-	-	-	389	433	-	383	416	-
Stage 2	-	-	-	-	-	-	557	416	-	597	428	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.2	0.5	23.3	10.9
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	SBLn1
Capacity (veh/h)	155	652	936	-	-	903	-	640
HCM Lane V/C Ratio	0.203	0.042	0.014	-	-	0.039	-	0.054
HCM Control Delay (s)	34.1	10.8	8.9	-	-	9.1	-	10.9
HCM Lane LOS	D	B	A	-	-	A	-	B
HCM 95th %tile Q(veh)	0.7	0.1	0	-	-	0.1	-	0.2

Intersection						
Int Delay, s/veh	1.1					

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	620	25	17	587	41	25
Future Vol, veh/h	620	25	17	587	41	25
Conflicting Peds, #/hr	0	1	2	0	0	5
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	25
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	674	27	18	638	45	27

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	703	0	1045	358
Stage 1	-	-	-	-	690	-
Stage 2	-	-	-	-	355	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	890	-	224	638
Stage 1	-	-	-	-	459	-
Stage 2	-	-	-	-	681	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	889	-	219	634
Mov Cap-2 Maneuver	-	-	-	-	219	-
Stage 1	-	-	-	-	458	-
Stage 2	-	-	-	-	667	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	20
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	219	634	-	-	889	-
HCM Lane V/C Ratio	0.203	0.043	-	-	0.021	-
HCM Control Delay (s)	25.6	10.9	-	-	9.1	-
HCM Lane LOS	D	B	-	-	A	-
HCM 95th %tile Q(veh)	0.7	0.1	-	-	0.1	-

Movement	EBU	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations							
Traffic Volume (veh/h)	1	40	604	472	69	171	131
Future Volume (veh/h)	1	40	604	472	69	171	131
Initial Q (Qb), veh		0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00			1.00	1.00	1.00
Parking Bus, Adj		1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach			No	No		No	
Adj Sat Flow, veh/h/ln		1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h		46	694	543	0	197	0
Peak Hour Factor		0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %		3	3	3	3	3	3
Cap, veh/h		73	1904	1362		266	
Arrive On Green		0.04	0.54	0.39	0.00	0.15	0.00
Sat Flow, veh/h		1767	3618	3711	0	1767	1572
Grp Volume(v), veh/h		46	694	543	0	197	0
Grp Sat Flow(s),veh/h/ln		1767	1763	1763	0	1767	1572
Q Serve(g_s), s		0.9	4.0	4.0	0.0	3.8	0.0
Cycle Q Clear(g_c), s		0.9	4.0	4.0	0.0	3.8	0.0
Prop In Lane		1.00			0.00	1.00	1.00
Lane Grp Cap(c), veh/h		73	1904	1362		266	
V/C Ratio(X)		0.63	0.36	0.40		0.74	
Avail Cap(c_a), veh/h		647	3969	3969		995	
HCM Platoon Ratio		1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)		1.00	1.00	1.00	0.00	1.00	0.00
Uniform Delay (d), s/veh		16.8	4.7	7.9	0.0	14.4	0.0
Incr Delay (d2), s/veh		8.8	0.3	0.4	0.0	4.0	0.0
Initial Q Delay(d3),s/veh		0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln		0.5	0.7	1.0	0.0	1.5	0.0
Unsig. Movement Delay, s/veh							
LnGrp Delay(d),s/veh		25.6	4.9	8.3	0.0	18.5	0.0
LnGrp LOS		C	A	A		B	
Approach Vol, veh/h			740	543	A	197	A
Approach Delay, s/veh			6.2	8.3		18.5	
Approach LOS			A	A		B	
Timer - Assigned Phs		2		4	5	6	
Phs Duration (G+Y+Rc), s		25.2		10.3	5.5	19.7	
Change Period (Y+Rc), s		6.0		5.0	4.0	6.0	
Max Green Setting (Gmax), s		40.0		20.0	13.0	40.0	
Max Q Clear Time (g_c+I1), s		6.0		5.8	2.9	6.0	
Green Ext Time (p_c), s		10.0		0.4	0.0	7.3	
Intersection Summary							
HCM 6th Ctrl Delay			8.6				
HCM 6th LOS			A				

Notes

User approved ignoring U-Turning movement.
Unsignalized Delay for [WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	1.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	749	26	18	514	0	25	0	58	0	0	2
Future Vol, veh/h	0	749	26	18	514	0	25	0	58	0	0	2
Conflicting Peds, #/hr	0	0	7	0	0	7	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	85	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	0	832	29	20	571	0	28	0	64	0	0	2

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	868	0	0	1180	1472	438	1034	1486	293
Stage 1	-	-	-	-	-	-	854	854	-	618	618	-
Stage 2	-	-	-	-	-	-	326	618	-	416	868	-
Critical Hdwy	-	-	-	4.16	-	-	7.56	6.56	6.96	7.56	6.56	6.96
Critical Hdwy Stg 1	-	-	-	-	-	-	6.56	5.56	-	6.56	5.56	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.56	5.56	-	6.56	5.56	-
Follow-up Hdwy	-	-	-	2.23	-	-	3.53	4.03	3.33	3.53	4.03	3.33
Pot Cap-1 Maneuver	0	-	-	765	-	-	144	125	564	185	122	700
Stage 1	0	-	-	-	-	-	318	371	-	441	477	-
Stage 2	0	-	-	-	-	-	658	477	-	582	365	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	-	-	-	761	-	-	140	120	561	159	117	696
Mov Cap-2 Maneuver	-	-	-	-	-	-	140	120	-	159	117	-
Stage 1	-	-	-	-	-	-	318	369	-	441	462	-
Stage 2	-	-	-	-	-	-	639	462	-	515	363	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.3	22.7	10.2
HCM LOS			C	B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	294	-	-	761	-	-	696
HCM Lane V/C Ratio	0.314	-	-	0.026	-	-	0.003
HCM Control Delay (s)	22.7	-	-	9.9	-	-	10.2
HCM Lane LOS	C	-	-	A	-	-	B
HCM 95th %tile Q(veh)	1.3	-	-	0.1	-	-	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	699	108	30	385	147	46
Future Volume (veh/h)	699	108	30	385	147	46
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1900	1900
Adj Flow Rate, veh/h	803	0	34	443	169	0
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %	2	2	2	2	0	0
Cap, veh/h	1220		141	988	390	
Arrive On Green	0.34	0.00	0.08	0.53	0.22	0.00
Sat Flow, veh/h	3647	1585	1781	1870	1771	0
Grp Volume(v), veh/h	803	0	34	443	170	0
Grp Sat Flow(s),veh/h/ln	1777	1585	1781	1870	1782	0
Q Serve(g_s), s	7.2	0.0	0.7	5.5	3.1	0.0
Cycle Q Clear(g_c), s	7.2	0.0	0.7	5.5	3.1	0.0
Prop In Lane		1.00	1.00		0.99	0.00
Lane Grp Cap(c), veh/h	1220		141	988	392	
V/C Ratio(X)	0.66		0.24	0.45	0.43	
Avail Cap(c_a), veh/h	3291		1037	1732	1179	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	10.5	0.0	16.3	5.5	12.7	0.0
Incr Delay (d2), s/veh	0.2	0.0	0.3	0.1	0.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.9	0.0	0.2	1.0	1.0	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	10.8	0.0	16.7	5.6	13.0	0.0
LnGrp LOS	B		B	A	B	
Approach Vol, veh/h	803	A		477	170	A
Approach Delay, s/veh	10.8			6.4	13.0	
Approach LOS	B			A	B	

Timer - Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	7.0	18.5				25.5		12.3
Change Period (Y+Rc), s	4.0	5.5				5.5		4.0
Max Green Setting (Gmax), s	22.0	35.0				35.0		25.0
Max Q Clear Time (g_c+I1), s	2.7	9.2				7.5		5.1
Green Ext Time (p_c), s	0.0	3.6				1.6		0.2

Intersection Summary	
HCM 6th Ctrl Delay	9.6
HCM 6th LOS	A

Notes

User approved volume balancing among the lanes for turning movement.

Unsignalized Delay for [NBR, EBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	618	127	165	320	95	8
Future Volume (veh/h)	618	127	165	320	95	8
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1856	1856	1856	1856	1900	1900
Adj Flow Rate, veh/h	824	40	220	427	127	6
Peak Hour Factor	0.75	0.75	0.75	0.75	0.75	0.75
Percent Heavy Veh, %	3	3	3	3	0	0
Cap, veh/h	1516	673	319	1305	185	9
Arrive On Green	0.43	0.43	0.18	0.70	0.11	0.11
Sat Flow, veh/h	3618	1565	1767	1856	1666	79
Grp Volume(v), veh/h	824	40	220	427	134	0
Grp Sat Flow(s),veh/h/ln	1763	1565	1767	1856	1758	0
Q Serve(g_s), s	7.5	0.6	5.0	3.8	3.2	0.0
Cycle Q Clear(g_c), s	7.5	0.6	5.0	3.8	3.2	0.0
Prop In Lane		1.00	1.00		0.95	0.04
Lane Grp Cap(c), veh/h	1516	673	319	1305	196	0
V/C Ratio(X)	0.54	0.06	0.69	0.33	0.69	0.00
Avail Cap(c_a), veh/h	3354	1489	1066	1765	1061	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	9.1	7.2	16.5	2.5	18.4	0.0
Incr Delay (d2), s/veh	0.4	0.1	5.6	0.2	4.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	2.0	0.2	2.1	0.2	1.4	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	9.6	7.2	22.1	2.7	22.6	0.0
LnGrp LOS	A	A	C	A	C	A
Approach Vol, veh/h	864			647	134	
Approach Delay, s/veh	9.5			9.3	22.6	
Approach LOS	A			A	C	

Timer - Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	11.8	22.5				34.3		8.8
Change Period (Y+Rc), s	4.0	4.0				4.0		4.0
Max Green Setting (Gmax), s	26.0	41.0				41.0		26.0
Max Q Clear Time (g_c+I1), s	7.0	9.5				5.8		5.2
Green Ext Time (p_c), s	1.3	9.0				4.0		0.3

Intersection Summary	
HCM 6th Ctrl Delay	10.5
HCM 6th LOS	B

Notes
User approved volume balancing among the lanes for turning movement.

Intersection						
Int Delay, s/veh	5.2					

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	14	56	46	25	34	18
Future Vol, veh/h	14	56	46	25	34	18
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	81	81	81	81	81	81
Heavy Vehicles, %	18	18	18	18	18	18
Mvmt Flow	17	69	57	31	42	22

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	198	53	64	0	-	0
Stage 1	53	-	-	-	-	-
Stage 2	145	-	-	-	-	-
Critical Hdwy	6.58	6.38	4.28	-	-	-
Critical Hdwy Stg 1	5.58	-	-	-	-	-
Critical Hdwy Stg 2	5.58	-	-	-	-	-
Follow-up Hdwy	3.662	3.462	2.362	-	-	-
Pot Cap-1 Maneuver	756	971	1442	-	-	-
Stage 1	930	-	-	-	-	-
Stage 2	845	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	726	971	1442	-	-	-
Mov Cap-2 Maneuver	726	-	-	-	-	-
Stage 1	893	-	-	-	-	-
Stage 2	845	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	9.4	4.9	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1442	-	910	-	-
HCM Lane V/C Ratio	0.039	-	0.095	-	-
HCM Control Delay (s)	7.6	0	9.4	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	0.3	-	-

Intersection	
Int Delay, s/veh	5.6

Movement	EBT	EBR	WBL	WBT	NBU	NBL	NBR
Lane Configurations							
Traffic Vol, veh/h	94	1	4	5	1	66	72
Future Vol, veh/h	94	1	4	5	1	66	72
Conflicting Peds, #/hr	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	None	-	None	-	-	None
Storage Length	-	-	-	-	-	0	25
Veh in Median Storage, #	0	-	-	0	-	0	-
Grade, %	0	-	-	0	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89
Heavy Vehicles, %	15	15	15	15	15	15	15
Mvmt Flow	106	1	4	6	1	74	81

Major/Minor	Major1		Major2		Minor1		
Conflicting Flow All	0	0	107	0	0	121	107
Stage 1	-	-	-	-	0	107	-
Stage 2	-	-	-	-	0	14	-
Critical Hdwy	-	-	4.25	-	-	6.55	6.35
Critical Hdwy Stg 1	-	-	-	-	-	5.55	-
Critical Hdwy Stg 2	-	-	-	-	-	5.55	-
Follow-up Hdwy	-	-	2.335	-	-	3.635	3.435
Pot Cap-1 Maneuver	-	-	1406	-	0	844	913
Stage 1	-	-	-	-	0	886	-
Stage 2	-	-	-	-	0	976	-
Platoon blocked, %	-	-		-	-		
Mov Cap-1 Maneuver	-	-	1406	-	0	841	913
Mov Cap-2 Maneuver	-	-	-	-	0	841	-
Stage 1	-	-	-	-	0	886	-
Stage 2	-	-	-	-	0	973	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3.4	9.5
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	841	913	-	-	1406	-
HCM Lane V/C Ratio	0.088	0.089	-	-	0.003	-
HCM Control Delay (s)	9.7	9.3	-	-	7.6	0
HCM Lane LOS	A	A	-	-	A	A
HCM 95th %tile Q(veh)	0.3	0.3	-	-	0	-

Intersection	
Int Delay, s/veh	3.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	121	6	60	95	5	4
Future Vol, veh/h	121	6	60	95	5	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	30
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	6	6	6	6	6	6
Mvmt Flow	132	7	65	103	5	4

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	168	0	-	0	388	117
Stage 1	-	-	-	-	117	-
Stage 2	-	-	-	-	271	-
Critical Hdwy	4.16	-	-	-	6.46	6.26
Critical Hdwy Stg 1	-	-	-	-	5.46	-
Critical Hdwy Stg 2	-	-	-	-	5.46	-
Follow-up Hdwy	2.254	-	-	-	3.554	3.354
Pot Cap-1 Maneuver	1386	-	-	-	608	924
Stage 1	-	-	-	-	898	-
Stage 2	-	-	-	-	765	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1386	-	-	-	550	924
Mov Cap-2 Maneuver	-	-	-	-	550	-
Stage 1	-	-	-	-	812	-
Stage 2	-	-	-	-	765	-

Approach	EB	WB	SB
HCM Control Delay, s	7.5	0	10.4
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1386	-	-	-	550	924
HCM Lane V/C Ratio	0.095	-	-	-	0.01	0.005
HCM Control Delay (s)	7.9	0	-	-	11.6	8.9
HCM Lane LOS	A	A	-	-	B	A
HCM 95th %tile Q(veh)	0.3	-	-	-	0	0

SimTraffic Post-Processor | **Aggie Research Campus**
Average Results from 10 Runs | **Existing Conditions**
Volume and Delay by Movement | **AM Peak Hour**

Intersection 9 **Mace Blvd/Alhambra Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	111	110	98.7%	34.5	3.5	C
	Through	470	460	97.9%	11.6	1.9	B
	Right Turn						
	Subtotal	581	570	98.1%	16.1	1.8	B
SB	Left Turn						
	Through	797	790	99.1%	23.9	2.1	C
	Right Turn	32	35	109.4%	9.5	2.2	A
	Subtotal	829	825	99.5%	23.3	2.0	C
EB	Left Turn	15	15	97.3%	44.3	12.1	D
	Through						
	Right Turn	342	341	99.6%	2.9	0.3	A
	Subtotal	357	355	99.5%	4.5	0.5	A
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		1,767	1,750	99.0%	17.0	1.3	B

Intersection 10 **Second St/Fermi Place** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	3	3	100.0%	11.5	13.4	B
	Through	1	2	160.0%	2.3	7.3	A
	Right Turn	14	17	122.9%	4.1	1.2	A
	Subtotal	18	22	121.1%	6.3	2.4	A
SB	Left Turn	33	32	96.7%	16.3	4.9	B
	Through						
	Right Turn	14	15	106.4%	5.5	3.3	A
	Subtotal	47	47	99.6%	13.2	3.9	B
EB	Left Turn	21	22	106.7%	15.1	5.4	B
	Through	248	249	100.4%	5.6	1.2	A
	Right Turn	10	9	89.0%	3.6	3.1	A
	Subtotal	279	280	100.5%	6.5	1.4	A
WB	Left Turn	82	86	104.6%	17.4	4.6	B
	Through	525	522	99.4%	4.8	1.5	A
	Right Turn	65	71	108.9%	0.9	0.4	A
	Subtotal	672	679	101.0%	6.0	1.5	A
Total		1,016	1,027	101.1%	6.5	1.4	A

Intersection 11 **Mace Blvd/Second St-Co Rd 32A** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	544	553	101.7%	32.7	14.3	C
	Through	549	540	98.3%	6.2	2.0	A
	Right Turn	24	26	106.7%	2.6	1.5	A
	Subtotal	1,117	1,119	100.2%	19.6	8.5	B
SB	Left Turn	39	37	95.6%	55.1	13.6	E
	Through	1,020	1,006	98.6%	57.6	14.4	E
	Right Turn	72	72	100.6%	24.1	10.3	C
	Subtotal	1,131	1,115	98.6%	55.4	14.2	E
EB	Left Turn	23	21	92.6%	41.8	15.9	D
	Through	18	23	125.0%	38.7	10.0	D
	Right Turn	299	306	102.2%	4.1	0.8	A
	Subtotal	340	349	102.8%	8.7	1.3	A
WB	Left Turn	16	16	101.3%	43.9	12.0	D
	Through	39	40	103.1%	39.8	8.9	D
	Right Turn	12	12	98.3%	18.5	15.3	B
	Subtotal	67	68	101.8%	37.1	6.4	D
Total		2,655	2,652	99.9%	33.9	7.6	C

Intersection 12 **Mace Park and Ride Entrance/Co Rd 32A** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	3	3	90.0%	4.1	2.0	A
	Through						
	Right Turn	1	2	210.0%	4.1	1.8	A
	Subtotal	4	5	120.0%	4.2	3.1	A
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through	71	74	104.4%	1.4	0.4	A
	Right Turn	8	9	110.0%	1.0	1.0	A
	Subtotal	79	83	104.9%	1.4	0.3	A
WB	Left Turn	2	2	90.0%	0.6	1.0	A
	Through	64	65	100.9%	0.2	0.2	A
	Right Turn						
	Subtotal	66	66	100.6%	0.3	0.1	A
Total		149	154	103.4%	1.1	0.3	A

Intersection 13 **Mace Blvd/I-80 WB Ramps** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	413	405	98.0%	34.1	5.1	C
	Through	615	610	99.1%	6.7	1.6	A
	Right Turn						
	Subtotal	1,028	1,014	98.6%	17.8	2.2	B
SB	Left Turn						
	Through	1,119	1,112	99.3%	29.2	7.4	C
	Right Turn	216	224	103.5%	13.6	2.3	B
	Subtotal	1,335	1,335	100.0%	26.6	6.5	C
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	304	311	102.4%	30.2	2.2	C
	Through	3	3	96.7%	7.8	10.6	A
	Right Turn	502	505	100.6%	3.5	0.4	A
	Subtotal	809	819	101.3%	14.0	1.4	B
Total		3,172	3,169	99.9%	20.3	3.1	C

Intersection 14 **Mace Blvd/Chiles Rd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	9	9	98.9%	39.4	21.3	D
	Through	589	588	99.8%	33.4	3.0	C
	Right Turn	40	43	108.0%	13.5	3.7	B
	Subtotal	638	640	100.3%	32.2	2.9	C
SB	Left Turn	194	205	105.8%	50.8	15.1	D
	Through	302	307	101.7%	22.8	3.2	C
	Right Turn	227	220	96.8%	10.0	3.3	A
	Subtotal	723	732	101.3%	27.9	6.0	C
EB	Left Turn	447	443	99.0%	70.8	27.2	E
	Through	154	155	100.9%	24.7	4.8	C
	Right Turn	148	149	100.6%	1.9	0.2	A
	Subtotal	749	747	99.7%	47.1	17.1	D
WB	Left Turn	29	27	91.7%	36.5	7.1	D
	Through	90	88	97.9%	29.2	5.1	C
	Right Turn	300	301	100.4%	14.3	1.4	B
	Subtotal	419	416	99.3%	19.0	1.4	B
Total		2,529	2,535	100.2%	33.4	5.5	C

SimTraffic Post-Processor | **Aggie Research Campus**
Average Results from 10 Runs | **Existing Conditions**
Volume and Delay by Movement | **AM Peak Hour**

Intersection 15 | **I-80 EB Off-Ramp/Chiles Rd** | **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn	331	326	98.6%	5.3	1.0	A
	Through						
	Right Turn	75	77	102.4%	2.9	0.6	A
	Subtotal	406	403	99.3%	4.8	0.8	A
EB	Left Turn						
	Through	418	421	100.8%	15.9	4.7	B
	Right Turn						
	Subtotal	418	421	100.8%	15.9	4.7	B
WB	Left Turn						
	Through	326	319	97.8%	10.7	1.6	B
	Right Turn						
	Subtotal	326	319	97.8%	10.7	1.6	B
Total		1,150	1,143	99.4%	10.5	1.9	B

Intersection 16 | **Mace Blvd/Cowell Blvd** | **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	16	14	88.1%	40.1	13.1	D
	Through	281	289	102.8%	23.2	3.2	C
	Right Turn	61	60	97.7%	16.3	3.8	B
	Subtotal	358	363	101.3%	22.6	3.2	C
SB	Left Turn	98	90	91.8%	31.4	5.7	C
	Through	206	205	99.7%	15.2	3.0	B
	Right Turn	28	30	107.5%	6.5	1.6	A
	Subtotal	332	326	98.0%	19.1	2.4	B
EB	Left Turn	132	125	94.5%	27.1	4.8	C
	Through	96	96	99.5%	16.3	4.4	B
	Right Turn	12	13	105.0%	8.7	5.6	A
	Subtotal	240	233	97.0%	21.8	3.5	C
WB	Left Turn	31	30	96.8%	34.5	8.7	C
	Through	79	78	98.6%	22.2	4.5	C
	Right Turn	123	121	98.3%	13.3	4.4	B
	Subtotal	233	229	98.2%	18.8	4.5	B
Total		1,163	1,150	98.8%	20.6	2.6	C

SimTraffic Post-Processor | **Aggie Research Campus**
Average Results from 10 Runs | **Existing Conditions**
Volume and Delay by Movement | **AM Peak Hour**

Intersection 17 | **Mace Blvd/El Marcero Dr** | **All-way Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	11	12	105.5%	5.1	1.8	A
	Through	238	250	105.0%	9.2	1.0	A
	Right Turn	2	3	140.0%	3.1	3.9	A
	Subtotal	251	264	105.3%	9.0	1.0	A
SB	Left Turn	62	59	95.6%	7.4	1.2	A
	Through	176	174	99.0%	10.2	1.0	B
	Right Turn	11	14	130.9%	5.1	2.2	A
	Subtotal	249	248	99.6%	9.3	0.9	A
EB	Left Turn	23	21	92.6%	4.9	0.5	A
	Through	5	5	100.0%	3.6	2.5	A
	Right Turn	5	6	112.0%	1.9	1.7	A
	Subtotal	33	32	96.7%	4.7	0.4	A
WB	Left Turn	4	3	82.5%	4.0	3.6	A
	Through	11	13	121.8%	6.9	2.7	A
	Right Turn	97	91	94.2%	4.2	1.1	A
	Subtotal	112	108	96.5%	4.6	1.2	A
Total		645	652	101.1%	8.3	0.8	A

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (veh/h)	1	321	617	174	97	480	143	180	319	40	188	289
Future Volume (veh/h)	1	321	617	174	97	480	143	180	319	40	188	289
Initial Q (Qb), veh		0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00		1.00	1.00		1.00	1.00		0.94	1.00	
Parking Bus, Adj		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach			No			No			No			No
Adj Sat Flow, veh/h/ln		1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h		338	649	0	102	505	0	189	336	7	198	304
Peak Hour Factor		0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %		1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h		391	1203		134	692		234	437	347	243	446
Arrive On Green		0.22	0.34	0.00	0.07	0.19	0.00	0.13	0.23	0.23	0.14	0.24
Sat Flow, veh/h		1795	3676	0	1795	3676	0	1795	1885	1497	1795	1885
Grp Volume(v), veh/h		338	649	0	102	505	0	189	336	7	198	304
Grp Sat Flow(s),veh/h/ln		1795	1791	0	1795	1791	0	1795	1885	1497	1795	1885
Q Serve(g_s), s		14.7	11.9	0.0	4.5	10.7	0.0	8.3	13.5	0.3	8.7	11.9
Cycle Q Clear(g_c), s		14.7	11.9	0.0	4.5	10.7	0.0	8.3	13.5	0.3	8.7	11.9
Prop In Lane		1.00		0.00	1.00		0.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h		391	1203		134	692		234	437	347	243	446
V/C Ratio(X)		0.87	0.54		0.76	0.73		0.81	0.77	0.02	0.81	0.68
Avail Cap(c_a), veh/h		776	1724		665	1282		554	535	425	510	535
HCM Platoon Ratio		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)		1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh		30.6	21.8	0.0	36.8	30.7	0.0	34.2	29.1	24.0	34.0	28.1
Incr Delay (d2), s/veh		5.8	0.4	0.0	8.4	1.5	0.0	6.5	5.4	0.0	6.5	2.7
Initial Q Delay(d3),s/veh		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln		6.7	4.8	0.0	2.2	4.6	0.0	3.9	6.6	0.1	4.1	5.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh		36.4	22.2	0.0	45.2	32.2	0.0	40.7	34.6	24.1	40.5	30.9
LnGrp LOS		D	C		D	C		D	C	C	D	C
Approach Vol, veh/h			987	A		607	A		532			688
Approach Delay, s/veh			27.1			34.4			36.6			32.8
Approach LOS			C			C			D			C

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	21.6	20.7	14.6	24.2	10.1	32.2	15.0	23.8
Change Period (Y+Rc), s	4.0	5.0	4.0	5.0	4.0	5.0	4.0	5.0
Max Green Setting (Gmax), s	35.0	29.0	25.0	23.0	30.0	39.0	23.0	23.0
Max Q Clear Time (g_c+I1), s	16.7	12.7	10.3	13.9	6.5	13.9	10.7	15.5
Green Ext Time (p_c), s	0.9	2.9	0.4	1.7	0.2	4.5	0.4	1.2

Intersection Summary	
HCM 6th Ctrl Delay	31.8
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.
User approved ignoring U-Turning movement.
Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Movement	SBR
Lane Configurations	
Traffic Volume (veh/h)	223
Future Volume (veh/h)	223
Initial Q (Qb), veh	0
Ped-Bike Adj(A_pbT)	1.00
Parking Bus, Adj	1.00
Work Zone On Approach	
Adj Sat Flow, veh/h/ln	1885
Adj Flow Rate, veh/h	186
Peak Hour Factor	0.95
Percent Heavy Veh, %	1
Cap, veh/h	378
Arrive On Green	0.24
Sat Flow, veh/h	1596
Grp Volume(v), veh/h	186
Grp Sat Flow(s),veh/h/ln	1596
Q Serve(g_s), s	8.2
Cycle Q Clear(g_c), s	8.2
Prop In Lane	1.00
Lane Grp Cap(c), veh/h	378
V/C Ratio(X)	0.49
Avail Cap(c_a), veh/h	453
HCM Platoon Ratio	1.00
Upstream Filter(I)	1.00
Uniform Delay (d), s/veh	26.7
Incr Delay (d2), s/veh	1.0
Initial Q Delay(d3),s/veh	0.0
%ile BackOfQ(50%),veh/ln	3.1
Unsig. Movement Delay, s/veh	
LnGrp Delay(d),s/veh	27.7
LnGrp LOS	C
Approach Vol, veh/h	
Approach Delay, s/veh	
Approach LOS	

Timer - Assigned Phs

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	815	30	37	680	0	40	0	11	0	3	0
Future Volume (veh/h)	0	815	30	37	680	0	40	0	11	0	3	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	0	1870	0	1870	0	1870	0
Adj Flow Rate, veh/h	0	867	32	39	723	0	43	0	12	0	3	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	0	2	2	2	2	0	2	0	2	0	2	0
Cap, veh/h	0	1221	45	74	1667	0	113	0	0	0	437	0
Arrive On Green	0.00	0.35	0.35	0.04	0.47	0.00	0.06	0.00	0.00	0.00	0.23	0.00
Sat Flow, veh/h	0	3585	129	1781	3647	0	1781	43		0	1870	0
Grp Volume(v), veh/h	0	441	458	39	723	0	43	25.2		0	3	0
Grp Sat Flow(s),veh/h/ln	0	1777	1844	1781	1777	0	1781	C		0	1870	0
Q Serve(g_s), s	0.0	11.0	11.0	1.1	7.0	0.0	1.2			0.0	0.1	0.0
Cycle Q Clear(g_c), s	0.0	11.0	11.0	1.1	7.0	0.0	1.2			0.0	0.1	0.0
Prop In Lane	0.00		0.07	1.00		0.00	1.00			0.00		0.00
Lane Grp Cap(c), veh/h	0	621	645	74	1667	0	113			0	437	0
V/C Ratio(X)	0.00	0.71	0.71	0.53	0.43	0.00	0.38			0.00	0.01	0.00
Avail Cap(c_a), veh/h	0	969	1005	555	1799	0	902			0	765	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00			1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00	1.00			0.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	14.4	14.4	24.1	9.1	0.0	23.1			0.0	15.1	0.0
Incr Delay (d2), s/veh	0.0	1.5	1.5	5.7	0.2	0.0	2.1			0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	3.9	4.0	0.5	2.1	0.0	0.5			0.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	16.0	15.9	29.8	9.3	0.0	25.2			0.0	15.1	0.0
LnGrp LOS	A	B	B	C	A	A	C			A	B	A
Approach Vol, veh/h		899			762						3	
Approach Delay, s/veh		15.9			10.3						15.1	
Approach LOS		B			B						B	

Timer - Assigned Phs	1	2	3	4		6
Phs Duration (G+Y+Rc), s	6.1	22.0	7.3	16.0		28.1
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	16.0	28.0	26.0	21.0		26.0
Max Q Clear Time (g_c+I1), s	3.1	13.0	3.2	2.1		9.0
Green Ext Time (p_c), s	0.0	4.9	0.1	0.0		4.5

Intersection Summary		
HCM 6th Ctrl Delay		13.7
HCM 6th LOS		B

Intersection	
Int Delay, s/veh	1

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations													
Traffic Vol, veh/h	8	12	779	39	12	688	3	21	1	2	5	0	4
Future Vol, veh/h	8	12	779	39	12	688	3	21	1	2	5	0	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	-	None	-	-	Free	-	-	None	-	-	Stop
Storage Length	-	100	-	-	100	-	-	-	-	50	-	-	-
Veh in Median Storage, #	-	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	9	13	829	41	13	732	3	22	1	2	5	0	4

Major/Minor	Major1				Major2			Minor1			Minor2		
Conflicting Flow All	732	732	0	0	870	0	0	1286	1652	435	1217	1672	366
Stage 1	-	-	-	-	-	-	-	894	894	-	758	758	-
Stage 2	-	-	-	-	-	-	-	392	758	-	459	914	-
Critical Hdwy	6.44	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.52	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	493	868	-	-	770	-	0	122	98	569	137	95	631
Stage 1	-	-	-	-	-	-	0	302	358	-	365	413	-
Stage 2	-	-	-	-	-	-	0	604	413	-	551	350	-
Platoon blocked, %			-	-		-							
Mov Cap-1 Maneuver	663	663	-	-	770	-	-	117	93	569	130	90	631
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	117	93	-	130	90	-
Stage 1	-	-	-	-	-	-	-	292	347	-	353	406	-
Stage 2	-	-	-	-	-	-	-	590	406	-	530	339	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0.2	41	21
HCM LOS			E	C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	SBLn1
Capacity (veh/h)	116	569	663	-	-	770	-	234
HCM Lane V/C Ratio	0.202	0.004	0.032	-	-	0.017	-	0.041
HCM Control Delay (s)	43.7	11.4	10.6	-	-	9.8	-	21
HCM Lane LOS	E	B	B	-	-	A	-	C
HCM 95th %tile Q(veh)	0.7	0	0.1	-	-	0.1	-	0.1

Intersection	
Int Delay, s/veh	1.2

Movement	EBT	EBR	WBU	WBL	WBT	NBL	NBR
Lane Configurations							
Traffic Vol, veh/h	733	53	1	29	663	40	23
Future Vol, veh/h	733	53	1	29	663	40	23
Conflicting Peds, #/hr	0	1	1	0	0	0	4
Sign Control	Free	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	-	None	-	None
Storage Length	-	-	-	100	-	0	25
Veh in Median Storage, #	0	-	-	-	0	0	-
Grade, %	0	-	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2
Mvmt Flow	780	56	1	31	705	43	24

Major/Minor	Major1		Major2			Minor1	
Conflicting Flow All	0	0	836	837	0	1226	423
Stage 1	-	-	-	-	-	809	-
Stage 2	-	-	-	-	-	417	-
Critical Hdwy	-	-	6.44	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.52	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	423	793	-	171	579
Stage 1	-	-	-	-	-	398	-
Stage 2	-	-	-	-	-	633	-
Platoon blocked, %	-	-			-		
Mov Cap-1 Maneuver	-	-	768	768	-	164	577
Mov Cap-2 Maneuver	-	-	-	-	-	164	-
Stage 1	-	-	-	-	-	398	-
Stage 2	-	-	-	-	-	606	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.4	26.1
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	164	577	-	-	768	-
HCM Lane V/C Ratio	0.259	0.042	-	-	0.042	-
HCM Control Delay (s)	34.5	11.5	-	-	9.9	-
HCM Lane LOS	D	B	-	-	A	-
HCM 95th %tile Q(veh)	1	0.1	-	-	0.1	-

Movement	EBU	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations							
Traffic Volume (veh/h)	1	85	671	633	133	116	59
Future Volume (veh/h)	1	85	671	633	133	116	59
Initial Q (Qb), veh		0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00			1.00	1.00	1.00
Parking Bus, Adj		1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach			No	No		No	
Adj Sat Flow, veh/h/ln		1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h		89	699	659	0	121	0
Peak Hour Factor		0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %		2	2	2	2	2	2
Cap, veh/h		115	2161	1548		171	
Arrive On Green		0.06	0.61	0.44	0.00	0.10	0.00
Sat Flow, veh/h		1781	3647	3741	0	1781	1585
Grp Volume(v), veh/h		89	699	659	0	121	0
Grp Sat Flow(s),veh/h/ln		1781	1777	1777	0	1781	1585
Q Serve(g_s), s		1.8	3.6	4.8	0.0	2.4	0.0
Cycle Q Clear(g_c), s		1.8	3.6	4.8	0.0	2.4	0.0
Prop In Lane		1.00			0.00	1.00	1.00
Lane Grp Cap(c), veh/h		115	2161	1548		171	
V/C Ratio(X)		0.77	0.32	0.43		0.71	
Avail Cap(c_a), veh/h		623	3826	3826		959	
HCM Platoon Ratio		1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)		1.00	1.00	1.00	0.00	1.00	0.00
Uniform Delay (d), s/veh		17.1	3.6	7.3	0.0	16.3	0.0
Incr Delay (d2), s/veh		10.4	0.2	0.4	0.0	5.3	0.0
Initial Q Delay(d3),s/veh		0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln		0.9	0.5	1.1	0.0	1.1	0.0
Unsig. Movement Delay, s/veh							
LnGrp Delay(d),s/veh		27.5	3.7	7.7	0.0	21.6	0.0
LnGrp LOS		C	A	A		C	
Approach Vol, veh/h			788	659	A	121	A
Approach Delay, s/veh			6.4	7.7		21.6	
Approach LOS			A	A		C	

Timer - Assigned Phs		2		4	5	6	
Phs Duration (G+Y+Rc), s		28.6		8.6	6.4	22.2	
Change Period (Y+Rc), s		6.0		5.0	4.0	6.0	
Max Green Setting (Gmax), s		40.0		20.0	13.0	40.0	
Max Q Clear Time (g_c+I1), s		5.6		4.4	3.8	6.8	
Green Ext Time (p_c), s		10.1		0.2	0.1	9.0	

Intersection Summary			
HCM 6th Ctrl Delay			8.1
HCM 6th LOS			A

Notes
User approved ignoring U-Turning movement.
Unsignalized Delay for [WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	743	44	39	738	0	27	0	16	0	0	1
Future Vol, veh/h	0	743	44	39	738	0	27	0	16	0	0	1
Conflicting Peds, #/hr	0	0	4	0	0	4	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	85	-	-	0	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	782	46	41	777	0	28	0	17	0	0	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	832	0	0	1280	-	418	1254	1695	393
Stage 1	-	-	-	-	-	-	809	-	-	863	863	-
Stage 2	-	-	-	-	-	-	471	-	-	391	832	-
Critical Hdwy	-	-	-	4.14	-	-	7.54	-	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	-	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	-	-	6.54	5.54	-
Follow-up Hdwy	-	-	-	2.22	-	-	3.52	-	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	0	-	-	796	-	-	123	0	584	128	92	606
Stage 1	0	-	-	-	-	-	340	0	-	316	370	-
Stage 2	0	-	-	-	-	-	542	0	-	605	382	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	-	-	-	793	-	-	118	-	582	119	87	604
Mov Cap-2 Maneuver	-	-	-	-	-	-	118	-	-	119	87	-
Stage 1	-	-	-	-	-	-	340	-	-	316	350	-
Stage 2	-	-	-	-	-	-	513	-	-	587	381	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.5	34.2	11
HCM LOS			D	B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	168	-	-	793	-	-	604
HCM Lane V/C Ratio	0.269	-	-	0.052	-	-	0.002
HCM Control Delay (s)	34.2	-	-	9.8	-	-	11
HCM Lane LOS	D	-	-	A	-	-	B
HCM 95th %tile Q(veh)	1	-	-	0.2	-	-	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	614	145	13	644	133	11
Future Volume (veh/h)	614	145	13	644	133	11
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1900	1900
Adj Flow Rate, veh/h	646	0	14	678	140	0
Peak Hour Factor	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %	2	2	2	2	0	0
Cap, veh/h	1141		65	901	394	
Arrive On Green	0.32	0.00	0.04	0.48	0.22	0.00
Sat Flow, veh/h	3647	1585	1781	1870	1769	0
Grp Volume(v), veh/h	646	0	14	678	141	0
Grp Sat Flow(s),veh/h/ln	1777	1585	1781	1870	1782	0
Q Serve(g_s), s	4.9	0.0	0.2	9.5	2.1	0.0
Cycle Q Clear(g_c), s	4.9	0.0	0.2	9.5	2.1	0.0
Prop In Lane		1.00	1.00		0.99	0.00
Lane Grp Cap(c), veh/h	1141		65	901	397	
V/C Ratio(X)	0.57		0.22	0.75	0.36	
Avail Cap(c_a), veh/h	3868		1219	2036	1385	
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	9.1	0.0	15.0	6.8	10.5	0.0
Incr Delay (d2), s/veh	0.2	0.0	0.6	0.5	0.2	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.1	0.0	0.1	1.5	0.6	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	9.2	0.0	15.7	7.3	10.8	0.0
LnGrp LOS	A		B	A	B	
Approach Vol, veh/h	646	A		692	141	A
Approach Delay, s/veh	9.2			7.4	10.8	
Approach LOS	A			A	B	

Timer - Assigned Phs	1	2	6	8
Phs Duration (G+Y+Rc), s	5.2	15.8	21.0	11.2
Change Period (Y+Rc), s	4.0	5.5	5.5	4.0
Max Green Setting (Gmax), s	22.0	35.0	35.0	25.0
Max Q Clear Time (g_c+I1), s	2.2	6.9	11.5	4.1
Green Ext Time (p_c), s	0.0	2.8	2.8	0.2

Intersection Summary	
HCM 6th Ctrl Delay	8.5
HCM 6th LOS	A

Notes

User approved volume balancing among the lanes for turning movement.
Unsignalized Delay for [NBR, EBR] is excluded from calculations of the approach delay and intersection delay.

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	606	19	22	620	37	8
Future Volume (veh/h)	606	19	22	620	37	8
Initial Q (Qb), veh	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		0.98	1.00		1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1885	1885	1885	1885	1900	1900
Adj Flow Rate, veh/h	652	12	24	667	40	0
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	1	1	1	1	0	0
Cap, veh/h	1624	709	66	1207	103	0
Arrive On Green	0.45	0.45	0.04	0.64	0.06	0.00
Sat Flow, veh/h	3676	1564	1795	1885	1754	0
Grp Volume(v), veh/h	652	12	24	667	41	0
Grp Sat Flow(s),veh/h/ln	1791	1564	1795	1885	1797	0
Q Serve(g_s), s	3.2	0.1	0.3	5.2	0.6	0.0
Cycle Q Clear(g_c), s	3.2	0.1	0.3	5.2	0.6	0.0
Prop In Lane		1.00	1.00		0.98	0.00
Lane Grp Cap(c), veh/h	1624	709	66	1207	106	0
V/C Ratio(X)	0.40	0.02	0.36	0.55	0.39	0.00
Avail Cap(c_a), veh/h	5519	2410	1754	2905	1756	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	0.00
Uniform Delay (d), s/veh	4.9	4.0	12.5	2.7	12.1	0.0
Incr Delay (d2), s/veh	0.2	0.0	7.1	0.6	2.3	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	0.2	0.2	0.2	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d),s/veh	5.1	4.0	19.6	3.2	14.4	0.0
LnGrp LOS	A	A	B	A	B	A
Approach Vol, veh/h	664			691	41	
Approach Delay, s/veh	5.1			3.8	14.4	
Approach LOS	A			A	B	

Timer - Assigned Phs	1	2				6		8
Phs Duration (G+Y+Rc), s	5.0	16.1				21.0		5.6
Change Period (Y+Rc), s	4.0	4.0				4.0		4.0
Max Green Setting (Gmax), s	26.0	41.0				41.0		26.0
Max Q Clear Time (g_c+I1), s	2.3	5.2				7.2		2.6
Green Ext Time (p_c), s	0.1	6.8				7.2		0.1

Intersection Summary	
HCM 6th Ctrl Delay	4.7
HCM 6th LOS	A

Notes

User approved volume balancing among the lanes for turning movement.

Intersection	
Int Delay, s/veh	6.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	5	218	43	56	44	9
Future Vol, veh/h	5	218	43	56	44	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	82	82	82	82	82	82
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	6	266	52	68	54	11

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	232	60	65	0	-	0
Stage 1	60	-	-	-	-	-
Stage 2	172	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	756	1005	1537	-	-	-
Stage 1	963	-	-	-	-	-
Stage 2	858	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	730	1005	1537	-	-	-
Mov Cap-2 Maneuver	730	-	-	-	-	-
Stage 1	929	-	-	-	-	-
Stage 2	858	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	10	3.2	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1537	-	997	-	-
HCM Lane V/C Ratio	0.034	-	0.273	-	-
HCM Control Delay (s)	7.4	0	10	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	1.1	-	-

Intersection	
Int Delay, s/veh	4.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	265	2	3	6	88	79
Future Vol, veh/h	265	2	3	6	88	79
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	25
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	78	78	78	78	78	78
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	340	3	4	8	113	101

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	343	0	358	342
Stage 1	-	-	-	-	342	-
Stage 2	-	-	-	-	16	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1216	-	640	701
Stage 1	-	-	-	-	719	-
Stage 2	-	-	-	-	1007	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1216	-	638	701
Mov Cap-2 Maneuver	-	-	-	-	638	-
Stage 1	-	-	-	-	719	-
Stage 2	-	-	-	-	1004	-

Approach	EB	WB	NB
HCM Control Delay, s	0	2.7	11.5
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	638	701	-	-	1216	-
HCM Lane V/C Ratio	0.177	0.144	-	-	0.003	-
HCM Control Delay (s)	11.9	11	-	-	8	0
HCM Lane LOS	B	B	-	-	A	A
HCM 95th %tile Q(veh)	0.6	0.5	-	-	0	-

Intersection						
Int Delay, s/veh	4.5					

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	320	3	73	268	0	2
Future Vol, veh/h	320	3	73	268	0	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	30
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	348	3	79	291	0	2

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	370	0	-	0	924	225
Stage 1	-	-	-	-	225	-
Stage 2	-	-	-	-	699	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	1183	-	-	-	298	812
Stage 1	-	-	-	-	810	-
Stage 2	-	-	-	-	491	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1183	-	-	-	210	812
Mov Cap-2 Maneuver	-	-	-	-	210	-
Stage 1	-	-	-	-	571	-
Stage 2	-	-	-	-	491	-

Approach	EB	WB	SB
HCM Control Delay, s	9.2	0	9.4
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1183	-	-	-	-	812
HCM Lane V/C Ratio	0.294	-	-	-	-	0.003
HCM Control Delay (s)	9.3	0	-	-	0	9.4
HCM Lane LOS	A	A	-	-	A	A
HCM 95th %tile Q(veh)	1.2	-	-	-	-	0

Intersection 9 **Mace Blvd/Alhambra Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	252	253	100.5%	42.8	5.7	D
	Through	609	606	99.5%	14.1	3.1	B
	Right Turn						
	Subtotal	861	859	99.8%	22.8	3.0	C
SB	Left Turn						
	Through	651	652	100.2%	23.8	3.2	C
	Right Turn	23	23	100.0%	7.1	2.5	A
	Subtotal	674	675	100.2%	23.3	3.2	C
EB	Left Turn	12	11	92.5%	37.5	14.0	D
	Through						
	Right Turn	199	195	97.9%	2.1	0.2	A
	Subtotal	211	206	97.6%	4.1	1.1	A
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		1,746	1,740	99.7%	20.7	2.5	C

Intersection 10 **Second St/Fermi Place** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	14	12	87.1%	41.5	9.5	D
	Through	4	4	97.5%	23.6	26.7	C
	Right Turn	33	31	93.0%	7.8	2.4	A
	Subtotal	51	47	91.8%	19.7	5.3	B
SB	Left Turn	172	171	99.3%	22.9	4.6	C
	Through						
	Right Turn	75	74	98.5%	4.9	1.3	A
	Subtotal	247	245	99.1%	17.3	3.0	B
EB	Left Turn	88	87	98.4%	28.5	4.0	C
	Through	610	619	101.4%	13.2	2.0	B
	Right Turn	7	7	101.4%	12.2	9.8	B
	Subtotal	705	712	101.0%	15.2	2.0	B
WB	Left Turn	56	55	98.4%	29.6	6.8	C
	Through	270	269	99.5%	15.1	2.3	B
	Right Turn	120	121	100.9%	3.9	1.0	A
	Subtotal	446	445	99.7%	13.7	2.1	B
Total		1,449	1,449	100.0%	15.2	1.6	B

SimTraffic Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Aggie Research Campus
Existing Conditions
PM Peak Hour

Intersection 11 **Mace Blvd/Second St-Co Rd 32A** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	367	371	101.0%	31.6	2.8	C
	Through	716	712	99.5%	21.9	4.6	C
	Right Turn	32	31	98.1%	15.7	4.2	B
	Subtotal	1,115	1,114	99.9%	25.1	3.5	C
SB	Left Turn	98	98	100.0%	48.9	5.8	D
	Through	660	661	100.2%	39.2	3.9	D
	Right Turn	93	90	96.9%	9.5	1.7	A
	Subtotal	851	850	99.8%	37.2	3.1	D
EB	Left Turn	124	122	98.7%	35.0	5.0	C
	Through	113	119	105.0%	29.3	4.7	C
	Right Turn	632	632	100.0%	12.7	2.8	B
	Subtotal	869	873	100.4%	17.9	2.0	B
WB	Left Turn	19	19	98.4%	44.7	11.1	D
	Through	22	19	86.4%	41.2	10.2	D
	Right Turn	41	47	113.4%	11.7	8.4	B
	Subtotal	82	84	102.7%	26.8	9.0	C
Total		2,917	2,921	100.1%	26.6	1.6	C

Intersection 12 **Mace Park and Ride Entrance/Co Rd 32A** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	22	25	111.8%	5.5	1.2	A
	Through						
	Right Turn	12	13	110.8%	2.7	0.8	A
	Subtotal	34	38	111.5%	4.6	1.0	A
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through	225	229	102.0%	2.6	0.5	A
	Right Turn	14	15	105.7%	2.3	0.6	A
	Subtotal	239	244	102.2%	2.5	0.5	A
WB	Left Turn	2	1	60.0%	0.3	0.7	A
	Through	60	59	98.8%	0.2	0.2	A
	Right Turn						
	Subtotal	62	61	97.6%	0.2	0.2	A
Total		335	343	102.3%	2.4	0.4	A

SimTraffic Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Aggie Research Campus
Existing Conditions
PM Peak Hour

Intersection 13 **Mace Blvd/I-80 WB Ramps** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	253	233	92.0%	33.6	8.1	C
	Through	446	430	96.3%	7.0	2.0	A
	Right Turn						
	Subtotal	699	662	94.7%	15.9	3.3	B
SB	Left Turn						
	Through	1,092	1,057	96.8%	100.5	84.3	F
	Right Turn	219	222	101.5%	55.9	55.9	E
	Subtotal	1,311	1,279	97.6%	93.7	80.7	F
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	387	387	99.9%	30.0	7.5	C
	Through						
	Right Turn	669	682	102.0%	4.3	0.4	A
	Subtotal	1,056	1,069	101.2%	13.3	2.3	B
Total		3,066	3,010	98.2%	47.6	34.2	D

Intersection 14 **Mace Blvd/Chiles Rd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	24	21	87.5%	96.2	21.6	F
	Through	518	457	88.1%	121.9	24.1	F
	Right Turn	162	140	86.4%	101.5	26.0	F
	Subtotal	704	618	87.7%	117.0	24.1	F
SB	Left Turn	259	246	94.8%	91.7	42.1	F
	Through	430	425	98.8%	43.6	13.7	D
	Right Turn	289	283	97.9%	28.8	13.3	C
	Subtotal	978	953	97.5%	52.3	20.8	D
EB	Left Turn	339	310	91.3%	132.2	52.5	F
	Through	275	264	96.0%	25.7	5.1	C
	Right Turn	85	80	94.0%	2.1	0.5	A
	Subtotal	699	654	93.5%	77.7	31.0	E
WB	Left Turn	46	46	99.8%	36.2	8.4	D
	Through	56	54	95.9%	29.5	6.2	C
	Right Turn	263	261	99.2%	34.7	16.6	C
	Subtotal	365	361	98.8%	34.2	12.3	C
Total		2,746	2,585	94.1%	69.4	6.3	E

SimTraffic Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Aggie Research Campus
Existing Conditions
PM Peak Hour

Intersection 15 **I-80 EB Off-Ramp/Chiles Rd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn	175	170	97.0%	16.6	13.6	B
	Through						
	Right Turn	29	27	93.8%	3.1	0.7	A
	Subtotal	204	197	96.6%	14.3	10.5	B
EB	Left Turn						
	Through	524	490	93.6%	92.2	131.1	F
	Right Turn						
	Subtotal	524	490	93.6%	92.2	131.1	F
WB	Left Turn						
	Through	369	357	96.8%	8.5	1.3	A
	Right Turn						
	Subtotal	369	357	96.8%	8.5	1.3	A
Total		1,097	1,045	95.2%	41.4	42.9	D

Intersection 16 **Mace Blvd/Cowell Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	15	15	98.0%	144.0	95.2	F
	Through	358	328	91.7%	168.5	117.6	F
	Right Turn	27	24	87.4%	154.2	109.7	F
	Subtotal	400	367	91.7%	167.1	116.4	F
SB	Left Turn	142	141	99.4%	36.3	8.4	D
	Through	225	215	95.4%	16.4	4.5	B
	Right Turn	67	62	93.0%	6.6	1.5	A
	Subtotal	434	418	96.3%	21.8	4.5	C
EB	Left Turn	119	111	93.1%	53.2	32.2	D
	Through	102	100	98.1%	25.5	15.0	C
	Right Turn	24	25	105.4%	18.9	21.4	B
	Subtotal	245	236	96.4%	37.7	22.6	D
WB	Left Turn	21	20	94.8%	45.5	27.0	D
	Through	47	50	106.8%	42.9	19.4	D
	Right Turn	98	98	100.1%	36.4	21.6	D
	Subtotal	166	168	101.3%	38.7	19.1	D
Total		1,245	1,189	95.5%	67.5	34.0	E

SimTraffic Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Aggie Research Campus
Existing Conditions
PM Peak Hour

Intersection 17 **Mace Blvd/El Marcero Dr** **All-way Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	14	12	86.4%	30.4	54.0	D
	Through	329	313	95.2%	54.9	72.3	F
	Right Turn	9	10	108.9%	54.3	72.0	F
	Subtotal	352	335	95.2%	53.8	71.3	F
SB	Left Turn	99	95	96.4%	8.0	1.0	A
	Through	162	156	96.2%	10.1	1.0	B
	Right Turn	9	9	102.2%	5.2	2.0	A
	Subtotal	270	260	96.4%	9.2	1.0	A
EB	Left Turn	4	4	92.5%	2.2	2.8	A
	Through	7	8	114.3%	6.7	4.0	A
	Right Turn	10	11	106.0%	3.5	1.2	A
	Subtotal	21	22	106.2%	4.8	1.2	A
WB	Left Turn	7	7	100.0%	10.0	15.8	A
	Through	14	14	100.7%	15.1	18.8	C
	Right Turn	67	69	102.2%	20.3	26.4	C
	Subtotal	88	90	101.8%	17.8	21.7	C
Total		731	707	96.8%	28.1	30.0	D

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBU	SBL	SBT
Lane Configurations												
Traffic Volume (veh/h)	153	686	132	93	497	114	114	192	40	2	317	358
Future Volume (veh/h)	153	686	132	93	497	114	114	192	40	2	317	358
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0		0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.96		1.00	
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00
Work Zone On Approach		No			No			No				No
Adj Sat Flow, veh/h/ln	1870	1870	1870	1870	1870	1870	1870	1870	1870		1870	1870
Adj Flow Rate, veh/h	168	754	0	102	546	0	125	211	4		348	393
Peak Hour Factor	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91	0.91		0.91	0.91
Percent Heavy Veh, %	2	2	2	2	2	2	2	2	2		2	2
Cap, veh/h	214	1053		135	894		163	312	253		398	558
Arrive On Green	0.12	0.30	0.00	0.08	0.25	0.00	0.09	0.17	0.17		0.22	0.30
Sat Flow, veh/h	1781	3647	0	1781	3647	0	1781	1870	1519		1781	1870
Grp Volume(v), veh/h	168	754	0	102	546	0	125	211	4		348	393
Grp Sat Flow(s),veh/h/ln	1781	1777	0	1781	1777	0	1781	1870	1519		1781	1870
Q Serve(g_s), s	6.9	14.3	0.0	4.2	10.3	0.0	5.2	8.0	0.2		14.2	14.1
Cycle Q Clear(g_c), s	6.9	14.3	0.0	4.2	10.3	0.0	5.2	8.0	0.2		14.2	14.1
Prop In Lane	1.00		0.00	1.00		0.00	1.00		1.00		1.00	
Lane Grp Cap(c), veh/h	214	1053		135	894		163	312	253		398	558
V/C Ratio(X)	0.78	0.72		0.76	0.61		0.77	0.68	0.02		0.88	0.70
Avail Cap(c_a), veh/h	825	1834		707	1364		589	569	462		542	569
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00		1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00		1.00	1.00
Uniform Delay (d), s/veh	32.3	23.8	0.0	34.2	25.0	0.0	33.5	29.6	26.3		28.3	23.5
Incr Delay (d2), s/veh	6.2	0.9	0.0	8.3	0.7	0.0	7.3	2.6	0.0		11.5	3.8
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0
%ile BackOfQ(50%),veh/ln	3.2	5.7	0.0	2.1	4.1	0.0	2.5	3.7	0.1		7.1	6.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	38.5	24.7	0.0	42.6	25.7	0.0	40.9	32.1	26.3		39.9	27.4
LnGrp LOS	D	C		D	C		D	C	C		D	C
Approach Vol, veh/h		922	A		648	A		340				781
Approach Delay, s/veh		27.2			28.3			35.3				32.5
Approach LOS		C			C			D				C

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	13.1	24.0	10.9	27.5	9.7	27.4	20.9	17.6
Change Period (Y+Rc), s	4.0	5.0	4.0	5.0	4.0	5.0	4.0	5.0
Max Green Setting (Gmax), s	35.0	29.0	25.0	23.0	30.0	39.0	23.0	23.0
Max Q Clear Time (g_c+I1), s	8.9	12.3	7.2	16.1	6.2	16.3	16.2	10.0
Green Ext Time (p_c), s	0.4	3.2	0.3	1.4	0.2	5.3	0.6	0.9

Intersection Summary	
HCM 6th Ctrl Delay	30.0
HCM 6th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.
User approved ignoring U-Turning movement.
Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Movement	SBR
Lane Configurations	
Traffic Volume (veh/h)	225
Future Volume (veh/h)	225
Initial Q (Qb), veh	0
Ped-Bike Adj(A_pbT)	1.00
Parking Bus, Adj	1.00
Work Zone On Approach	
Adj Sat Flow, veh/h/ln	1870
Adj Flow Rate, veh/h	40
Peak Hour Factor	0.91
Percent Heavy Veh, %	2
Cap, veh/h	473
Arrive On Green	0.30
Sat Flow, veh/h	1585
Grp Volume(v), veh/h	40
Grp Sat Flow(s),veh/h/ln	1585
Q Serve(g_s), s	1.4
Cycle Q Clear(g_c), s	1.4
Prop In Lane	1.00
Lane Grp Cap(c), veh/h	473
V/C Ratio(X)	0.08
Avail Cap(c_a), veh/h	483
HCM Platoon Ratio	1.00
Upstream Filter(I)	1.00
Uniform Delay (d), s/veh	19.1
Incr Delay (d2), s/veh	0.1
Initial Q Delay(d3),s/veh	0.0
%ile BackOfQ(50%),veh/ln	0.5
Unsig. Movement Delay, s/veh	
LnGrp Delay(d),s/veh	19.2
LnGrp LOS	B
Approach Vol, veh/h	
Approach Delay, s/veh	
Approach LOS	
Timer - Assigned Phs	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	986	57	65	635	0	69	0	27	0	69	0
Future Volume (veh/h)	0	986	57	65	635	0	69	0	27	0	69	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	0	1870	0	1870	0	1870	0
Adj Flow Rate, veh/h	0	1072	62	71	690	0	75	0	29	0	75	0
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	0	2	2	2	2	0	2	0	2	0	2	0
Cap, veh/h	0	1400	81	108	1938	0	143	0	0	0	281	0
Arrive On Green	0.00	0.41	0.41	0.06	0.55	0.00	0.08	0.00	0.00	0.00	0.15	0.00
Sat Flow, veh/h	0	3508	197	1781	3647	0	1781	75		0	1870	0
Grp Volume(v), veh/h	0	558	576	71	690	0	75	26.6		0	75	0
Grp Sat Flow(s),veh/h/ln	0	1777	1835	1781	1777	0	1781	C		0	1870	0
Q Serve(g_s), s	0.0	14.5	14.5	2.1	5.9	0.0	2.2			0.0	1.9	0.0
Cycle Q Clear(g_c), s	0.0	14.5	14.5	2.1	5.9	0.0	2.2			0.0	1.9	0.0
Prop In Lane	0.00		0.11	1.00		0.00	1.00			0.00		0.00
Lane Grp Cap(c), veh/h	0	729	753	108	1938	0	143			0	281	0
V/C Ratio(X)	0.00	0.77	0.77	0.66	0.36	0.00	0.52			0.00	0.27	0.00
Avail Cap(c_a), veh/h	0	927	957	531	1938	0	863			0	732	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00			1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00	1.00			0.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	13.6	13.6	24.7	6.9	0.0	23.7			0.0	20.2	0.0
Incr Delay (d2), s/veh	0.0	2.9	2.9	6.5	0.1	0.0	2.9			0.0	0.5	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	5.2	5.4	1.0	1.6	0.0	1.0			0.0	0.8	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	16.6	16.5	31.2	7.0	0.0	26.6			0.0	20.7	0.0
LnGrp LOS	A	B	B	C	A	A	C			A	C	A
Approach Vol, veh/h		1134			761						75	
Approach Delay, s/veh		16.5			9.3						20.7	
Approach LOS		B			A						C	

Timer - Assigned Phs	1	2	3	4		6
Phs Duration (G+Y+Rc), s	7.3	26.0	8.3	12.1		33.3
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	16.0	28.0	26.0	21.0		26.0
Max Q Clear Time (g_c+I1), s	4.1	16.5	4.2	3.9		7.9
Green Ext Time (p_c), s	0.1	5.5	0.2	0.3		4.4

Intersection Summary	
HCM 6th Ctrl Delay	14.3
HCM 6th LOS	B

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	12	994	20	32	640	3	29	0	29	8	0	24
Future Vol, veh/h	12	994	20	32	640	3	29	0	29	8	0	24
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	Free	-	-	None	-	-	Stop
Storage Length	100	-	-	100	-	-	-	-	50	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	13	1080	22	35	696	3	32	0	32	9	0	26

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	696	0	0	1102	0	0	1535	1883	551	1332	1894	348
Stage 1	-	-	-	-	-	-	1117	1117	-	766	766	-
Stage 2	-	-	-	-	-	-	418	766	-	566	1128	-
Critical Hdwy	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	896	-	-	629	-	0	79	70	478	112	69	648
Stage 1	-	-	-	-	-	0	221	281	-	361	410	-
Stage 2	-	-	-	-	-	0	583	410	-	476	278	-
Platoon blocked, %		-	-		-							
Mov Cap-1 Maneuver	896	-	-	629	-	-	72	65	478	99	64	648
Mov Cap-2 Maneuver	-	-	-	-	-	-	72	65	-	99	64	-
Stage 1	-	-	-	-	-	-	218	277	-	356	387	-
Stage 2	-	-	-	-	-	-	528	387	-	438	274	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.1	0.5	51.2	15
HCM LOS			F	C

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	SBLn1
Capacity (veh/h)	72	478	896	-	-	629	-	396
HCM Lane V/C Ratio	0.438	0.066	0.015	-	-	0.055	-	0.088
HCM Control Delay (s)	89.3	13.1	9.1	-	-	11.1	-	15
HCM Lane LOS	F	B	A	-	-	B	-	C
HCM 95th %tile Q(veh)	1.7	0.2	0	-	-	0.2	-	0.3

Intersection	
Int Delay, s/veh	1.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1006	25	17	634	41	29
Future Vol, veh/h	1006	25	17	634	41	29
Conflicting Peds, #/hr	0	1	2	0	0	5
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	100	-	0	25
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1093	27	18	689	45	32

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	1122	0	1490	567
Stage 1	-	-	-	-	1109	-
Stage 2	-	-	-	-	381	-
Critical Hdwy	-	-	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	618	-	115	467
Stage 1	-	-	-	-	277	-
Stage 2	-	-	-	-	660	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	617	-	111	464
Mov Cap-2 Maneuver	-	-	-	-	111	-
Stage 1	-	-	-	-	276	-
Stage 2	-	-	-	-	641	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	39.3
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	111	464	-	-	617	-
HCM Lane V/C Ratio	0.401	0.068	-	-	0.03	-
HCM Control Delay (s)	57.7	13.3	-	-	11	-
HCM Lane LOS	F	B	-	-	B	-
HCM 95th %tile Q(veh)	1.7	0.2	-	-	0.1	-

Movement	EBU	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations							
Traffic Volume (veh/h)	1	40	994	519	72	188	131
Future Volume (veh/h)	1	40	994	519	72	188	131
Initial Q (Qb), veh		0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00			1.00	1.00	1.00
Parking Bus, Adj		1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach			No	No		No	
Adj Sat Flow, veh/h/ln		1856	1856	1856	1856	1856	1856
Adj Flow Rate, veh/h		46	1143	597	0	216	0
Peak Hour Factor		0.87	0.87	0.87	0.87	0.87	0.87
Percent Heavy Veh, %		3	3	3	3	3	3
Cap, veh/h		68	2115	1671		283	
Arrive On Green		0.04	0.60	0.47	0.00	0.16	0.00
Sat Flow, veh/h		1767	3618	3711	0	1767	1572
Grp Volume(v), veh/h		46	1143	597	0	216	0
Grp Sat Flow(s),veh/h/ln		1767	1763	1763	0	1767	1572
Q Serve(g_s), s		1.2	8.8	4.9	0.0	5.4	0.0
Cycle Q Clear(g_c), s		1.2	8.8	4.9	0.0	5.4	0.0
Prop In Lane		1.00			0.00	1.00	1.00
Lane Grp Cap(c), veh/h		68	2115	1671		283	
V/C Ratio(X)		0.67	0.54	0.36		0.76	
Avail Cap(c_a), veh/h		501	3077	3077		771	
HCM Platoon Ratio		1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)		1.00	1.00	1.00	0.00	1.00	0.00
Uniform Delay (d), s/veh		21.7	5.4	7.6	0.0	18.4	0.0
Incr Delay (d2), s/veh		10.9	0.5	0.3	0.0	4.3	0.0
Initial Q Delay(d3),s/veh		0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln		0.6	1.8	1.3	0.0	2.3	0.0
Unsig. Movement Delay, s/veh							
LnGrp Delay(d),s/veh		32.6	5.9	7.9	0.0	22.7	0.0
LnGrp LOS		C	A	A		C	
Approach Vol, veh/h			1189	597	A	216	A
Approach Delay, s/veh			6.9	7.9		22.7	
Approach LOS			A	A		C	

Timer - Assigned Phs		2		4	5	6	
Phs Duration (G+Y+Rc), s		33.5		12.3	5.8	27.7	
Change Period (Y+Rc), s		6.0		5.0	4.0	6.0	
Max Green Setting (Gmax), s		40.0		20.0	13.0	40.0	
Max Q Clear Time (g_c+I1), s		10.8		7.4	3.2	6.9	
Green Ext Time (p_c), s		16.7		0.5	0.0	8.0	

Intersection Summary			
HCM 6th Ctrl Delay			8.9
HCM 6th LOS			A

Notes

User approved ignoring U-Turning movement.

Unsignalized Delay for [WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	1156	26	18	564	0	25	0	63	0	0	2
Future Vol, veh/h	0	1156	26	18	564	0	25	0	63	0	0	2
Conflicting Peds, #/hr	0	0	7	0	0	7	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	85	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	90	90	90	90	90	90	90	90	90	90	90	90
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	0	1284	29	20	627	0	28	0	70	0	0	2

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	1320	0	0	1660	1980	664	1316	1994	321
Stage 1	-	-	-	-	-	-	1306	1306	-	674	674	-
Stage 2	-	-	-	-	-	-	354	674	-	642	1320	-
Critical Hdwy	-	-	-	4.16	-	-	7.56	6.56	6.96	7.56	6.56	6.96
Critical Hdwy Stg 1	-	-	-	-	-	-	6.56	5.56	-	6.56	5.56	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.56	5.56	-	6.56	5.56	-
Follow-up Hdwy	-	-	-	2.23	-	-	3.53	4.03	3.33	3.53	4.03	3.33
Pot Cap-1 Maneuver	0	-	-	514	-	-	63	60	401	114	59	672
Stage 1	0	-	-	-	-	-	167	226	-	408	449	-
Stage 2	0	-	-	-	-	-	633	449	-	427	223	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	-	-	-	511	-	-	61	57	399	91	56	668
Mov Cap-2 Maneuver	-	-	-	-	-	-	61	57	-	91	56	-
Stage 1	-	-	-	-	-	-	167	225	-	408	429	-
Stage 2	-	-	-	-	-	-	606	429	-	352	222	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.4	61.3	10.4
HCM LOS			F	B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	155	-	-	511	-	-	668
HCM Lane V/C Ratio	0.631	-	-	0.039	-	-	0.003
HCM Control Delay (s)	61.3	-	-	12.3	-	-	10.4
HCM Lane LOS	F	-	-	B	-	-	B
HCM 95th %tile Q(veh)	3.5	-	-	0.1	-	-	0

Intersection						
Int Delay, s/veh	7.9					

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	14	125	305	25	34	18
Future Vol, veh/h	14	125	305	25	34	18
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	81	81	81	81	81	81
Heavy Vehicles, %	18	18	18	18	18	18
Mvmt Flow	17	154	377	31	42	22

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	838	53	64	0	-	0
Stage 1	53	-	-	-	-	-
Stage 2	785	-	-	-	-	-
Critical Hdwy	6.58	6.38	4.28	-	-	-
Critical Hdwy Stg 1	5.58	-	-	-	-	-
Critical Hdwy Stg 2	5.58	-	-	-	-	-
Follow-up Hdwy	3.662	3.462	2.362	-	-	-
Pot Cap-1 Maneuver	316	971	1442	-	-	-
Stage 1	930	-	-	-	-	-
Stage 2	423	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	232	971	1442	-	-	-
Mov Cap-2 Maneuver	232	-	-	-	-	-
Stage 1	683	-	-	-	-	-
Stage 2	423	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	11.4	7.7	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1442	-	735	-	-
HCM Lane V/C Ratio	0.261	-	0.233	-	-
HCM Control Delay (s)	8.4	0	11.4	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	1.1	-	0.9	-	-

Intersection							
Int Delay, s/veh	9.3						

Movement	EBT	EBR	WBL	WBT	NBU	NBL	NBR
Lane Configurations							
Traffic Vol, veh/h	163	1	4	5	1	325	72
Future Vol, veh/h	163	1	4	5	1	325	72
Conflicting Peds, #/hr	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	None	-	None	-	-	None
Storage Length	-	-	-	-	-	0	25
Veh in Median Storage, #	0	-	-	0	-	0	-
Grade, %	0	-	-	0	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89
Heavy Vehicles, %	15	15	15	15	15	15	15
Mvmt Flow	183	1	4	6	1	365	81

Major/Minor	Major1		Major2		Minor1		
Conflicting Flow All	0	0	184	0	0	198	184
Stage 1	-	-	-	-	0	184	-
Stage 2	-	-	-	-	0	14	-
Critical Hdwy	-	-	4.25	-	-	6.55	6.35
Critical Hdwy Stg 1	-	-	-	-	-	5.55	-
Critical Hdwy Stg 2	-	-	-	-	-	5.55	-
Follow-up Hdwy	-	-	2.335	-	-	3.635	3.435
Pot Cap-1 Maneuver	-	-	1316	-	0	762	826
Stage 1	-	-	-	-	0	817	-
Stage 2	-	-	-	-	0	976	-
Platoon blocked, %	-	-		-	-		
Mov Cap-1 Maneuver	-	-	1316	-	0	760	826
Mov Cap-2 Maneuver	-	-	-	-	0	760	-
Stage 1	-	-	-	-	0	817	-
Stage 2	-	-	-	-	0	973	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3.4	13.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	760	826	-	-	1316	-
HCM Lane V/C Ratio	0.48	0.098	-	-	0.003	-
HCM Control Delay (s)	14	9.8	-	-	7.7	0
HCM Lane LOS	B	A	-	-	A	A
HCM 95th %tile Q(veh)	2.6	0.3	-	-	0	-

Intersection	
Int Delay, s/veh	3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	121	6	60	164	5	4
Future Vol, veh/h	121	6	60	164	5	4
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	30
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	6	6	6	6	6	6
Mvmt Flow	132	7	65	178	5	4

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	243	0	-	0	425	154
Stage 1	-	-	-	-	154	-
Stage 2	-	-	-	-	271	-
Critical Hdwy	4.16	-	-	-	6.46	6.26
Critical Hdwy Stg 1	-	-	-	-	5.46	-
Critical Hdwy Stg 2	-	-	-	-	5.46	-
Follow-up Hdwy	2.254	-	-	-	3.554	3.354
Pot Cap-1 Maneuver	1300	-	-	-	578	882
Stage 1	-	-	-	-	864	-
Stage 2	-	-	-	-	765	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1300	-	-	-	519	882
Mov Cap-2 Maneuver	-	-	-	-	519	-
Stage 1	-	-	-	-	776	-
Stage 2	-	-	-	-	765	-

Approach	EB	WB	SB
HCM Control Delay, s	7.7	0	10.7
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	1300	-	-	-	519	882
HCM Lane V/C Ratio	0.101	-	-	-	0.01	0.005
HCM Control Delay (s)	8.1	0	-	-	12	9.1
HCM Lane LOS	A	A	-	-	B	A
HCM 95th %tile Q(veh)	0.3	-	-	-	0	0

Intersection 9 **Mace Blvd/Alhambra Blvd-ARC Dwy 1** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	111	85	76.8%	80.0	13.8	E
	Through	620	499	80.4%	70.8	9.6	E
	Right Turn	350	287	82.1%	59.4	10.9	E
	Subtotal	1,081	871	80.6%	68.0	10.7	E
SB	Left Turn	200	161	80.6%	239.2	53.2	F
	Through	763	570	74.8%	265.3	23.4	F
	Right Turn	32	23	72.8%	209.2	57.1	F
	Subtotal	995	755	75.9%	259.1	14.9	F
EB	Left Turn	15	14	90.7%	97.4	56.7	F
	Through	212	212	100.1%	94.2	51.4	F
	Right Turn	400	381	95.2%	113.4	89.5	F
	Subtotal	627	607	96.8%	107.5	74.8	F
WB	Left Turn	182	93	50.9%	637.0	86.9	F
	Through	46	36	78.5%	160.5	127.8	F
	Right Turn	28	22	77.9%	146.4	158.0	F
	Subtotal	256	151	58.8%	482.3	137.8	F
Total		2,959	2,383	80.5%	159.4	20.0	F

Intersection 10 **Second St/Fermi Place** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	3	2	76.7%	5.0	11.9	A
	Through	1	1	70.0%	2.4	7.7	A
	Right Turn	14	15	105.0%	3.9	1.0	A
	Subtotal	18	18	98.3%	4.8	2.0	A
SB	Left Turn	36	34	95.0%	19.0	5.9	B
	Through						
	Right Turn	14	14	102.1%	4.7	3.8	A
	Subtotal	50	49	97.0%	15.0	4.6	B
EB	Left Turn	21	19	91.0%	17.5	5.8	B
	Through	308	301	97.8%	5.4	1.4	A
	Right Turn	10	9	90.0%	1.9	1.6	A
	Subtotal	339	329	97.2%	6.1	1.3	A
WB	Left Turn	82	66	80.2%	19.0	4.6	B
	Through	572	483	84.4%	5.5	1.6	A
	Right Turn	77	62	80.5%	0.9	0.4	A
	Subtotal	731	611	83.5%	6.5	1.5	A
Total		1,138	1,006	88.4%	6.8	1.5	A

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Intersection 11 **Mace Blvd/Second St-Co Rd 32A** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	544	449	82.5%	173.5	22.9	F
	Through	1,017	817	80.4%	184.3	40.8	F
	Right Turn	464	374	80.7%	171.3	36.5	F
	Subtotal	2,025	1,641	81.0%	178.6	34.1	F
SB	Left Turn	63	46	72.4%	160.5	8.6	F
	Through	1,162	871	74.9%	181.8	8.2	F
	Right Turn	112	86	76.8%	128.8	7.5	F
	Subtotal	1,337	1,003	75.0%	176.4	8.4	F
EB	Left Turn	53	45	84.7%	95.1	35.0	F
	Through	51	48	94.7%	46.6	13.0	D
	Right Turn	299	292	97.8%	6.2	1.0	A
	Subtotal	403	386	95.7%	22.8	6.4	C
WB	Left Turn	203	188	92.7%	160.5	82.4	F
	Through	58	58	99.5%	108.0	65.8	F
	Right Turn	14	13	95.0%	107.2	89.4	F
	Subtotal	275	259	94.3%	146.7	80.7	F
Total		4,040	3,288	81.4%	155.3	16.7	F

Intersection 211 **ARC Dwy 4-Mace Park and Ride Entrance/Co Rd 32A** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	14	14	99.3%	13.6	14.5	B
	Through						
	Right Turn	3	3	90.0%	2.2	2.6	A
	Subtotal	17	17	97.6%	12.8	14.8	B
SB	Left Turn	30	34	111.7%	17.0	12.5	C
	Through	2	2	85.0%	1.6	3.6	A
	Right Turn	108	101	93.1%	17.7	20.1	C
	Subtotal	140	136	96.9%	17.7	18.1	C
EB	Left Turn	231	180	78.0%	4.2	0.5	A
	Through	271	223	82.2%	2.3	0.4	A
	Right Turn	74	63	85.7%	1.5	0.4	A
	Subtotal	576	466	81.0%	2.9	0.3	A
WB	Left Turn	14	14	102.1%	3.2	1.5	A
	Through	153	151	98.8%	7.1	10.1	A
	Right Turn	50	54	108.8%	6.0	12.5	A
	Subtotal	217	220	101.3%	6.8	9.9	A
Total		950	839	88.3%	6.2	5.2	A

Intersection 13 **Mace Blvd/I-80 WB Ramps** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	413	323	78.2%	78.3	39.1	E
	Through	1,168	878	75.2%	119.1	62.1	F
	Right Turn						
	Subtotal	1,581	1,201	76.0%	108.7	56.1	F
SB	Left Turn						
	Through	1,311	1,065	81.2%	23.0	3.5	C
	Right Turn	353	282	79.8%	12.3	1.0	B
	Subtotal	1,664	1,347	80.9%	20.7	2.7	C
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	304	297	97.8%	53.8	43.9	D
	Through	3	2	80.0%	5.1	10.7	A
	Right Turn	857	821	95.8%	138.8	78.5	F
	Subtotal	1,164	1,121	96.3%	116.3	67.6	F
Total		4,409	3,669	83.2%	77.6	30.8	E

Intersection 14 **Mace Blvd/Chiles Rd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	9	9	98.9%	49.5	23.2	D
	Through	640	638	99.7%	46.2	19.8	D
	Right Turn	40	41	101.5%	27.7	19.8	C
	Subtotal	689	688	99.8%	45.2	19.6	D
SB	Left Turn	206	177	85.9%	39.0	8.5	D
	Through	315	280	89.0%	21.3	2.9	C
	Right Turn	258	231	89.5%	7.7	1.0	A
	Subtotal	779	688	88.3%	21.3	2.5	C
EB	Left Turn	929	502	54.0%	173.4	27.5	F
	Through	154	84	54.7%	32.1	9.4	C
	Right Turn	148	82	55.5%	2.2	0.3	A
	Subtotal	1,231	669	54.3%	133.5	21.5	F
WB	Left Turn	29	30	103.8%	47.5	25.8	D
	Through	90	95	105.4%	32.1	13.0	C
	Right Turn	320	326	102.0%	26.2	15.3	C
	Subtotal	439	451	102.8%	28.8	14.1	C
Total		3,138	2,496	79.5%	59.0	8.4	E

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Intersection 15 **I-80 EB Off-Ramp/Chiles Rd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn	739	423	57.2%	578.7	38.6	F
	Through						
	Right Turn	75	42	56.3%	498.1	68.9	F
	Subtotal	814	465	57.1%	570.1	37.6	F
EB	Left Turn						
	Through	492	245	49.8%	556.0	36.8	F
	Right Turn						
	Subtotal	492	245	49.8%	556.0	36.8	F
WB	Left Turn						
	Through	357	335	93.7%	14.6	2.0	B
	Right Turn						
	Subtotal	357	335	93.7%	14.6	2.0	B
Total		1,663	1,044	62.8%	383.0	16.8	F

Intersection 16 **Mace Blvd/Cowell Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	16	18	113.1%	34.7	15.7	C
	Through	305	308	100.9%	25.3	6.1	C
	Right Turn	61	63	103.8%	14.1	2.1	B
	Subtotal	382	389	101.9%	24.1	5.6	C
SB	Left Turn	98	80	81.5%	27.4	3.8	C
	Through	208	171	82.0%	13.8	3.6	B
	Right Turn	31	26	83.5%	3.0	0.7	A
	Subtotal	337	276	82.0%	16.6	3.4	B
EB	Left Turn	149	147	98.6%	28.1	9.4	C
	Through	96	95	98.6%	16.9	4.5	B
	Right Turn	12	11	94.2%	6.9	6.2	A
	Subtotal	257	253	98.4%	23.4	7.1	C
WB	Left Turn	31	31	100.3%	32.4	13.7	C
	Through	79	78	98.4%	25.2	6.3	C
	Right Turn	131	134	101.9%	15.2	6.7	B
	Subtotal	241	242	100.5%	20.5	6.1	C
Total		1,217	1,161	95.4%	21.5	4.5	C

Intersection 17 **Mace Blvd/El Marcero Dr** **All-way Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	11	10	92.7%	6.4	1.4	A
	Through	246	252	102.5%	9.2	1.2	A
	Right Turn	2	2	115.0%	3.6	3.2	A
	Subtotal	259	265	102.2%	9.0	1.1	A
SB	Left Turn	62	55	87.9%	7.7	1.4	A
	Through	178	150	84.3%	10.3	1.2	B
	Right Turn	11	10	91.8%	7.4	2.4	A
	Subtotal	251	215	85.5%	9.5	1.1	A
EB	Left Turn	31	29	92.3%	4.7	0.4	A
	Through	5	5	106.0%	3.9	2.8	A
	Right Turn	5	6	118.0%	3.3	1.8	A
	Subtotal	41	40	97.1%	4.7	0.2	A
WB	Left Turn	4	4	90.0%	3.8	3.5	A
	Through	11	9	85.5%	7.9	5.6	A
	Right Turn	105	108	102.9%	5.1	1.9	A
	Subtotal	120	121	100.8%	5.3	2.0	A
Total		671	640	95.4%	8.2	0.9	A

Intersection 7 **Alhambra Blvd/Covell Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	147	114	77.3%	17.4	3.7	B
	Through						
	Right Turn	50	40	79.8%	7.4	2.5	A
	Subtotal	197	154	78.0%	14.9	3.8	B
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through	928	914	98.5%	7.8	1.0	A
	Right Turn	291	296	101.8%	5.0	0.5	A
	Subtotal	1,219	1,211	99.3%	7.1	0.8	A
WB	Left Turn	30	24	78.7%	17.4	4.0	B
	Through	435	365	83.9%	8.6	1.3	A
	Right Turn						
	Subtotal	465	389	83.6%	9.2	1.3	A
Total		1,881	1,753	93.2%	8.3	0.8	A

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Intersection 8 **Harper Jr High Entrance/Covell Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	95	93	97.8%	22.8	6.8	C
	Through						
	Right Turn	8	9	117.5%	18.4	19.7	B
	Subtotal	103	102	99.3%	22.3	7.3	C
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through	851	806	94.7%	62.0	73.6	E
	Right Turn	127	122	96.0%	45.3	70.4	D
	Subtotal	978	928	94.9%	59.8	73.2	E
WB	Left Turn	165	135	81.8%	24.0	4.9	C
	Through	370	296	79.9%	20.6	4.2	C
	Right Turn						
	Subtotal	535	431	80.5%	21.7	3.5	C
Total		1,616	1,461	90.4%	44.8	45.4	D

Intersection 209 **Mace Blvd/ARC Dwy 2** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	563	454	80.7%	5.7	1.0	A
	Right Turn	100	82	81.5%	5.5	2.2	A
	Subtotal	663	536	80.8%	5.7	0.9	A
SB	Left Turn						
	Through	995	815	81.9%	101.3	10.0	F
	Right Turn						
	Subtotal	995	815	81.9%	101.3	10.0	F
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn						
	Through						
	Right Turn	10	12	119.0%	3.2	2.3	A
	Subtotal	10	12	119.0%	3.2	2.3	A
Total		1,668	1,362	81.7%	59.2	4.2	E

Intersection 210 **Mace Blvd/Co Rd 30B-ARC Dwy 3** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	525	426	81.2%	1.3	0.2	A
	Right Turn	48	40	82.9%	0.6	0.3	A
	Subtotal	573	466	81.4%	1.2	0.2	A
SB	Left Turn	71	60	83.8%	208.3	29.6	F
	Through	995	837	84.1%	229.5	22.8	F
	Right Turn						
	Subtotal	1,066	896	84.1%	228.1	22.5	F
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn						
	Through						
	Right Turn	10	9	89.0%	4.7	3.0	A
	Subtotal	10	9	89.0%	4.7	3.0	A
Total		1,649	1,371	83.2%	143.3	9.6	F

Intersection 212 **Project Dwy 5/Co Rd 32A** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn	37	35	93.8%	10.9	4.6	B
	Through						
	Right Turn	89	90	101.0%	4.9	1.7	A
	Subtotal	126	125	98.9%	6.5	2.0	A
EB	Left Turn	200	167	83.4%	5.1	0.7	A
	Through	104	91	87.4%	0.8	0.3	A
	Right Turn						
	Subtotal	304	258	84.8%	3.7	0.7	A
WB	Left Turn						
	Through	128	130	101.3%	2.1	0.9	A
	Right Turn	197	197	99.8%	1.1	0.3	A
	Subtotal	325	326	100.4%	1.5	0.5	A
Total		755	709	93.9%	3.1	0.6	A

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT
Lane Configurations												
Traffic Volume (veh/h)	1	321	745	174	100	719	285	180	319	42	202	289
Future Volume (veh/h)	1	321	745	174	100	719	285	180	319	42	202	289
Initial Q (Qb), veh		0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00		1.00	1.00		1.00	1.00		0.93	1.00	
Parking Bus, Adj		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach			No			No			No			No
Adj Sat Flow, veh/h/ln		1885	1885	1885	1885	1885	1885	1885	1885	1885	1885	1885
Adj Flow Rate, veh/h		338	784	0	105	757	0	189	336	9	213	304
Peak Hour Factor		0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95
Percent Heavy Veh, %		1	1	1	1	1	1	1	1	1	1	1
Cap, veh/h		381	1387		136	899		227	401	317	251	427
Arrive On Green		0.21	0.39	0.00	0.08	0.25	0.00	0.13	0.21	0.21	0.14	0.23
Sat Flow, veh/h		1795	3676	0	1795	3676	0	1795	1885	1490	1795	1885
Grp Volume(v), veh/h		338	784	0	105	757	0	189	336	9	213	304
Grp Sat Flow(s),veh/h/ln		1795	1791	0	1795	1791	0	1795	1885	1490	1795	1885
Q Serve(g_s), s		17.9	16.8	0.0	5.6	19.6	0.0	10.0	16.7	0.5	11.3	14.5
Cycle Q Clear(g_c), s		17.9	16.8	0.0	5.6	19.6	0.0	10.0	16.7	0.5	11.3	14.5
Prop In Lane		1.00		0.00	1.00		0.00	1.00		1.00	1.00	
Lane Grp Cap(c), veh/h		381	1387		136	899		227	401	317	251	427
V/C Ratio(X)		0.89	0.57		0.77	0.84		0.83	0.84	0.03	0.85	0.71
Avail Cap(c_a), veh/h		643	1429		551	1062		459	443	350	422	443
HCM Platoon Ratio		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)		1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh		37.4	23.5	0.0	44.4	34.8	0.0	41.7	36.9	30.5	41.0	34.9
Incr Delay (d2), s/veh		8.2	0.5	0.0	9.0	5.5	0.0	7.7	12.2	0.0	8.0	5.1
Initial Q Delay(d3),s/veh		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln		8.5	6.9	0.0	2.8	9.0	0.0	4.9	8.9	0.2	5.5	7.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh		45.6	24.0	0.0	53.3	40.3	0.0	49.3	49.1	30.5	49.0	40.0
LnGrp LOS		D	C		D	D		D	D	C	D	D
Approach Vol, veh/h			1122	A		862	A		534			703
Approach Delay, s/veh			30.5			41.9			48.9			41.2
Approach LOS			C			D			D			D

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	24.7	29.5	16.4	27.1	11.4	42.9	17.7	25.8
Change Period (Y+Rc), s	4.0	5.0	4.0	5.0	4.0	5.0	4.0	5.0
Max Green Setting (Gmax), s	35.0	29.0	25.0	23.0	30.0	39.0	23.0	23.0
Max Q Clear Time (g_c+I1), s	19.9	21.6	12.0	16.5	7.6	18.8	13.3	18.7
Green Ext Time (p_c), s	0.9	2.9	0.4	1.4	0.2	5.3	0.4	0.8

Intersection Summary	
HCM 6th Ctrl Delay	38.9
HCM 6th LOS	D

Notes

User approved pedestrian interval to be less than phase max green.
User approved ignoring U-Turning movement.
Unsignalized Delay for [EBR, WBR] is excluded from calculations of the approach delay and intersection delay.

Movement	SBR
Lane Configurations	
Traffic Volume (veh/h)	223
Future Volume (veh/h)	223
Initial Q (Qb), veh	0
Ped-Bike Adj(A_pbT)	1.00
Parking Bus, Adj	1.00
Work Zone On Approach	
Adj Sat Flow, veh/h/ln	1885
Adj Flow Rate, veh/h	186
Peak Hour Factor	0.95
Percent Heavy Veh, %	1
Cap, veh/h	361
Arrive On Green	0.23
Sat Flow, veh/h	1595
Grp Volume(v), veh/h	186
Grp Sat Flow(s),veh/h/ln	1595
Q Serve(g_s), s	10.0
Cycle Q Clear(g_c), s	10.0
Prop In Lane	1.00
Lane Grp Cap(c), veh/h	361
V/C Ratio(X)	0.52
Avail Cap(c_a), veh/h	375
HCM Platoon Ratio	1.00
Upstream Filter(I)	1.00
Uniform Delay (d), s/veh	33.1
Incr Delay (d2), s/veh	1.1
Initial Q Delay(d3),s/veh	0.0
%ile BackOfQ(50%),veh/ln	3.9
Unsig. Movement Delay, s/veh	
LnGrp Delay(d),s/veh	34.3
LnGrp LOS	C
Approach Vol, veh/h	
Approach Delay, s/veh	
Approach LOS	
Timer - Assigned Phs	

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	0	959	30	37	1064	0	40	0	11	0	3	0
Future Volume (veh/h)	0	959	30	37	1064	0	40	0	11	0	3	0
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00		0.98	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	0	1870	1870	1870	1870	0	1870	0	1870	0	1870	0
Adj Flow Rate, veh/h	0	1020	32	39	1132	0	43	0	12	0	3	0
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	0	2	2	2	2	0	2	0	2	0	2	0
Cap, veh/h	0	1353	42	73	1774	0	109	0	0	0	411	0
Arrive On Green	0.00	0.38	0.38	0.04	0.50	0.00	0.06	0.00	0.00	0.00	0.22	0.00
Sat Flow, veh/h	0	3608	110	1781	3647	0	1781	43		0	1870	0
Grp Volume(v), veh/h	0	516	536	39	1132	0	43	27.0		0	3	0
Grp Sat Flow(s),veh/h/ln	0	1777	1848	1781	1777	0	1781	C		0	1870	0
Q Serve(g_s), s	0.0	13.7	13.7	1.2	12.8	0.0	1.3			0.0	0.1	0.0
Cycle Q Clear(g_c), s	0.0	13.7	13.7	1.2	12.8	0.0	1.3			0.0	0.1	0.0
Prop In Lane	0.00		0.06	1.00		0.00	1.00			0.00		0.00
Lane Grp Cap(c), veh/h	0	684	711	73	1774	0	109			0	411	0
V/C Ratio(X)	0.00	0.75	0.75	0.54	0.64	0.00	0.39			0.00	0.01	0.00
Avail Cap(c_a), veh/h	0	911	948	522	1774	0	848			0	720	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00			1.00	1.00	1.00
Upstream Filter(I)	0.00	1.00	1.00	1.00	1.00	0.00	1.00			0.00	1.00	0.00
Uniform Delay (d), s/veh	0.0	14.5	14.5	25.7	10.0	0.0	24.7			0.0	16.6	0.0
Incr Delay (d2), s/veh	0.0	2.5	2.4	6.0	0.8	0.0	2.3			0.0	0.0	0.0
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0			0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	5.0	5.2	0.6	3.9	0.0	0.6			0.0	0.0	0.0
Unsig. Movement Delay, s/veh												
LnGrp Delay(d),s/veh	0.0	17.1	17.0	31.7	10.8	0.0	27.0			0.0	16.6	0.0
LnGrp LOS	A	B	B	C	B	A	C			A	B	A
Approach Vol, veh/h		1052			1171						3	
Approach Delay, s/veh		17.0			11.5						16.6	
Approach LOS		B			B						B	

Timer - Assigned Phs	1	2	3	4		6
Phs Duration (G+Y+Rc), s	6.2	25.0	7.3	16.0		31.2
Change Period (Y+Rc), s	4.0	4.0	4.0	4.0		4.0
Max Green Setting (Gmax), s	16.0	28.0	26.0	21.0		26.0
Max Q Clear Time (g_c+I1), s	3.2	15.7	3.3	2.1		14.8
Green Ext Time (p_c), s	0.0	5.3	0.1	0.0		5.8

Intersection Summary	
HCM 6th Ctrl Delay	14.4
HCM 6th LOS	B

Intersection	
Int Delay, s/veh	1.5

Movement	EBU	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations													
Traffic Vol, veh/h	8	12	923	39	16	1079	3	21	1	2	5	0	0
Future Vol, veh/h	8	12	923	39	16	1079	3	21	1	2	5	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	-	None	-	-	Free	-	-	None	-	-	Stop
Storage Length	-	100	-	-	100	-	-	-	-	50	-	-	-
Veh in Median Storage, #	-	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	9	13	982	41	17	1148	3	22	1	2	5	0	0

Major/Minor	Major1				Major2			Minor1			Minor2		
Conflicting Flow All	1148	1148	0	0	1023	0	0	1655	2229	512	1718	2249	574
Stage 1	-	-	-	-	-	-	-	1047	1047	-	1182	1182	-
Stage 2	-	-	-	-	-	-	-	608	1182	-	536	1067	-
Critical Hdwy	6.44	4.14	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	2.52	2.22	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	267	604	-	-	674	-	0	64	42	507	58	41	462
Stage 1	-	-	-	-	-	-	0	244	303	-	201	262	-
Stage 2	-	-	-	-	-	-	0	450	262	-	496	297	-
Platoon blocked, %			-	-		-							
Mov Cap-1 Maneuver	401	401	-	-	674	-	-	60	39	507	53	38	462
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	60	39	-	53	38	-
Stage 1	-	-	-	-	-	-	-	231	287	-	191	255	-
Stage 2	-	-	-	-	-	-	-	439	255	-	466	282	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.3	0.2	94.1	80.4
HCM LOS			F	F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	SBLn1
Capacity (veh/h)	59	507	401	-	-	674	-	53
HCM Lane V/C Ratio	0.397	0.004	0.053	-	-	0.025	-	0.1
HCM Control Delay (s)	101.5	12.1	14.5	-	-	10.5	-	80.4
HCM Lane LOS	F	B	B	-	-	B	-	F
HCM 95th %tile Q(veh)	1.5	0	0.2	-	-	0.1	-	0.3

Intersection	
Int Delay, s/veh	1.7

Movement	EBT	EBR	WBU	WBL	WBT	NBL	NBR
Lane Configurations							
Traffic Vol, veh/h	877	53	1	34	1058	40	23
Future Vol, veh/h	877	53	1	34	1058	40	23
Conflicting Peds, #/hr	0	1	1	0	0	0	4
Sign Control	Free	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	-	None	-	None
Storage Length	-	-	-	100	-	0	25
Veh in Median Storage, #	0	-	-	-	0	0	-
Grade, %	0	-	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94	94
Heavy Vehicles, %	2	2	2	2	2	2	2
Mvmt Flow	933	56	1	36	1126	43	24

Major/Minor	Major1		Major2			Minor1	
Conflicting Flow All	0	0	989	990	0	1599	500
Stage 1	-	-	-	-	-	962	-
Stage 2	-	-	-	-	-	637	-
Critical Hdwy	-	-	6.44	4.14	-	6.84	6.94
Critical Hdwy Stg 1	-	-	-	-	-	5.84	-
Critical Hdwy Stg 2	-	-	-	-	-	5.84	-
Follow-up Hdwy	-	-	2.52	2.22	-	3.52	3.32
Pot Cap-1 Maneuver	-	-	337	694	-	97	516
Stage 1	-	-	-	-	-	331	-
Stage 2	-	-	-	-	-	489	-
Platoon blocked, %	-	-			-		
Mov Cap-1 Maneuver	-	-	671	671	-	92	514
Mov Cap-2 Maneuver	-	-	-	-	-	92	-
Stage 1	-	-	-	-	-	331	-
Stage 2	-	-	-	-	-	462	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.3	51.6
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	92	514	-	-	671	-
HCM Lane V/C Ratio	0.463	0.048	-	-	0.055	-
HCM Control Delay (s)	74.1	12.4	-	-	10.7	-
HCM Lane LOS	F	B	-	-	B	-
HCM 95th %tile Q(veh)	2	0.1	-	-	0.2	-

HCM 6th Signalized Intersection Summary | Existing + Project
5: E Covell Blvd & Wright Blvd | PM Peak Hour

Movement	EBU	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations							
Traffic Volume (veh/h)	1	85	815	1033	161	119	59
Future Volume (veh/h)	1	85	815	1033	161	119	59
Initial Q (Qb), veh		0	0	0	0	0	0
Ped-Bike Adj(A_pbT)		1.00			1.00	1.00	1.00
Parking Bus, Adj		1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach			No	No		No	
Adj Sat Flow, veh/h/ln		1870	1870	1870	1870	1870	1870
Adj Flow Rate, veh/h		89	849	1076	0	124	0
Peak Hour Factor		0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh, %		2	2	2	2	2	2
Cap, veh/h		115	2437	1921		165	
Arrive On Green		0.06	0.69	0.54	0.00	0.09	0.00
Sat Flow, veh/h		1781	3647	3741	0	1781	1585
Grp Volume(v), veh/h		89	849	1076	0	124	0
Grp Sat Flow(s),veh/h/ln		1781	1777	1777	0	1781	1585
Q Serve(g_s), s		2.4	4.9	9.9	0.0	3.4	0.0
Cycle Q Clear(g_c), s		2.4	4.9	9.9	0.0	3.4	0.0
Prop In Lane		1.00			0.00	1.00	1.00
Lane Grp Cap(c), veh/h		115	2437	1921		165	
V/C Ratio(X)		0.77	0.35	0.56		0.75	
Avail Cap(c_a), veh/h		466	2863	2863		717	
HCM Platoon Ratio		1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)		1.00	1.00	1.00	0.00	1.00	0.00
Uniform Delay (d), s/veh		22.9	3.2	7.5	0.0	22.0	0.0
Incr Delay (d2), s/veh		10.3	0.2	0.6	0.0	6.7	0.0
Initial Q Delay(d3),s/veh		0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln		1.2	0.8	2.5	0.0	1.6	0.0
Unsig. Movement Delay, s/veh							
LnGrp Delay(d),s/veh		33.2	3.4	8.1	0.0	28.7	0.0
LnGrp LOS		C	A	A		C	
Approach Vol, veh/h			938	1076	A	124	A
Approach Delay, s/veh			6.2	8.1		28.7	
Approach LOS			A	A		C	

Timer - Assigned Phs		2		4	5	6	
Phs Duration (G+Y+Rc), s		40.1		9.6	7.2	32.8	
Change Period (Y+Rc), s		6.0		5.0	4.0	6.0	
Max Green Setting (Gmax), s		40.0		20.0	13.0	40.0	
Max Q Clear Time (g_c+I1), s		6.9		5.4	4.4	11.9	
Green Ext Time (p_c), s		12.6		0.2	0.1	14.9	

Intersection Summary							
HCM 6th Ctrl Delay			8.5				
HCM 6th LOS			A				

Notes

User approved ignoring U-Turning movement.

Unsignalized Delay for [WBR, SBR] is excluded from calculations of the approach delay and intersection delay.

Intersection	
Int Delay, s/veh	1.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	890	44	44	1166	0	27	0	16	0	0	1
Future Vol, veh/h	0	890	44	44	1166	0	27	0	16	0	0	1
Conflicting Peds, #/hr	0	0	4	0	0	4	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	85	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	95	95	95	95	95	95	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	0	937	46	46	1227	0	28	0	17	0	0	1

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	-	0	0	987	0	0	1670	2287	496	1792	2310	618
Stage 1	-	-	-	-	-	-	964	964	-	1323	1323	-
Stage 2	-	-	-	-	-	-	706	1323	-	469	987	-
Critical Hdwy	-	-	-	4.14	-	-	7.54	6.54	6.94	7.54	6.54	6.94
Critical Hdwy Stg 1	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.54	5.54	-	6.54	5.54	-
Follow-up Hdwy	-	-	-	2.22	-	-	3.52	4.02	3.32	3.52	4.02	3.32
Pot Cap-1 Maneuver	0	-	-	696	-	-	63	39	519	51	38	432
Stage 1	0	-	-	-	-	-	274	332	-	165	224	-
Stage 2	0	-	-	-	-	-	393	224	-	544	324	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	-	-	-	694	-	-	59	36	517	47	35	431
Mov Cap-2 Maneuver	-	-	-	-	-	-	59	36	-	47	35	-
Stage 1	-	-	-	-	-	-	274	331	-	165	209	-
Stage 2	-	-	-	-	-	-	366	209	-	526	323	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0	0.4	83	13.4
HCM LOS			F	B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	88	-	-	694	-	-	431
HCM Lane V/C Ratio	0.514	-	-	0.067	-	-	0.002
HCM Control Delay (s)	83	-	-	10.6	-	-	13.4
HCM Lane LOS	F	-	-	B	-	-	B
HCM 95th %tile Q(veh)	2.2	-	-	0.2	-	-	0

Intersection	
Int Delay, s/veh	22

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	5	714	128	56	44	9
Future Vol, veh/h	5	714	128	56	44	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	82	82	82	82	82	82
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	6	871	156	68	54	11

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	440	60	65	0	-	0
Stage 1	60	-	-	-	-	-
Stage 2	380	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	574	1005	1537	-	-	-
Stage 1	963	-	-	-	-	-
Stage 2	691	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	514	1005	1537	-	-	-
Mov Cap-2 Maneuver	514	-	-	-	-	-
Stage 1	862	-	-	-	-	-
Stage 2	691	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	27.9	5.3	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1537	-	998	-	-
HCM Lane V/C Ratio	0.102	-	0.879	-	-
HCM Control Delay (s)	7.6	0	27.9	-	-
HCM Lane LOS	A	A	D	-	-
HCM 95th %tile Q(veh)	0.3	-	12.1	-	-

Intersection	
Int Delay, s/veh	11.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	761	2	3	6	173	79
Future Vol, veh/h	761	2	3	6	173	79
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	25
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	78	78	78	78	78	78
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	976	3	4	8	222	101

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	979	0	994	978
Stage 1	-	-	-	-	978	-
Stage 2	-	-	-	-	16	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	705	-	272	304
Stage 1	-	-	-	-	364	-
Stage 2	-	-	-	-	1007	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	705	-	270	304
Mov Cap-2 Maneuver	-	-	-	-	270	-
Stage 1	-	-	-	-	364	-
Stage 2	-	-	-	-	1001	-

Approach	EB	WB	NB
HCM Control Delay, s	0	3.4	47.6
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	270	304	-	-	705	-
HCM Lane V/C Ratio	0.821	0.333	-	-	0.005	-
HCM Control Delay (s)	59	22.6	-	-	10.1	0
HCM Lane LOS	F	C	-	-	B	A
HCM 95th %tile Q(veh)	6.6	1.4	-	-	0	-

Intersection	
Int Delay, s/veh	3.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	320	3	73	764	0	2
Future Vol, veh/h	320	3	73	764	0	2
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	30
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	348	3	79	830	0	2

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	909	0	-	0	1193	494
Stage 1	-	-	-	-	494	-
Stage 2	-	-	-	-	699	-
Critical Hdwy	4.13	-	-	-	6.43	6.23
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	2.227	-	-	-	3.527	3.327
Pot Cap-1 Maneuver	745	-	-	-	206	573
Stage 1	-	-	-	-	611	-
Stage 2	-	-	-	-	491	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	745	-	-	-	110	573
Mov Cap-2 Maneuver	-	-	-	-	110	-
Stage 1	-	-	-	-	325	-
Stage 2	-	-	-	-	491	-

Approach	EB	WB	SB
HCM Control Delay, s	13.9	0	11.3
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	745	-	-	-	-	573
HCM Lane V/C Ratio	0.467	-	-	-	-	0.004
HCM Control Delay (s)	14	0	-	-	0	11.3
HCM Lane LOS	B	A	-	-	A	B
HCM 95th %tile Q(veh)	2.5	-	-	-	-	0

SimTraffic Post-Processor | **Aggie Research Campus**
Average Results from 10 Runs | **Existing + Project**
Volume and Delay by Movement | **PM Peak Hour**

Intersection 9 **Mace Blvd/Alhambra Blvd-ARC Dwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	258	227	87.9%	64.4	11.9	E
	Through	766	677	88.4%	43.2	6.5	D
	Right Turn	130	117	89.6%	37.3	7.7	D
	Subtotal	1,154	1,021	88.4%	47.1	6.2	D
SB	Left Turn	70	61	87.1%	379.7	204.4	F
	Through	706	594	84.2%	417.5	223.8	F
	Right Turn	23	18	79.1%	350.8	230.5	F
	Subtotal	799	673	84.3%	411.2	219.7	F
EB	Left Turn	12	9	78.3%	59.6	24.2	E
	Through	100	104	103.5%	52.5	11.5	D
	Right Turn	220	222	100.9%	28.4	39.0	C
	Subtotal	332	335	100.9%	38.9	26.4	D
WB	Left Turn	350	238	68.0%	538.4	208.0	F
	Through	143	121	84.7%	164.6	121.9	F
	Right Turn	150	125	83.1%	167.3	148.9	F
	Subtotal	643	484	75.2%	328.8	180.0	F
Total		2,928	2,513	85.8%	166.1	53.4	F

Intersection 10 **Second St/Fermi Place** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	14	12	85.7%	24.8	17.2	C
	Through	4	3	80.0%	17.5	26.5	B
	Right Turn	33	31	93.9%	26.3	30.8	C
	Subtotal	51	46	90.6%	28.5	22.8	C
SB	Left Turn	189	187	98.7%	54.9	52.0	D
	Through						
	Right Turn	75	72	95.3%	5.2	3.1	A
	Subtotal	264	258	97.8%	41.4	40.3	D
EB	Left Turn	88	83	93.8%	64.6	80.8	E
	Through	685	650	94.9%	77.4	129.2	E
	Right Turn	7	7	102.9%	104.3	181.7	F
	Subtotal	780	740	94.9%	77.4	127.3	E
WB	Left Turn	56	51	91.8%	55.9	48.3	E
	Through	336	310	92.2%	22.0	5.0	C
	Right Turn	126	115	91.1%	7.8	1.6	A
	Subtotal	518	476	91.9%	21.6	7.6	C
Total		1,613	1,520	94.3%	40.9	39.5	D

SimTraffic Post-Processor | **Aggie Research Campus**
Average Results from 10 Runs | **Existing + Project**
Volume and Delay by Movement | **PM Peak Hour**

Intersection 11 **Mace Blvd/Second St-Co Rd 32A** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	367	357	97.2%	100.5	66.1	F
	Through	916	861	94.0%	118.9	79.9	F
	Right Turn	133	132	99.2%	111.9	79.7	F
	Subtotal	1,416	1,350	95.4%	113.6	76.7	F
SB	Left Turn	161	133	82.4%	179.1	30.2	F
	Through	953	767	80.5%	196.1	39.9	F
	Right Turn	163	134	81.9%	129.3	29.1	F
	Subtotal	1,277	1,033	80.9%	185.3	37.3	F
EB	Left Turn	154	133	86.4%	268.8	189.8	F
	Through	175	166	95.0%	172.3	117.5	F
	Right Turn	632	580	91.8%	83.2	49.6	F
	Subtotal	961	879	91.5%	131.1	63.8	F
WB	Left Turn	425	212	49.9%	246.7	67.2	F
	Through	24	13	52.9%	183.7	63.1	F
	Right Turn	104	47	44.7%	188.8	62.1	F
	Subtotal	553	271	49.0%	235.9	66.5	F
Total		4,207	3,534	84.0%	145.2	39.9	F

Intersection 211 **ARC Dwy 4/Co Rd 32A** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	76	23	29.7%	590.6	191.7	F
	Through	1	1	50.0%	200.8	338.8	F
	Right Turn	26	7	26.2%	604.7	165.4	F
	Subtotal	103	30	29.0%	413.7	231.8	F
SB	Left Turn	180	20	11.1%	604.7	187.0	F
	Through						
	Right Turn	220	23	10.3%	611.5	154.3	F
	Subtotal	400	43	10.7%	608.5	164.9	F
EB	Left Turn	91	85	93.2%	5.3	1.8	A
	Through	349	317	90.9%	3.0	0.5	A
	Right Turn	25	25	98.0%	2.0	0.6	A
	Subtotal	465	427	91.7%	3.4	0.5	A
WB	Left Turn	4	3	75.0%	27.0	45.8	D
	Through	257	225	87.6%	152.6	110.2	F
	Right Turn	40	41	102.0%	155.0	117.8	F
	Subtotal	301	269	89.4%	152.6	111.0	F
Total		1,269	768	60.5%	106.8	21.0	F

Intersection 13 **Mace Blvd/I-80 WB Ramps** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	253	220	87.1%	41.3	6.5	D
	Through	620	574	92.5%	13.5	12.1	B
	Right Turn						
	Subtotal	873	794	90.9%	22.0	7.6	C
SB	Left Turn						
	Through	1,410	1,052	74.6%	144.6	58.4	F
	Right Turn	600	461	76.9%	80.6	39.5	F
	Subtotal	2,010	1,514	75.3%	125.6	53.7	F
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	387	395	102.1%	36.1	4.7	D
	Through						
	Right Turn	796	800	100.5%	33.4	59.2	C
	Subtotal	1,183	1,195	101.0%	34.2	39.3	C
Total		4,066	3,503	86.1%	70.4	25.5	E

Intersection 14 **Mace Blvd/Chiles Rd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	24	22	92.1%	91.6	15.0	F
	Through	546	484	88.7%	118.2	15.3	F
	Right Turn	162	141	86.8%	98.5	26.1	F
	Subtotal	732	647	88.4%	113.2	17.5	F
SB	Left Turn	282	238	84.5%	91.0	16.7	F
	Through	485	402	82.9%	47.8	4.1	D
	Right Turn	369	308	83.6%	35.2	3.7	D
	Subtotal	1,136	949	83.5%	54.3	6.0	D
EB	Left Turn	462	388	84.0%	155.1	27.3	F
	Through	275	237	86.1%	31.3	7.2	C
	Right Turn	85	74	86.6%	2.2	0.3	A
	Subtotal	822	699	85.0%	98.0	17.9	F
WB	Left Turn	46	47	101.3%	52.4	33.7	D
	Through	56	58	102.9%	35.5	14.1	D
	Right Turn	286	282	98.7%	54.7	50.4	D
	Subtotal	388	387	99.6%	52.3	44.2	D
Total		3,078	2,681	87.1%	77.1	8.6	E

SimTraffic Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Aggie Research Campus
Existing + Project
PM Peak Hour

Intersection 15 **I-80 EB Off-Ramp/Chiles Rd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn	226	216	95.7%	49.3	33.0	D
	Through						
	Right Turn	29	27	92.4%	4.4	2.3	A
	Subtotal	255	243	95.3%	45.7	31.3	D
EB	Left Turn						
	Through	596	485	81.4%	321.0	148.7	F
	Right Turn						
	Subtotal	596	485	81.4%	321.0	148.7	F
WB	Left Turn						
	Through	449	390	86.8%	12.1	2.3	B
	Right Turn						
	Subtotal	449	390	86.8%	12.1	2.3	B
Total		1,300	1,118	86.0%	131.3	53.9	F

Intersection 16 **Mace Blvd/Cowell Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	15	15	98.7%	143.3	107.3	F
	Through	369	347	93.9%	151.5	104.5	F
	Right Turn	27	24	89.3%	143.0	108.3	F
	Subtotal	411	386	93.8%	150.3	104.0	F
SB	Left Turn	150	127	84.4%	35.3	5.9	D
	Through	249	215	86.4%	17.7	3.7	B
	Right Turn	85	69	81.4%	6.8	2.0	A
	Subtotal	484	411	84.9%	21.5	2.3	C
EB	Left Turn	122	112	92.0%	51.8	25.2	D
	Through	102	103	100.9%	23.5	13.0	C
	Right Turn	24	26	107.1%	10.0	6.6	B
	Subtotal	248	241	97.1%	34.7	17.6	C
WB	Left Turn	21	18	86.2%	42.5	10.3	D
	Through	47	49	103.4%	40.2	30.0	D
	Right Turn	100	92	92.3%	39.6	28.4	D
	Subtotal	168	159	94.6%	41.0	24.9	D
Total		1,311	1,196	91.3%	65.1	33.1	E

Intersection 17 **Mace Blvd/El Marcero Dr** **All-way Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	14	13	92.9%	38.6	45.8	E
	Through	338	334	98.8%	58.1	59.1	F
	Right Turn	9	9	95.6%	51.4	61.8	F
	Subtotal	361	355	98.4%	57.3	58.4	F
SB	Left Turn	107	95	88.5%	9.0	1.9	A
	Through	170	150	88.2%	10.2	0.8	B
	Right Turn	17	14	80.6%	6.0	1.9	A
	Subtotal	294	258	87.9%	9.5	1.0	A
EB	Left Turn	5	4	88.0%	17.5	44.4	C
	Through	7	7	98.6%	2.7	2.9	A
	Right Turn	10	12	116.0%	3.4	1.3	A
	Subtotal	22	23	104.1%	6.0	7.2	A
WB	Left Turn	7	5	77.1%	19.3	27.4	C
	Through	14	14	99.3%	22.8	39.3	C
	Right Turn	68	67	98.1%	19.5	18.3	C
	Subtotal	89	86	96.6%	20.5	19.7	C
Total		766	723	94.3%	34.3	31.8	D

Intersection 7 **Alhambra Blvd/Covell Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	133	115	86.3%	16.0	2.7	B
	Through						
	Right Turn	11	9	84.5%	6.0	4.1	A
	Subtotal	144	124	86.2%	15.1	2.5	B
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through	691	693	100.3%	8.6	0.9	A
	Right Turn	215	216	100.2%	6.5	0.3	A
	Subtotal	906	908	100.3%	8.1	0.7	A
WB	Left Turn	17	15	88.2%	24.7	10.6	C
	Through	1,077	958	89.0%	18.9	5.9	B
	Right Turn						
	Subtotal	1,094	973	88.9%	19.0	5.8	B
Total		2,144	2,006	93.5%	13.8	3.1	B

SimTraffic Post-Processor **Aggie Research Campus**
Average Results from 10 Runs **Existing + Project**
Volume and Delay by Movement **PM Peak Hour**

Intersection 8 **Harper Jr High Dwy/Covell Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	37	36	95.9%	18.4	3.1	B
	Through						
	Right Turn	8	11	136.3%	4.4	3.7	A
	Subtotal	45	46	103.1%	15.0	2.6	B
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through	683	680	99.5%	6.4	0.6	A
	Right Turn	19	20	107.4%	3.8	2.5	A
	Subtotal	702	700	99.7%	6.3	0.6	A
WB	Left Turn	22	20	90.5%	30.7	7.2	C
	Through	1,057	934	88.3%	19.1	2.8	B
	Right Turn						
	Subtotal	1,079	954	88.4%	19.3	2.9	B
Total		1,826	1,700	93.1%	14.0	1.6	B

Intersection 209 **Mace Blvd/ARC Dwy 2** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	848	738	87.0%	7.3	1.4	A
	Right Turn	80	75	93.6%	6.0	3.0	A
	Subtotal	928	813	87.6%	7.2	1.3	A
SB	Left Turn						
	Through	799	726	90.8%	68.6	49.3	F
	Right Turn						
	Subtotal	799	726	90.8%	68.6	49.3	F
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn						
	Through						
	Right Turn	130	129	99.0%	12.6	2.8	B
	Subtotal	130	129	99.0%	12.6	2.8	B
Total		1,857	1,667	89.8%	32.0	18.9	D

Intersection 210 **Mace Blvd/Co Rd 30B-Arc Dwy 3** **Side-street Stop**

		Demand	Served Volume (vph)		Total Delay (sec/veh)		
Direction	Movement	Volume (vph)	Average	Percent	Average	Std. Dev.	LOS
NB	Left Turn						
	Through	958	847	88.4%	1.4	0.3	A
	Right Turn	20	20	101.5%	0.8	0.3	A
	Subtotal	978	867	88.7%	1.4	0.3	A
SB	Left Turn	24	23	94.6%	91.4	102.2	F
	Through	727	685	94.3%	103.1	110.9	F
	Right Turn						
	Subtotal	751	708	94.3%	102.8	110.6	F
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	72	58	80.8%	325.3	300.8	F
	Through						
	Right Turn	100	82	82.4%	306.1	292.0	F
	Subtotal	172	141	81.7%	315.7	295.1	F
Total		1,901	1,716	90.3%	54.8	49.6	F

Intersection 212 **ARC Dwy 5/Co Rd 32A** **Side-street Stop**

		Demand	Served Volume (vph)		Total Delay (sec/veh)		
Direction	Movement	Volume (vph)	Average	Percent	Average	Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn	243	207	85.1%	177.2	186.2	F
	Through						
	Right Turn	197	167	84.6%	156.0	162.9	F
	Subtotal	440	374	84.9%	167.7	175.3	F
EB	Left Turn	65	42	64.0%	2.6	0.5	A
	Through	490	304	62.0%	1.0	0.2	A
	Right Turn						
	Subtotal	555	345	62.2%	1.2	0.3	A
WB	Left Turn						
	Through	104	103	98.9%	19.7	23.1	C
	Right Turn	43	45	104.0%	11.5	14.1	B
	Subtotal	147	148	100.4%	17.7	21.0	C
Total		1,142	867	75.9%	55.8	43.4	F

Intersection 9 **Mace Blvd/Alhambra Blvd-ARC Dwy 1** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	111	107	96.5%	51.9	6.7	D
	Through	620	601	96.9%	15.8	5.6	B
	Right Turn	350	343	97.9%	7.7	2.3	A
	Subtotal	1,081	1,051	97.2%	17.1	4.1	B
SB	Left Turn	200	199	99.4%	77.5	22.4	E
	Through	763	770	100.9%	24.8	8.6	C
	Right Turn	32	36	111.3%	7.7	5.1	A
	Subtotal	995	1,004	100.9%	34.7	10.9	C
EB	Left Turn	15	13	89.3%	46.9	21.8	D
	Through	212	207	97.4%	46.2	4.8	D
	Right Turn	400	400	100.1%	5.4	1.1	A
	Subtotal	627	620	98.9%	19.8	1.9	B
WB	Left Turn	182	177	97.3%	61.5	38.0	E
	Through	46	45	97.4%	28.1	6.1	C
	Right Turn	28	29	101.8%	2.4	1.0	A
	Subtotal	256	250	97.8%	49.1	25.8	D
Total		2,959	2,925	98.9%	26.4	6.8	C

Intersection 10 **Second St/Fermi Place** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	3	3	83.3%	9.6	14.0	A
	Through	1	1	90.0%	0.0	0.0	A
	Right Turn	14	16	111.4%	4.0	0.8	A
	Subtotal	18	19	105.6%	7.2	5.9	A
SB	Left Turn	36	36	99.4%	22.9	7.0	C
	Through						
	Right Turn	14	15	105.0%	5.0	4.3	A
	Subtotal	50	51	101.0%	18.0	3.3	B
EB	Left Turn	21	21	99.5%	19.0	5.6	B
	Through	308	305	98.9%	5.1	1.3	A
	Right Turn	10	11	113.0%	2.1	2.3	A
	Subtotal	339	337	99.4%	5.9	1.4	A
WB	Left Turn	82	81	99.0%	19.1	3.7	B
	Through	572	567	99.1%	6.2	1.7	A
	Right Turn	77	77	99.7%	1.2	0.5	A
	Subtotal	731	725	99.2%	7.2	1.5	A
Total		1,138	1,131	99.4%	7.3	1.2	A

Intersection 11 **Mace Blvd/Second St-Co Rd 32A** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	544	540	99.3%	52.5	10.3	D
	Through	1,017	986	97.0%	58.2	18.5	E
	Right Turn	464	459	98.9%	92.9	29.0	F
	Subtotal	2,025	1,985	98.0%	64.7	16.5	E
SB	Left Turn	63	60	95.2%	74.1	21.6	E
	Through	1,162	1,158	99.6%	69.8	23.7	E
	Right Turn	112	113	101.2%	39.5	21.1	D
	Subtotal	1,337	1,331	99.6%	67.5	23.5	E
EB	Left Turn	53	50	95.1%	47.8	8.1	D
	Through	51	51	100.4%	46.6	13.4	D
	Right Turn	299	300	100.2%	11.6	3.2	B
	Subtotal	403	401	99.6%	20.4	3.0	C
WB	Left Turn	203	203	100.0%	45.0	4.3	D
	Through	58	55	95.3%	40.8	7.7	D
	Right Turn	14	13	95.0%	13.3	11.3	B
	Subtotal	275	272	98.7%	43.0	3.0	D
Total		4,040	3,989	98.7%	60.2	6.9	E

Intersection 12 **ARC Dwy 4-Mace Park and Ride Entrance/Co Rd 32A** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	14	14	97.1%	18.4	10.6	B
	Through						
	Right Turn	3	4	140.0%	1.5	2.5	A
	Subtotal	17	18	104.7%	16.2	10.8	B
SB	Left Turn	30	28	93.7%	23.8	7.1	C
	Through	2	2	110.0%	1.9	5.6	A
	Right Turn	108	108	99.6%	3.7	0.6	A
	Subtotal	140	138	98.5%	8.0	2.4	A
EB	Left Turn	231	229	99.2%	21.1	3.1	C
	Through	271	267	98.5%	9.7	1.7	A
	Right Turn	74	72	97.8%	5.3	1.5	A
	Subtotal	576	568	98.7%	14.0	2.1	B
WB	Left Turn	14	15	107.1%	40.4	7.5	D
	Through	153	149	97.4%	29.8	4.3	C
	Right Turn	50	49	98.2%	22.5	4.5	C
	Subtotal	217	213	98.2%	29.0	3.9	C
Total		950	937	98.7%	16.8	1.8	B

SimTraffic Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Aggie Research Campus
Existing Plus Project - Mitigated
AM Peak Hour

Intersection 13 **Mace Blvd/I-80 WB Ramps** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	413	407	98.6%	38.8	4.9	D
	Through	1,168	1,141	97.7%	22.9	15.8	C
	Right Turn						
	Subtotal	1,581	1,549	97.9%	27.3	12.1	C
SB	Left Turn						
	Through	1,311	1,288	98.3%	91.8	41.0	F
	Right Turn	353	350	99.0%	18.0	13.2	B
	Subtotal	1,664	1,638	98.4%	76.2	35.2	E
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	304	291	95.8%	41.1	19.3	D
	Through	3	2	60.0%	7.4	15.7	A
	Right Turn	857	843	98.3%	53.6	78.0	D
	Subtotal	1,164	1,136	97.6%	50.7	62.9	D
Total		4,409	4,322	98.0%	51.1	19.3	D

Intersection 14 **Mace Blvd/Chiles Rd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	9	9	95.6%	100.7	26.1	F
	Through	640	622	97.2%	86.8	6.2	F
	Right Turn	40	39	97.5%	62.8	11.5	E
	Subtotal	689	669	97.2%	85.8	6.0	F
SB	Left Turn	206	195	94.5%	110.4	46.6	F
	Through	315	304	96.3%	41.3	7.2	D
	Right Turn	258	248	96.0%	15.6	4.1	B
	Subtotal	779	746	95.8%	51.7	17.0	D
EB	Left Turn	929	914	98.4%	36.5	4.0	D
	Through	154	149	96.9%	38.9	6.5	D
	Right Turn	148	151	102.2%	1.8	0.1	A
	Subtotal	1,231	1,214	98.6%	32.3	3.3	C
WB	Left Turn	29	27	91.7%	38.6	12.9	D
	Through	90	88	97.6%	45.5	6.1	D
	Right Turn	327	328	100.4%	29.3	3.7	C
	Subtotal	446	443	99.3%	32.9	2.8	C
Total		3,145	3,072	97.7%	49.7	4.5	D

SimTraffic Post-Processor | **Aggie Research Campus**
Average Results from 10 Runs | **Existing Plus Project - Mitigated**
Volume and Delay by Movement | **AM Peak Hour**

Intersection 15 **I-80 EB Off-Ramp/Chiles Rd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn	739	727	98.4%	14.3	1.7	B
	Through						
	Right Turn	75	85	113.5%	8.9	1.3	A
	Subtotal	814	812	99.8%	13.8	1.6	B
EB	Left Turn						
	Through	492	485	98.5%	42.4	11.7	D
	Right Turn						
	Subtotal	492	485	98.5%	42.4	11.7	D
WB	Left Turn						
	Through	357	344	96.4%	17.5	3.5	B
	Right Turn						
	Subtotal	357	344	96.4%	17.5	3.5	B
Total		1,663	1,641	98.7%	23.0	3.9	C

Intersection 16 **Mace Blvd/Cowell Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	16	17	106.3%	48.1	28.2	D
	Through	305	308	101.0%	70.0	49.9	E
	Right Turn	61	64	104.8%	62.6	50.1	E
	Subtotal	382	389	101.8%	67.7	48.1	E
SB	Left Turn	98	95	97.1%	35.2	5.7	D
	Through	208	202	97.2%	14.1	3.3	B
	Right Turn	31	31	101.0%	3.6	2.9	A
	Subtotal	337	329	97.5%	19.9	3.8	B
EB	Left Turn	149	149	100.1%	34.9	10.3	C
	Through	96	100	103.9%	20.4	4.1	C
	Right Turn	12	13	111.7%	16.0	11.6	B
	Subtotal	257	262	102.0%	28.8	7.3	C
WB	Left Turn	31	33	105.8%	38.6	18.4	D
	Through	79	81	102.8%	31.7	13.8	C
	Right Turn	131	136	103.5%	21.5	10.6	C
	Subtotal	241	250	103.6%	27.0	11.7	C
Total		1,217	1,229	101.0%	38.4	18.3	D

SimTraffic Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Aggie Research Campus
Existing Plus Project - Mitigated
AM Peak Hour

Intersection 17 **Mace Blvd/El Marcero Dr** **All-way Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	11	12	109.1%	5.9	0.5	A
	Through	246	248	100.8%	11.1	6.2	B
	Right Turn	2	1	70.0%	1.3	1.6	A
	Subtotal	259	261	100.9%	10.8	6.1	B
SB	Left Turn	62	62	100.2%	8.3	0.6	A
	Through	178	176	98.9%	10.6	1.0	B
	Right Turn	11	10	87.3%	7.1	2.6	A
	Subtotal	251	248	98.7%	9.9	0.8	A
EB	Left Turn	31	32	102.9%	5.8	3.1	A
	Through	5	4	88.0%	3.5	4.4	A
	Right Turn	5	6	112.0%	2.1	1.7	A
	Subtotal	41	42	102.2%	5.7	3.0	A
WB	Left Turn	4	4	87.5%	4.7	3.0	A
	Through	11	12	110.0%	7.7	8.8	A
	Right Turn	105	109	103.4%	6.1	5.5	A
	Subtotal	120	124	103.5%	6.2	5.5	A
Total		671	675	100.6%	9.5	3.7	A

Intersection 7 **Alhambra Blvd/Covell Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	147	143	97.0%	17.1	2.5	B
	Through						
	Right Turn	50	51	102.2%	7.9	2.2	A
	Subtotal	197	194	98.3%	15.1	2.1	B
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through	928	936	100.8%	9.0	1.4	A
	Right Turn	291	293	100.8%	5.3	0.2	A
	Subtotal	1,219	1,229	100.8%	8.1	1.0	A
WB	Left Turn	30	27	88.3%	23.5	4.5	C
	Through	435	429	98.5%	10.1	1.2	B
	Right Turn						
	Subtotal	465	455	97.9%	10.9	1.2	B
Total		1,881	1,878	99.8%	9.5	0.9	A

Intersection 8 **Harper Jr High Entrance/Covell Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	95	99	103.8%	22.3	3.5	C
	Through						
	Right Turn	8	11	132.5%	11.3	16.7	B
	Subtotal	103	109	106.0%	21.8	3.9	C
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through	851	852	100.1%	12.8	1.2	B
	Right Turn	127	134	105.5%	9.1	1.5	A
	Subtotal	978	986	100.8%	12.3	1.2	B
WB	Left Turn	165	158	95.6%	27.2	3.7	C
	Through	370	357	96.5%	23.8	5.5	C
	Right Turn						
	Subtotal	535	515	96.2%	24.9	3.6	C
Total		1,616	1,610	99.6%	16.8	0.9	B

Intersection 209 **Mace Blvd/ARC Dwy 2** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	563	543	96.4%	3.6	0.6	A
	Right Turn	100	99	99.0%	4.2	1.6	A
	Subtotal	663	642	96.8%	3.7	0.7	A
SB	Left Turn						
	Through	995	1,005	101.0%	2.5	0.3	A
	Right Turn						
	Subtotal	995	1,005	101.0%	2.5	0.3	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn						
	Through						
	Right Turn	10	9	89.0%	4.1	2.8	A
	Subtotal	10	9	89.0%	4.1	2.8	A
Total		1,668	1,656	99.3%	3.0	0.4	A

Intersection 210 **Mace Blvd/Co Rd 30B-ARC Dwy 3** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	525	504	96.0%	22.4	2.2	C
	Right Turn	48	46	95.6%	18.3	5.2	B
	Subtotal	573	550	95.9%	22.1	2.3	C
SB	Left Turn	71	74	103.7%	31.3	7.3	C
	Through	995	1,007	101.2%	14.8	1.6	B
	Right Turn						
	Subtotal	1,066	1,080	101.3%	15.8	1.6	B
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn						
	Through						
	Right Turn	10	12	116.0%	3.2	2.1	A
	Subtotal	10	12	116.0%	3.2	2.1	A
Total		1,649	1,642	99.5%	17.9	1.4	B

Intersection 212 **Project Dwy 5/Co Rd 32A** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn	37	37	100.5%	11.5	3.7	B
	Through						
	Right Turn	89	86	96.4%	4.7	0.8	A
	Subtotal	126	123	97.6%	6.8	1.3	A
EB	Left Turn	200	195	97.5%	6.2	1.2	A
	Through	104	103	98.8%	1.9	0.5	A
	Right Turn						
	Subtotal	304	298	97.9%	4.7	1.0	A
WB	Left Turn						
	Through	128	127	99.1%	2.1	0.6	A
	Right Turn	197	198	100.4%	1.1	0.3	A
	Subtotal	325	325	99.9%	1.5	0.4	A
Total		755	745	98.7%	3.6	0.5	A

SimTraffic Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Aggie Research Campus
Existing + Project - Mitigated
PM Peak Hour

Intersection 9 **Mace Blvd/Alhambra Blvd-ARC Dwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	258	256	99.1%	37.0	8.2	D
	Through	766	753	98.3%	17.9	5.5	B
	Right Turn	130	127	97.8%	6.5	1.7	A
	Subtotal	1,154	1,136	98.4%	21.1	3.0	C
SB	Left Turn	70	69	99.1%	64.4	28.0	E
	Through	706	691	97.8%	74.6	48.9	E
	Right Turn	23	23	99.1%	22.6	30.1	C
	Subtotal	799	783	98.0%	72.0	46.2	E
EB	Left Turn	12	10	80.0%	40.1	30.8	D
	Through	100	101	100.5%	45.7	6.8	D
	Right Turn	220	228	103.6%	5.3	1.3	A
	Subtotal	332	338	101.8%	18.0	2.6	B
WB	Left Turn	350	318	90.7%	172.3	131.4	F
	Through	143	140	97.8%	31.7	3.0	C
	Right Turn	150	155	103.3%	10.2	3.4	B
	Subtotal	643	612	95.2%	91.3	51.8	F
Total		2,928	2,869	98.0%	48.8	16.7	D

Intersection 10 **Second St/Fermi Place** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	14	12	87.1%	38.0	18.3	D
	Through	4	4	110.0%	34.5	28.1	C
	Right Turn	33	32	96.4%	11.7	5.0	B
	Subtotal	51	48	94.9%	24.1	8.2	C
SB	Left Turn	189	186	98.5%	24.2	4.4	C
	Through						
	Right Turn	75	77	103.1%	5.2	1.6	A
	Subtotal	264	263	99.8%	18.0	3.0	B
EB	Left Turn	88	85	96.8%	33.3	4.9	C
	Through	685	676	98.7%	14.5	3.3	B
	Right Turn	7	8	112.9%	8.6	14.1	A
	Subtotal	780	769	98.6%	16.5	3.0	B
WB	Left Turn	56	52	93.2%	39.3	6.9	D
	Through	336	329	97.9%	21.0	4.0	C
	Right Turn	126	123	97.3%	8.5	1.2	A
	Subtotal	518	504	97.2%	20.0	3.2	B
Total		1,613	1,585	98.2%	18.1	2.3	B

SimTraffic Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Aggie Research Campus
Existing + Project - Mitigated
PM Peak Hour

Intersection 11 **Mace Blvd/Second St-Co Rd 32A** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	367	353	96.2%	56.5	16.9	E
	Through	916	910	99.3%	28.0	2.7	C
	Right Turn	133	130	97.5%	8.5	1.2	A
	Subtotal	1,416	1,392	98.3%	33.8	6.4	C
SB	Left Turn	161	151	93.7%	140.5	15.7	F
	Through	953	905	95.0%	126.6	24.5	F
	Right Turn	163	157	96.4%	79.8	20.7	E
	Subtotal	1,277	1,213	95.0%	122.4	21.4	F
EB	Left Turn	154	150	97.3%	39.9	6.9	D
	Through	175	169	96.7%	41.1	4.6	D
	Right Turn	632	623	98.6%	5.9	0.5	A
	Subtotal	961	942	98.0%	17.4	1.5	B
WB	Left Turn	425	408	96.0%	140.2	68.1	F
	Through	24	26	106.3%	49.0	9.8	D
	Right Turn	104	100	95.7%	21.6	7.8	C
	Subtotal	553	533	96.4%	116.6	55.8	F
Total		4,207	4,081	97.0%	67.4	11.2	E

Intersection 12 **ARC Dwy 4/Co Rd 32A** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	76	74	97.5%	40.1	57.1	E
	Through	1	1	120.0%	0.2	0.6	A
	Right Turn	26	29	111.9%	6.1	2.8	A
	Subtotal	103	104	101.4%	30.3	39.1	D
SB	Left Turn	180	183	101.6%	22.5	4.3	C
	Through						
	Right Turn	220	216	98.3%	5.5	2.7	A
	Subtotal	400	399	99.8%	13.2	3.6	B
EB	Left Turn	91	84	91.8%	31.8	7.7	D
	Through	349	339	97.1%	13.5	1.6	B
	Right Turn	25	25	100.8%	10.4	5.3	B
	Subtotal	465	448	96.3%	16.9	2.5	C
WB	Left Turn	4	4	90.0%	25.8	19.3	D
	Through	257	252	97.9%	41.4	80.6	E
	Right Turn	40	40	99.5%	31.1	64.2	D
	Subtotal	301	295	98.0%	40.2	78.2	E
Total		1,269	1,246	98.2%	22.0	22.2	C

SimTraffic Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Aggie Research Campus
Existing + Project - Mitigated
PM Peak Hour

Intersection 13 **Mace Blvd/I-80 WB Ramps** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	253	245	96.9%	34.4	4.5	C
	Through	620	607	97.9%	7.4	1.0	A
	Right Turn						
	Subtotal	873	852	97.6%	15.2	1.5	B
SB	Left Turn						
	Through	1,410	1,330	94.3%	75.1	47.2	E
	Right Turn	600	586	97.7%	36.0	27.7	D
	Subtotal	2,010	1,915	95.3%	63.6	41.9	E
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	387	381	98.3%	30.3	2.5	C
	Through						
	Right Turn	796	785	98.6%	5.2	0.4	A
	Subtotal	1,183	1,166	98.5%	13.7	1.4	B
Total		4,066	3,933	96.7%	38.2	20.0	D

Intersection 14 **Mace Blvd/Chiles Rd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	24	20	82.1%	85.2	13.4	F
	Through	546	549	100.6%	78.9	9.9	E
	Right Turn	162	159	98.0%	54.4	10.3	D
	Subtotal	732	728	99.4%	73.9	10.1	E
SB	Left Turn	282	259	91.7%	140.6	44.4	F
	Through	485	477	98.4%	50.3	14.4	D
	Right Turn	369	358	96.9%	20.4	11.4	C
	Subtotal	1,136	1,093	96.2%	62.6	21.1	E
EB	Left Turn	462	438	94.8%	56.8	3.7	E
	Through	275	271	98.7%	80.2	7.3	F
	Right Turn	85	85	99.9%	2.4	0.3	A
	Subtotal	822	794	96.6%	59.2	4.6	E
WB	Left Turn	46	43	94.3%	34.5	8.4	C
	Through	56	56	99.5%	36.1	7.4	D
	Right Turn	299	297	99.2%	14.7	5.0	B
	Subtotal	401	396	98.7%	20.9	3.5	C
Total		3,091	3,011	97.4%	58.8	8.1	E

SimTraffic Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Aggie Research Campus
Existing + Project - Mitigated
PM Peak Hour

Intersection 15 **I-80 EB Off-Ramp/Chiles Rd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn	226	220	97.2%	20.7	10.4	C
	Through						
	Right Turn	29	28	96.6%	3.6	1.7	A
	Subtotal	255	248	97.1%	18.7	9.4	B
EB	Left Turn						
	Through	596	576	96.6%	133.2	87.8	F
	Right Turn						
	Subtotal	596	576	96.6%	133.2	87.8	F
WB	Left Turn						
	Through	449	433	96.3%	10.8	1.8	B
	Right Turn						
	Subtotal	449	433	96.3%	10.8	1.8	B
Total		1,300	1,256	96.6%	70.8	43.0	E

Intersection 16 **Mace Blvd/Cowell Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	15	17	112.7%	58.1	41.4	E
	Through	369	356	96.6%	51.0	41.1	D
	Right Turn	27	25	92.2%	46.5	48.4	D
	Subtotal	411	398	96.9%	51.2	41.5	D
SB	Left Turn	150	148	98.3%	36.3	6.0	D
	Through	249	237	95.3%	16.4	3.0	B
	Right Turn	85	85	100.5%	8.1	1.9	A
	Subtotal	484	470	97.1%	21.1	3.3	C
EB	Left Turn	122	126	103.4%	32.8	16.6	C
	Through	102	100	98.2%	23.1	15.4	C
	Right Turn	24	23	97.5%	18.1	32.0	B
	Subtotal	248	250	100.7%	27.4	17.6	C
WB	Left Turn	21	21	98.1%	31.0	12.5	C
	Through	47	46	97.0%	28.7	10.7	C
	Right Turn	100	104	103.5%	17.2	4.9	B
	Subtotal	168	170	101.0%	21.8	4.5	C
Total		1,311	1,288	98.2%	32.6	16.8	C

SimTraffic Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Aggie Research Campus
Existing + Project - Mitigated
PM Peak Hour

Intersection 17 **Mace Blvd/El Marcero Dr** **All-way Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	14	17	118.6%	6.3	1.8	A
	Through	338	330	97.6%	10.0	1.1	A
	Right Turn	9	11	122.2%	5.5	3.5	A
	Subtotal	361	358	99.1%	9.8	1.2	A
SB	Left Turn	107	100	93.1%	8.7	1.3	A
	Through	170	164	96.2%	10.6	1.7	B
	Right Turn	17	18	107.1%	7.4	1.8	A
	Subtotal	294	281	95.7%	9.7	1.5	A
EB	Left Turn	5	3	68.0%	2.6	2.9	A
	Through	7	6	88.6%	4.6	1.7	A
	Right Turn	10	10	103.0%	3.1	0.6	A
	Subtotal	22	20	90.5%	4.0	0.4	A
WB	Left Turn	7	6	88.6%	3.9	2.1	A
	Through	14	14	97.9%	4.9	1.8	A
	Right Turn	68	68	99.3%	4.1	0.4	A
	Subtotal	89	87	98.2%	4.4	0.4	A
Total		766	746	97.4%	9.0	0.8	A

Intersection 7 **Alhambra Blvd/Covell Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	133	131	98.6%	18.9	2.4	B
	Through						
	Right Turn	11	11	97.3%	6.4	4.7	A
	Subtotal	144	142	98.5%	17.8	2.4	B
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through	691	688	99.6%	8.7	1.2	A
	Right Turn	215	226	105.2%	6.2	0.4	A
	Subtotal	906	914	100.9%	8.1	1.0	A
WB	Left Turn	17	18	105.3%	41.0	6.4	D
	Through	1,077	1,067	99.0%	29.4	8.9	C
	Right Turn						
	Subtotal	1,094	1,084	99.1%	29.6	8.8	C
Total		2,144	2,141	99.8%	19.9	4.8	B

SimTraffic Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Aggie Research Campus
Existing + Project - Mitigated
PM Peak Hour

Intersection 8 **Harper Jr High Dwy/Covell Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)		
			Average	Percent	Average	Std. Dev.	LOS
NB	Left Turn	37	34	92.4%	15.5	5.9	B
	Through						
	Right Turn	8	8	101.3%	5.6	2.5	A
	Subtotal	45	42	94.0%	13.4	4.8	B
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through	683	681	99.6%	5.7	1.5	A
	Right Turn	19	18	95.8%	4.5	2.0	A
	Subtotal	702	699	99.5%	5.7	1.5	A
WB	Left Turn	22	22	98.2%	35.1	7.7	D
	Through	1,057	1,049	99.2%	25.7	7.0	C
	Right Turn						
	Subtotal	1,079	1,070	99.2%	25.8	6.8	C
Total		1,826	1,811	99.2%	17.4	3.9	B

Intersection 209 **Mace Blvd/ARC Dwy 2** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)		
			Average	Percent	Average	Std. Dev.	LOS
NB	Left Turn						
	Through	848	833	98.2%	4.8	0.7	A
	Right Turn	80	82	102.0%	5.9	1.8	A
	Subtotal	928	914	98.5%	4.9	0.8	A
SB	Left Turn						
	Through	799	794	99.4%	0.5	0.1	A
	Right Turn						
	Subtotal	799	794	99.4%	0.5	0.1	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn						
	Through						
	Right Turn	130	131	100.5%	7.1	1.2	A
	Subtotal	130	131	100.5%	7.1	1.2	A
Total		1,857	1,839	99.0%	3.1	0.4	A

SimTraffic Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Aggie Research Campus
Existing + Project - Mitigated
PM Peak Hour

Intersection 210 **Mace Blvd/Co Rd 30B-Arc Dwy 3** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	958	943	98.4%	0.8	0.1	A
	Right Turn	20	20	100.0%	1.0	0.8	A
	Subtotal	978	963	98.4%	0.8	0.1	A
SB	Left Turn	24	23	97.1%	8.3	3.4	A
	Through	727	723	99.4%	2.2	0.3	A
	Right Turn						
	Subtotal	751	746	99.3%	2.4	0.3	A
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	72	70	97.6%	31.2	16.8	C
	Through						
	Right Turn	100	107	106.6%	21.4	13.0	C
	Subtotal	172	177	102.8%	25.3	14.4	C
Total		1,901	1,886	99.2%	4.1	1.8	A

Intersection 212 **ARC Dwy 5/Co Rd 32A** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn	243	250	102.7%	42.4	45.8	E
	Through						
	Right Turn	197	196	99.7%	36.2	37.9	E
	Subtotal	440	446	101.4%	39.6	42.2	E
EB	Left Turn	65	66	100.9%	3.8	0.4	A
	Through	490	487	99.4%	2.2	0.2	A
	Right Turn						
	Subtotal	555	553	99.6%	2.3	0.2	A
WB	Left Turn						
	Through	104	100	95.7%	2.0	3.4	A
	Right Turn	43	43	99.8%	0.7	1.1	A
	Subtotal	147	142	96.9%	1.5	2.4	A
Total		1,142	1,141	99.9%	16.4	14.3	C

Intersection 9 **Mace Blvd/Alhambra Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	320	266	83.0%	60.4	21.3	E
	Through	550	460	83.7%	14.4	4.5	B
	Right Turn						
	Subtotal	870	726	83.4%	31.5	11.4	C
SB	Left Turn						
	Through	840	778	92.7%	210.3	91.6	F
	Right Turn	50	48	95.4%	185.1	105.7	F
	Subtotal	890	826	92.8%	208.8	92.6	F
EB	Left Turn	20	20	100.0%	45.1	17.4	D
	Through						
	Right Turn	440	428	97.3%	21.7	31.6	C
	Subtotal	460	448	97.4%	22.7	30.3	C
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		2,220	2,000	90.1%	99.6	34.5	F

Intersection 10 **Second St/Fermi Place** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	10	9	94.0%	27.0	13.5	C
	Through	10	9	94.0%	23.9	14.1	C
	Right Turn	50	55	109.0%	6.5	1.9	A
	Subtotal	70	73	104.7%	12.0	4.2	B
SB	Left Turn	80	77	96.1%	22.0	1.4	C
	Through	10	13	126.0%	19.5	7.5	B
	Right Turn	20	20	98.0%	9.2	5.6	A
	Subtotal	110	109	99.2%	18.8	1.7	B
EB	Left Turn	40	36	90.5%	30.5	8.6	C
	Through	310	300	96.8%	12.8	2.8	B
	Right Turn	30	31	102.7%	7.9	4.2	A
	Subtotal	380	367	96.6%	14.1	3.0	B
WB	Left Turn	155	136	87.9%	33.5	4.6	C
	Through	670	564	84.1%	15.5	2.4	B
	Right Turn	150	130	86.3%	7.1	0.3	A
	Subtotal	975	829	85.0%	17.4	2.5	B
Total		1,535	1,379	89.8%	16.3	2.2	B

SimTraffic Post-Processor | **Aggie Research Campus**
Average Results from 10 Runs | **Cumulative No Project**
Volume and Delay by Movement | **AM Peak Hour**

Intersection 11 | **Mace Blvd/Second St-Co Rd 32A** | **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	790	655	83.0%	161.4	7.3	F
	Through	810	669	82.6%	69.6	4.2	E
	Right Turn	30	28	93.7%	66.9	5.0	E
	Subtotal	1,630	1,352	83.0%	115.3	6.1	F
SB	Left Turn	40	36	90.5%	133.1	19.4	F
	Through	1,100	988	89.8%	155.4	21.3	F
	Right Turn	130	118	90.8%	107.1	16.4	F
	Subtotal	1,270	1,143	90.0%	149.4	20.4	F
EB	Left Turn	40	35	87.8%	40.6	11.8	D
	Through	20	21	102.5%	41.6	19.1	D
	Right Turn	430	417	96.9%	9.4	5.5	A
	Subtotal	490	472	96.4%	13.4	4.8	B
WB	Left Turn	20	19	96.5%	36.5	13.1	D
	Through	40	42	105.5%	31.0	5.8	C
	Right Turn	20	20	100.0%	12.6	7.3	B
	Subtotal	80	82	101.9%	27.3	4.9	C
Total		3,470	3,049	87.9%	109.9	7.6	F

Intersection 12 | **Mace Park and Ride Entrance/Co Rd 32A** | **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	10	9	94.0%	4.1	1.7	A
	Through						
	Right Turn	10	11	111.0%	2.3	0.6	A
	Subtotal	20	21	102.5%	3.1	0.6	A
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through	80	73	91.5%	1.5	0.4	A
	Right Turn	10	12	123.0%	1.2	0.6	A
	Subtotal	90	86	95.0%	1.5	0.3	A
WB	Left Turn	10	11	108.0%	2.0	1.4	A
	Through	70	72	102.1%	0.3	0.2	A
	Right Turn						
	Subtotal	80	82	102.9%	0.6	0.3	A
Total		190	188	99.1%	1.3	0.2	A

Intersection 13 **Mace Blvd/I-80 WB Ramps** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	380	309	81.4%	128.4	22.5	F
	Through	770	628	81.6%	186.2	43.9	F
	Right Turn						
	Subtotal	1,150	938	81.5%	167.5	37.4	F
SB	Left Turn						
	Through	1,290	1,157	89.7%	153.5	52.6	F
	Right Turn	260	239	92.0%	92.4	39.8	F
	Subtotal	1,550	1,396	90.1%	143.3	51.1	F
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	520	469	90.2%	118.6	15.3	F
	Through	10	11	111.0%	121.5	57.6	F
	Right Turn	860	745	86.6%	251.5	22.4	F
	Subtotal	1,390	1,225	88.1%	200.5	18.7	F
Total		4,090	3,559	87.0%	167.7	25.5	F

Intersection 14 **Mace Blvd/Chiles Rd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	10	10	99.0%	84.6	25.0	F
	Through	635	598	94.2%	101.3	33.5	F
	Right Turn	50	49	98.0%	66.2	26.5	E
	Subtotal	695	657	94.5%	98.7	33.4	F
SB	Left Turn	280	255	91.1%	128.6	72.2	F
	Through	350	311	88.8%	48.5	20.2	D
	Right Turn	350	312	89.2%	29.4	14.4	C
	Subtotal	980	878	89.6%	66.4	34.8	E
EB	Left Turn	640	409	63.9%	223.7	35.3	F
	Through	220	140	63.8%	33.2	7.0	C
	Right Turn	150	91	60.3%	2.3	0.2	A
	Subtotal	1,010	640	63.3%	150.7	19.7	F
WB	Left Turn	30	28	91.7%	84.7	42.4	F
	Through	110	103	94.0%	80.7	48.0	F
	Right Turn	390	387	99.3%	96.4	57.3	F
	Subtotal	530	518	97.8%	93.0	54.7	F
Total		3,215	2,692	83.7%	97.1	21.8	F

SimTraffic Post-Processor | **Aggie Research Campus**
Average Results from 10 Runs | **Cumulative No Project**
Volume and Delay by Movement | **AM Peak Hour**

Intersection 15 **I-80 EB Off-Ramp/Chiles Rd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn	480	391	81.4%	396.0	83.0	F
	Through						
	Right Turn	120	111	92.8%	270.3	135.0	F
	Subtotal	600	502	83.7%	366.4	95.7	F
EB	Left Turn						
	Through	530	250	47.1%	581.1	50.8	F
	Right Turn						
	Subtotal	530	250	47.1%	581.1	50.8	F
WB	Left Turn						
	Through	470	424	90.2%	14.7	1.7	B
	Right Turn						
	Subtotal	470	424	90.2%	14.7	1.7	B
Total		1,600	1,175	73.5%	270.5	40.4	F

Intersection 16 **Mace Blvd/Cowell Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	10	10	103.0%	92.9	81.8	F
	Through	290	282	97.3%	112.2	85.4	F
	Right Turn	70	71	101.7%	95.3	65.0	F
	Subtotal	370	364	98.3%	108.8	81.0	F
SB	Left Turn	90	72	79.7%	36.6	7.8	D
	Through	220	188	85.5%	16.8	4.7	B
	Right Turn	70	59	83.6%	7.6	1.5	A
	Subtotal	380	318	83.8%	19.2	3.4	B
EB	Left Turn	190	190	99.8%	67.5	53.5	E
	Through	100	97	97.1%	46.1	49.2	D
	Right Turn	20	20	101.0%	41.6	61.9	D
	Subtotal	310	307	99.0%	60.5	52.5	E
WB	Left Turn	40	37	92.3%	45.9	20.8	D
	Through	90	90	99.4%	47.9	33.4	D
	Right Turn	110	107	96.8%	44.3	38.9	D
	Subtotal	240	233	97.0%	46.7	33.4	D
Total		1,300	1,222	94.0%	62.4	40.2	E

SimTraffic Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Aggie Research Campus
Cumulative No Project
AM Peak Hour

Intersection 17 **Mace Blvd/El Marcero Dr** **All-way Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	20	19	96.5%	37.3	70.1	E
	Through	240	242	100.9%	47.2	76.6	E
	Right Turn	10	10	97.0%	40.6	77.3	E
	Subtotal	270	271	100.4%	46.0	75.7	E
SB	Left Turn	70	64	91.1%	8.3	1.3	A
	Through	200	170	84.9%	10.3	0.8	B
	Right Turn	10	10	100.0%	4.7	1.8	A
	Subtotal	280	244	87.0%	9.6	0.8	A
EB	Left Turn	30	30	101.3%	9.5	7.4	A
	Through	10	12	121.0%	5.8	1.6	A
	Right Turn	10	11	107.0%	2.9	1.7	A
	Subtotal	50	53	106.4%	7.6	4.5	A
WB	Left Turn	10	12	116.0%	4.5	1.8	A
	Through	20	20	98.0%	11.1	10.1	B
	Right Turn	100	100	100.1%	12.5	14.6	B
	Subtotal	130	131	101.0%	11.9	12.5	B
Total		730	699	95.8%	27.0	41.5	D

SimTraffic Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Aggie Research Campus
Cumulative No Project
PM Peak Hour

Intersection 9 **Mace Blvd/Alhambra Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	470	408	86.7%	37.4	4.6	D
	Through	680	585	86.1%	18.9	1.6	B
	Right Turn						
	Subtotal	1,150	993	86.3%	26.6	2.8	C
SB	Left Turn						
	Through	700	482	68.8%	674.4	56.7	F
	Right Turn	40	30	74.3%	674.8	97.1	F
	Subtotal	740	512	69.1%	673.8	57.1	F
EB	Left Turn	10	8	79.0%	213.2	142.9	F
	Through						
	Right Turn	390	353	90.4%	306.8	185.8	F
	Subtotal	400	361	90.2%	305.0	184.6	F
WB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
Total		2,290	1,865	81.4%	242.2	40.7	F

Intersection 10 **Second St/Fermi Place** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	30	28	94.3%	42.5	15.8	D
	Through	10	10	102.0%	100.4	48.5	F
	Right Turn	110	109	99.2%	93.4	42.4	F
	Subtotal	150	148	98.4%	84.7	35.4	F
SB	Left Turn	290	161	55.6%	300.6	147.7	F
	Through	10	5	49.0%	26.5	30.5	C
	Right Turn	90	58	64.6%	10.7	9.2	B
	Subtotal	390	224	57.5%	238.9	164.3	F
EB	Left Turn	110	78	71.2%	134.8	37.8	F
	Through	720	472	65.5%	231.6	78.2	F
	Right Turn						
	Subtotal	830	550	66.2%	218.9	73.5	F
WB	Left Turn	115	102	88.9%	92.7	49.0	F
	Through	330	287	87.0%	32.7	19.9	C
	Right Turn	190	154	81.2%	4.3	1.1	A
	Subtotal	635	544	85.6%	37.9	22.7	D
Total		2,005	1,465	73.1%	117.5	21.6	F

SimTraffic Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Aggie Research Campus
Cumulative No Project
PM Peak Hour

Intersection 11 **Mace Blvd/Second St-Co Rd 32A** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	510	447	87.5%	37.6	5.1	D
	Through	960	842	87.7%	20.1	3.6	C
	Right Turn	40	35	86.3%	14.9	7.0	B
	Subtotal	1,510	1,323	87.6%	26.3	3.1	C
SB	Left Turn	100	75	75.4%	209.6	32.8	F
	Through	850	620	73.0%	260.6	48.1	F
	Right Turn	140	100	71.1%	177.1	33.3	F
	Subtotal	1,090	795	73.0%	245.7	45.6	F
EB	Left Turn	165	110	66.9%	47.6	7.7	D
	Through	120	75	62.5%	51.0	9.5	D
	Right Turn	890	553	62.1%	204.8	45.1	F
	Subtotal	1,175	738	62.8%	163.9	30.8	F
WB	Left Turn	30	32	106.7%	61.7	37.0	E
	Through	20	23	116.0%	37.3	13.1	D
	Right Turn	50	54	107.0%	13.6	7.3	B
	Subtotal	100	109	108.7%	31.1	15.2	C
Total		3,875	2,965	76.5%	114.7	8.6	F

Intersection 12 **Mace Park and Ride Entrance/Co Rd 32A** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	30	35	117.0%	5.9	1.1	A
	Through						
	Right Turn	20	18	92.0%	3.3	0.9	A
	Subtotal	50	54	107.0%	5.2	0.8	A
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through	240	172	71.7%	2.3	0.4	A
	Right Turn	20	13	65.0%	1.8	0.8	A
	Subtotal	260	185	71.2%	2.3	0.3	A
WB	Left Turn	10	9	87.0%	2.1	1.6	A
	Through	70	74	105.9%	0.2	0.2	A
	Right Turn						
	Subtotal	80	83	103.5%	0.5	0.3	A
Total		390	321	82.4%	2.2	0.3	A

SimTraffic Post-Processor | **Aggie Research Campus**
Average Results from 10 Runs | **Cumulative No Project**
Volume and Delay by Movement | **PM Peak Hour**

Intersection 13 **Mace Blvd/I-80 WB Ramps** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	330	213	64.6%	39.7	6.0	D
	Through	550	360	65.4%	12.2	2.4	B
	Right Turn						
	Subtotal	880	573	65.1%	22.6	3.7	C
SB	Left Turn						
	Through	1,370	894	65.3%	261.1	41.6	F
	Right Turn	400	264	66.1%	168.5	30.9	F
	Subtotal	1,770	1,159	65.5%	242.1	41.3	F
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	580	567	97.7%	64.9	35.1	E
	Through						
	Right Turn	960	953	99.3%	7.0	1.0	A
	Subtotal	1,540	1,520	98.7%	28.4	13.3	C
Total		4,190	3,251	77.6%	99.5	11.8	F

Intersection 14 **Mace Blvd/Chiles Rd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	30	14	47.0%	156.4	45.2	F
	Through	630	299	47.5%	201.4	51.1	F
	Right Turn	180	83	46.1%	184.8	58.2	F
	Subtotal	840	396	47.2%	196.4	52.2	F
SB	Left Turn	345	268	77.7%	204.2	54.0	F
	Through	570	453	79.4%	85.1	22.1	F
	Right Turn	340	275	81.0%	57.2	15.7	E
	Subtotal	1,255	996	79.4%	111.1	30.1	F
EB	Left Turn	430	245	56.9%	193.8	15.2	F
	Through	320	180	56.2%	31.0	10.9	C
	Right Turn	90	51	57.1%	2.2	0.3	A
	Subtotal	840	476	56.7%	111.1	7.6	F
WB	Left Turn	80	70	87.9%	199.3	22.4	F
	Through	60	53	88.2%	207.2	38.5	F
	Right Turn	420	365	86.9%	230.8	27.8	F
	Subtotal	560	488	87.2%	224.2	25.4	F
Total		3,495	2,356	67.4%	146.0	13.6	F

Intersection 15 **I-80 EB Off-Ramp/Chiles Rd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn	270	231	85.5%	276.3	94.6	F
	Through						
	Right Turn	100	99	98.6%	23.1	29.7	C
	Subtotal	370	329	89.0%	203.2	70.9	F
EB	Left Turn						
	Through	570	246	43.1%	541.0	52.1	F
	Right Turn						
	Subtotal	570	246	43.1%	541.0	52.1	F
WB	Left Turn						
	Through	430	344	79.9%	15.1	1.9	B
	Right Turn						
	Subtotal	430	344	79.9%	15.1	1.9	B
Total		1,370	919	67.1%	218.8	30.4	F

Intersection 16 **Mace Blvd/Cowell Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	20	9	42.5%	418.5	201.6	F
	Through	380	149	39.1%	475.0	181.3	F
	Right Turn	30	12	39.7%	460.0	204.2	F
	Subtotal	430	169	39.3%	471.8	182.4	F
SB	Left Turn	140	103	73.7%	42.3	7.3	D
	Through	260	200	76.7%	18.5	3.0	B
	Right Turn	210	152	72.2%	8.1	1.6	A
	Subtotal	610	454	74.5%	20.7	1.9	C
EB	Left Turn	240	149	62.0%	448.7	43.1	F
	Through	120	71	59.4%	430.7	45.2	F
	Right Turn	30	19	63.0%	367.2	62.6	F
	Subtotal	390	239	61.3%	437.8	38.2	F
WB	Left Turn	20	17	87.0%	139.8	110.2	F
	Through	60	57	94.8%	132.9	126.0	F
	Right Turn	90	83	91.8%	146.6	108.1	F
	Subtotal	170	157	92.3%	141.3	113.2	F
Total		1,600	1,019	63.7%	199.8	22.2	F

SimTraffic Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Aggie Research Campus
Cumulative No Project
PM Peak Hour

Intersection 17 **Mace Blvd/El Marcero Dr** **All-way Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	20	8	39.0%	1095.6	323.3	F
	Through	350	131	37.5%	1068.3	234.6	F
	Right Turn	10	4	43.0%	831.5	440.1	F
	Subtotal	380	143	37.7%	1064.8	237.7	F
SB	Left Turn	110	86	78.5%	8.9	1.4	A
	Through	190	141	74.3%	11.3	1.5	B
	Right Turn	10	10	95.0%	6.4	2.7	A
	Subtotal	310	237	76.5%	10.3	1.3	B
EB	Left Turn	10	9	86.0%	84.4	73.3	F
	Through	10	9	86.0%	29.2	33.6	D
	Right Turn	10	11	107.0%	16.1	32.3	C
	Subtotal	30	28	93.0%	32.7	38.6	D
WB	Left Turn	10	7	72.0%	345.0	263.1	F
	Through	20	16	80.0%	327.4	215.4	F
	Right Turn	70	53	75.9%	336.2	184.1	F
	Subtotal	100	76	76.3%	330.3	191.6	F
Total		820	484	59.1%	299.3	54.0	F

Intersection 9 **Mace Blvd/Alhambra Blvd-ARC Dwy 1** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	320	211	65.9%	100.9	28.1	F
	Through	700	479	68.5%	42.7	8.4	D
	Right Turn	350	243	69.4%	31.7	8.7	C
	Subtotal	1,370	933	68.1%	52.9	9.9	D
SB	Left Turn	200	140	70.2%	213.4	21.0	F
	Through	806	546	67.7%	279.6	25.7	F
	Right Turn	50	33	66.2%	247.9	42.3	F
	Subtotal	1,056	719	68.1%	266.4	23.3	F
EB	Left Turn	20	17	84.5%	207.7	36.6	F
	Through	212	183	86.2%	221.4	39.5	F
	Right Turn	498	396	79.6%	298.8	70.1	F
	Subtotal	730	596	81.6%	274.9	64.7	F
WB	Left Turn	182	79	43.2%	694.7	79.7	F
	Through	46	33	70.9%	248.0	153.9	F
	Right Turn	28	19	68.6%	280.0	231.0	F
	Subtotal	256	130	50.9%	574.2	147.5	F
Total		3,412	2,379	69.7%	190.9	14.4	F

Intersection 10 **Second St/Fermi Place** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	10	9	85.0%	26.2	14.6	C
	Through	10	11	113.0%	33.6	11.1	C
	Right Turn	50	53	105.2%	8.3	2.3	A
	Subtotal	70	72	103.4%	14.5	2.5	B
SB	Left Turn	83	83	100.5%	24.3	4.9	C
	Through	10	11	108.0%	16.9	10.4	B
	Right Turn	20	19	94.0%	6.9	3.4	A
	Subtotal	113	113	100.0%	21.3	3.4	C
EB	Left Turn	40	40	100.0%	28.5	8.9	C
	Through	370	378	102.2%	12.8	2.6	B
	Right Turn	30	30	101.0%	9.7	3.5	A
	Subtotal	440	448	101.9%	14.0	2.6	B
WB	Left Turn	155	112	72.1%	36.4	7.3	D
	Through	717	494	68.8%	17.8	3.2	B
	Right Turn	162	114	70.6%	7.5	0.9	A
	Subtotal	1,034	720	69.6%	19.2	2.6	B
Total		1,657	1,354	81.7%	17.3	2.0	B

SimTraffic Post-Processor **Aggie Research Campus**
Average Results from 10 Runs **Cumulative Plus Project**
Volume and Delay by Movement **AM Peak Hour**

Intersection 11 **Mace Blvd/Second St-Co Rd 32A** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	790	530	67.1%	187.1	17.3	F
	Through	1,278	848	66.3%	111.4	37.7	F
	Right Turn	470	320	68.1%	103.7	35.1	F
	Subtotal	2,538	1,698	66.9%	133.2	29.9	F
SB	Left Turn	64	46	72.0%	176.5	18.3	F
	Through	1,242	832	67.0%	196.3	17.0	F
	Right Turn	170	111	65.2%	138.8	13.2	F
	Subtotal	1,476	989	67.0%	189.0	17.2	F
EB	Left Turn	70	63	89.7%	85.1	64.9	F
	Through	53	53	100.2%	47.7	7.3	D
	Right Turn	430	438	101.8%	13.4	6.6	B
	Subtotal	553	554	100.1%	27.1	12.2	C
WB	Left Turn	207	209	100.7%	164.5	109.9	F
	Through	59	60	102.4%	115.9	86.4	F
	Right Turn	22	21	94.5%	96.5	92.1	F
	Subtotal	288	290	100.6%	152.5	104.1	F
Total		4,855	3,530	72.7%	132.6	23.2	F

Intersection 211 **ARC Dwy 4-Mace Park and Ride Entrance/Co Rd 32A** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	21	19	91.4%	40.0	78.3	E
	Through						
	Right Turn	12	13	107.5%	18.5	47.4	C
	Subtotal	33	32	97.3%	30.9	66.7	D
SB	Left Turn	30	29	97.3%	71.3	130.3	F
	Through	2	2	90.0%	7.7	15.2	A
	Right Turn	108	115	106.1%	77.4	154.8	F
	Subtotal	140	146	104.0%	76.5	150.2	F
EB	Left Turn	231	163	70.6%	4.2	0.6	A
	Through	280	202	72.1%	2.4	0.4	A
	Right Turn	76	56	73.4%	1.6	0.5	A
	Subtotal	587	421	71.7%	3.0	0.4	A
WB	Left Turn	22	21	95.9%	21.6	57.5	C
	Through	159	155	97.4%	24.9	55.4	C
	Right Turn	50	55	110.2%	15.5	35.0	C
	Subtotal	231	231	100.0%	23.2	52.9	C
Total		991	830	83.7%	18.6	29.6	C

SimTraffic Post-Processor **Aggie Research Campus**
Average Results from 10 Runs **Cumulative Plus Project**
Volume and Delay by Movement **AM Peak Hour**

Intersection 13 **Mace Blvd/I-80 WB Ramps** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	380	230	60.6%	146.6	14.1	F
	Through	1,323	809	61.1%	202.0	16.9	F
	Right Turn						
	Subtotal	1,703	1,039	61.0%	190.3	16.2	F
SB	Left Turn						
	Through	1,482	1,149	77.6%	88.4	49.1	F
	Right Turn	397	297	74.9%	41.2	33.7	D
	Subtotal	1,879	1,447	77.0%	78.8	45.9	E
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	520	387	74.4%	117.7	7.4	F
	Through	10	8	82.0%	108.4	72.0	F
	Right Turn	1,215	885	72.8%	212.8	22.7	F
	Subtotal	1,745	1,280	73.4%	184.0	19.0	F
Total		5,327	3,766	70.7%	144.7	18.0	F

Intersection 14 **Mace Blvd/Chiles Rd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	10	10	97.0%	90.2	24.7	F
	Through	686	617	89.9%	113.3	12.9	F
	Right Turn	50	42	83.8%	85.7	15.0	F
	Subtotal	746	668	89.6%	111.6	12.9	F
SB	Left Turn	292	224	76.8%	69.3	19.6	E
	Through	363	273	75.2%	32.8	4.7	C
	Right Turn	381	284	74.5%	22.8	3.9	C
	Subtotal	1,036	781	75.4%	39.4	7.0	D
EB	Left Turn	1,122	378	33.7%	234.7	34.0	F
	Through	220	73	33.0%	34.5	6.8	C
	Right Turn	150	44	29.3%	2.0	0.5	A
	Subtotal	1,492	495	33.2%	185.6	28.7	F
WB	Left Turn	30	24	78.7%	197.9	45.1	F
	Through	110	95	86.3%	224.0	62.0	F
	Right Turn	410	358	87.3%	244.4	59.0	F
	Subtotal	550	477	86.6%	239.7	58.7	F
Total		3,824	2,421	63.3%	122.3	10.1	F

SimTraffic Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Aggie Research Campus
Cumulative Plus Project
AM Peak Hour

Intersection 15 **I-80 EB Off-Ramp/Chiles Rd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn	888	311	35.0%	614.5	35.9	F
	Through						
	Right Turn	120	38	31.8%	553.8	56.9	F
	Subtotal	1,008	349	34.6%	607.2	32.6	F
EB	Left Turn						
	Through	604	186	30.9%	597.4	40.1	F
	Right Turn						
	Subtotal	604	186	30.9%	597.4	40.1	F
WB	Left Turn						
	Through	501	389	77.6%	14.0	1.9	B
	Right Turn						
	Subtotal	501	389	77.6%	14.0	1.9	B
Total		2,113	924	43.7%	358.8	17.5	F

Intersection 16 **Mace Blvd/Cowell Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	10	8	84.0%	169.2	84.3	F
	Through	314	295	94.0%	162.3	63.4	F
	Right Turn	70	66	94.7%	158.0	62.0	F
	Subtotal	394	370	93.9%	161.9	63.1	F
SB	Left Turn	90	56	61.9%	37.3	6.3	D
	Through	222	143	64.3%	19.0	3.6	B
	Right Turn	73	51	69.9%	6.8	1.1	A
	Subtotal	385	249	64.8%	20.4	2.8	C
EB	Left Turn	207	206	99.4%	95.5	72.2	F
	Through	100	106	105.5%	71.4	68.9	E
	Right Turn	20	20	99.0%	57.3	76.5	E
	Subtotal	327	331	101.2%	85.3	70.1	F
WB	Left Turn	40	37	92.3%	48.1	22.2	D
	Through	90	85	94.0%	46.1	24.0	D
	Right Turn	118	116	98.0%	40.3	29.5	D
	Subtotal	248	237	95.6%	43.7	25.5	D
Total		1,354	1,187	87.7%	89.3	37.6	F

SimTraffic Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Aggie Research Campus
Cumulative Plus Project
AM Peak Hour

Intersection 17 **Mace Blvd/El Marcero Dr** **All-way Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	20	18	91.0%	54.0	75.3	F
	Through	248	238	96.0%	89.7	107.4	F
	Right Turn	10	12	115.0%	64.7	90.5	F
	Subtotal	278	268	96.4%	86.6	104.5	F
SB	Left Turn	70	49	70.0%	7.7	1.6	A
	Through	202	143	70.7%	10.4	0.9	B
	Right Turn	10	8	77.0%	4.8	2.5	A
	Subtotal	282	200	70.7%	9.6	0.8	A
EB	Left Turn	38	40	106.1%	28.1	36.7	D
	Through	10	9	93.0%	12.4	19.4	B
	Right Turn	10	13	125.0%	4.7	3.6	A
	Subtotal	58	62	107.1%	21.6	27.0	C
WB	Left Turn	10	9	88.0%	34.2	40.7	D
	Through	20	18	91.0%	25.6	36.6	D
	Right Turn	108	105	97.0%	36.0	44.0	E
	Subtotal	138	132	95.5%	35.2	42.5	E
Total		756	661	87.5%	44.3	47.8	E

Intersection 7 **Alhambra Blvd/Covell Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	150	98	65.4%	16.8	2.9	B
	Through						
	Right Turn	54	38	70.4%	5.0	1.0	A
	Subtotal	204	136	66.7%	13.4	1.7	B
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through	989	961	97.1%	9.1	4.2	A
	Right Turn	293	296	101.2%	5.7	1.8	A
	Subtotal	1,282	1,257	98.0%	8.3	3.6	A
WB	Left Turn	40	30	74.5%	19.8	4.5	B
	Through	520	390	75.0%	9.2	1.5	A
	Right Turn						
	Subtotal	560	420	74.9%	10.0	1.4	A
Total		2,046	1,813	88.6%	9.1	2.6	A

SimTraffic Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Aggie Research Campus
Cumulative Plus Project
AM Peak Hour

Intersection 8 **Harper Jr High Entrance/Covell Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	100	100	100.4%	32.4	11.9	C
	Through						
	Right Turn	10	9	94.0%	48.5	87.7	D
	Subtotal	110	110	99.8%	32.2	12.1	C
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through	913	798	87.4%	223.4	94.8	F
	Right Turn	130	109	84.0%	220.5	121.8	F
	Subtotal	1,043	908	87.0%	222.9	97.9	F
WB	Left Turn	170	112	65.9%	29.8	4.2	C
	Through	460	324	70.3%	24.3	7.1	C
	Right Turn						
	Subtotal	630	436	69.1%	25.5	5.3	C
Total		1,783	1,453	81.5%	139.9	53.3	F

Intersection 209 **Mace Blvd/ARC Dwy 2** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	648	446	68.8%	4.8	0.8	A
	Right Turn	100	70	69.5%	4.5	1.8	A
	Subtotal	748	515	68.9%	4.7	0.6	A
SB	Left Turn						
	Through	1,056	765	72.5%	107.1	14.7	F
	Right Turn						
	Subtotal	1,056	765	72.5%	107.1	14.7	F
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn						
	Through						
	Right Turn	10	10	101.0%	2.8	0.9	A
	Subtotal	10	10	101.0%	2.8	0.9	A
Total		1,814	1,291	71.1%	62.1	5.5	E

Intersection 210 **Mace Blvd/Co Rd 30B-ARC Dwy 3** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	610	422	69.2%	1.1	0.3	A
	Right Turn	48	33	69.4%	0.8	0.4	A
	Subtotal	658	455	69.2%	1.1	0.2	A
SB	Left Turn	71	51	71.3%	218.4	44.6	F
	Through	1,056	787	74.5%	248.7	26.7	F
	Right Turn						
	Subtotal	1,127	838	74.3%	247.1	26.9	F
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn						
	Through						
	Right Turn	10	12	122.0%	3.7	1.8	A
	Subtotal	10	12	122.0%	3.7	1.8	A
Total		1,795	1,305	72.7%	151.4	10.4	F

Intersection 212 **Project Dwy 5/Co Rd 32A** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn	37	37	98.6%	10.0	3.3	A
	Through						
	Right Turn	89	93	104.9%	4.4	0.9	A
	Subtotal	126	130	103.1%	6.0	1.1	A
EB	Left Turn	200	153	76.4%	5.3	1.0	A
	Through	122	89	73.0%	0.7	0.3	A
	Right Turn						
	Subtotal	322	242	75.1%	3.6	0.7	A
WB	Left Turn						
	Through	142	137	96.5%	2.4	0.6	A
	Right Turn	197	195	99.1%	1.3	0.3	A
	Subtotal	339	332	98.1%	1.8	0.4	A
Total		787	704	89.5%	3.2	0.4	A

Intersection 9 **Mace Blvd/Alhambra Blvd-ARC Dwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	476	353	74.1%	53.9	11.5	D
	Through	837	637	76.1%	28.6	6.6	C
	Right Turn	130	97	74.8%	20.5	6.4	C
	Subtotal	1,443	1,087	75.4%	36.2	7.3	D
SB	Left Turn	70	35	50.6%	966.3	198.7	F
	Through	755	386	51.1%	1062.2	204.1	F
	Right Turn	40	23	56.5%	1037.2	247.8	F
	Subtotal	865	444	51.3%	1055.0	204.7	F
EB	Left Turn	10	9	94.0%	255.2	71.5	F
	Through	100	81	81.1%	275.8	55.6	F
	Right Turn	411	328	79.7%	378.1	81.8	F
	Subtotal	521	418	80.2%	358.6	75.6	F
WB	Left Turn	350	155	44.2%	597.9	164.8	F
	Through	143	76	53.2%	293.5	228.8	F
	Right Turn	150	85	56.7%	287.4	237.7	F
	Subtotal	643	316	49.1%	449.9	192.6	F
Total		3,472	2,265	65.2%	300.7	23.0	F

Intersection 10 **Second St/Fermi Place** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	30	30	100.7%	35.2	11.1	D
	Through	10	11	112.0%	56.0	37.6	E
	Right Turn	110	105	95.6%	67.5	43.2	E
	Subtotal	150	147	97.7%	60.4	30.0	E
SB	Left Turn	307	199	64.8%	191.0	55.4	F
	Through	10	6	55.0%	27.6	26.6	C
	Right Turn	90	62	69.2%	9.1	5.3	A
	Subtotal	407	267	65.5%	143.0	37.2	F
EB	Left Turn	110	77	70.2%	142.1	94.1	F
	Through	795	538	67.7%	193.5	100.7	F
	Right Turn						
	Subtotal	905	615	68.0%	187.3	98.8	F
WB	Left Turn	115	81	70.0%	89.4	88.4	F
	Through	396	288	72.8%	28.2	8.2	C
	Right Turn	195	141	72.5%	8.0	1.4	A
	Subtotal	706	510	72.3%	27.7	5.7	C
Total		2,168	1,539	71.0%	101.6	24.6	F

Intersection 11 **Mace Blvd/Second St-Co Rd 32A** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	510	409	80.2%	178.0	32.4	F
	Through	1,160	922	79.4%	201.3	34.8	F
	Right Turn	141	112	79.7%	197.8	40.5	F
	Subtotal	1,811	1,443	79.7%	194.3	34.3	F
SB	Left Turn	163	101	61.7%	215.3	16.3	F
	Through	1,143	645	56.4%	246.7	24.0	F
	Right Turn	210	118	56.0%	163.1	14.8	F
	Subtotal	1,516	863	56.9%	230.9	21.6	F
EB	Left Turn	195	130	66.6%	299.0	122.1	F
	Through	182	123	67.6%	161.3	115.5	F
	Right Turn	890	582	65.4%	163.1	27.5	F
	Subtotal	1,267	835	65.9%	182.0	34.6	F
WB	Left Turn	436	187	42.9%	278.0	64.9	F
	Through	22	9	42.7%	232.8	85.4	F
	Right Turn	113	49	43.6%	211.7	41.6	F
	Subtotal	571	246	43.1%	261.4	56.5	F
Total		5,165	3,387	65.6%	204.2	20.7	F

Intersection 211 **ARC Dwy 4/Co Rd 32A** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	84	20	23.7%	632.1	176.5	F
	Through	26	6	24.2%	549.4	273.0	F
	Right Turn	34	9	25.3%	535.0	315.0	F
	Subtotal	144	35	24.2%	438.9	257.0	F
SB	Left Turn	180	21	11.6%	673.8	197.7	F
	Through						
	Right Turn	220	22	9.9%	705.2	189.5	F
	Subtotal	400	43	10.7%	510.6	308.8	F
EB	Left Turn	91	62	68.2%	4.4	2.0	A
	Through	364	250	68.7%	2.5	0.5	A
	Right Turn	31	23	74.8%	2.0	0.9	A
	Subtotal	486	335	69.0%	2.9	0.7	A
WB	Left Turn	12	9	71.7%	189.3	160.1	F
	Through	267	203	75.9%	319.2	173.7	F
	Right Turn	40	32	80.0%	315.7	206.9	F
	Subtotal	319	243	76.2%	321.2	173.5	F
Total		1,349	656	48.6%	133.1	33.3	F

Intersection 13 **Mace Blvd/I-80 WB Ramps** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)		
			Average	Percent	Average	Std. Dev.	LOS
NB	Left Turn	330	216	65.3%	42.9	7.0	D
	Through	724	472	65.2%	26.0	18.2	C
	Right Turn						
	Subtotal	1,054	688	65.2%	31.3	14.1	C
SB	Left Turn						
	Through	1,688	941	55.8%	203.0	30.3	F
	Right Turn	781	424	54.3%	122.7	22.3	F
	Subtotal	2,469	1,365	55.3%	179.0	29.2	F
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	580	539	92.9%	111.2	25.9	F
	Through						
	Right Turn	1,087	989	90.9%	164.5	50.2	F
	Subtotal	1,667	1,528	91.6%	146.1	40.9	F
Total		5,190	3,580	69.0%	137.0	22.1	F

Intersection 14 **Mace Blvd/Chiles Rd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)		
			Average	Percent	Average	Std. Dev.	LOS
NB	Left Turn	30	17	56.0%	136.6	20.3	F
	Through	658	363	55.2%	165.6	33.9	F
	Right Turn	180	97	54.1%	146.1	36.2	F
	Subtotal	868	477	55.0%	160.3	33.7	F
SB	Left Turn	368	258	70.1%	129.0	55.0	F
	Through	625	445	71.3%	54.5	11.7	D
	Right Turn	420	285	67.8%	37.8	6.1	D
	Subtotal	1,413	988	69.9%	68.4	20.4	E
EB	Left Turn	553	291	52.6%	172.4	10.1	F
	Through	320	154	48.3%	30.9	6.5	C
	Right Turn	90	42	46.2%	2.1	0.4	A
	Subtotal	963	487	50.6%	114.2	4.7	F
WB	Left Turn	80	64	80.5%	196.6	34.8	F
	Through	60	53	88.8%	197.3	20.6	F
	Right Turn	443	376	84.8%	240.7	37.9	F
	Subtotal	583	494	84.6%	230.8	34.0	F
Total		3,827	2,446	63.9%	125.4	11.0	F

SimTraffic Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Aggie Research Campus
Cumulative Plus Project
PM Peak Hour

Intersection 15 **I-80 EB Off-Ramp/Chiles Rd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn	321	253	78.7%	426.7	134.0	F
	Through						
	Right Turn	100	81	80.6%	334.3	234.3	F
	Subtotal	421	333	79.1%	401.0	161.1	F
EB	Left Turn						
	Through	642	232	36.2%	568.1	75.5	F
	Right Turn						
	Subtotal	642	232	36.2%	568.1	75.5	F
WB	Left Turn						
	Through	510	354	69.4%	14.6	1.3	B
	Right Turn						
	Subtotal	510	354	69.4%	14.6	1.3	B
Total		1,573	920	58.5%	274.6	36.5	F

Intersection 16 **Mace Blvd/Cowell Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	20	9	43.0%	327.5	130.1	F
	Through	391	197	50.4%	395.1	136.1	F
	Right Turn	30	15	48.7%	369.4	99.7	F
	Subtotal	441	220	49.9%	393.0	133.5	F
SB	Left Turn	148	95	64.3%	39.9	7.9	D
	Through	284	190	66.7%	18.9	5.3	B
	Right Turn	228	154	67.5%	8.1	1.8	A
	Subtotal	660	439	66.4%	19.4	2.4	B
EB	Left Turn	243	171	70.3%	406.9	80.9	F
	Through	120	85	70.8%	414.9	102.9	F
	Right Turn	30	21	68.7%	366.4	92.4	F
	Subtotal	393	276	70.3%	406.0	82.4	F
WB	Left Turn	20	20	97.5%	85.8	57.8	F
	Through	60	57	95.2%	101.4	69.6	F
	Right Turn	92	89	96.3%	104.0	67.9	F
	Subtotal	172	165	96.0%	100.7	66.5	F
Total		1,666	1,100	66.0%	189.8	24.1	F

SimTraffic Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Aggie Research Campus
Cumulative Plus Project
PM Peak Hour

Intersection 17 **Mace Blvd/El Marcero Dr** **All-way Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	20	10	50.5%	1003.9	331.9	F
	Through	359	169	47.0%	1076.4	204.0	F
	Right Turn	10	6	58.0%	907.1	299.1	F
	Subtotal	389	185	47.5%	1068.3	204.0	F
SB	Left Turn	118	80	67.7%	8.6	1.0	A
	Through	198	137	69.3%	11.4	1.6	B
	Right Turn	18	13	74.4%	7.8	4.7	A
	Subtotal	334	231	69.0%	10.4	1.2	B
EB	Left Turn	11	12	105.5%	58.6	38.2	F
	Through	10	12	118.0%	20.8	28.3	C
	Right Turn	10	10	100.0%	28.6	28.5	D
	Subtotal	31	33	107.7%	40.9	24.5	E
WB	Left Turn	10	9	89.0%	279.2	140.7	F
	Through	20	17	87.0%	230.3	150.4	F
	Right Turn	71	63	88.0%	264.6	165.4	F
	Subtotal	101	89	87.9%	254.6	155.4	F
Total		855	538	62.9%	314.1	43.6	F

Intersection 7 **Alhambra Blvd/Covell Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	160	109	68.1%	24.0	7.6	C
	Through						
	Right Turn	20	15	76.0%	9.1	12.0	A
	Subtotal	180	124	68.9%	21.8	6.8	C
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through	767	715	93.3%	121.6	173.3	F
	Right Turn	220	215	97.5%	91.5	165.6	F
	Subtotal	987	930	94.2%	114.1	172.2	F
WB	Left Turn	24	19	77.9%	36.4	14.5	D
	Through	1,143	852	74.6%	17.8	7.0	B
	Right Turn						
	Subtotal	1,167	871	74.6%	18.3	7.1	B
Total		2,334	1,925	82.5%	48.1	41.4	D

SimTraffic Post-Processor | **Aggie Research Campus**
Average Results from 10 Runs | **Cumulative Plus Project**
Volume and Delay by Movement | **PM Peak Hour**

Intersection 8 | **Harper Jr High Dwy/Covell Blvd** | **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	40	39	98.5%	28.4	19.5	C
	Through						
	Right Turn	10	9	92.0%	53.8	51.0	D
	Subtotal	50	49	97.2%	33.9	24.8	C
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through	757	563	74.3%	516.5	97.3	F
	Right Turn	30	21	71.0%	473.3	153.9	F
	Subtotal	787	584	74.2%	515.2	96.8	F
WB	Left Turn	20	14	70.5%	37.6	12.0	D
	Through	1,127	832	73.8%	23.3	8.4	C
	Right Turn						
	Subtotal	1,147	846	73.7%	23.5	8.3	C
Total		1,984	1,478	74.5%	151.4	20.8	F

Intersection 209 | **Mace Blvd/ARC Dwy 2** | **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	917	675	73.6%	6.5	1.3	A
	Right Turn	80	60	74.6%	5.2	1.5	A
	Subtotal	997	734	73.7%	6.4	1.2	A
SB	Left Turn						
	Through	865	496	57.3%	199.5	51.0	F
	Right Turn						
	Subtotal	865	496	57.3%	199.5	51.0	F
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn						
	Through						
	Right Turn	130	127	97.7%	11.5	5.3	B
	Subtotal	130	127	97.7%	11.5	5.3	B
Total		1,992	1,357	68.1%	61.3	4.1	F

SimTraffic Post-Processor **Aggie Research Campus**
Average Results from 10 Runs **Cumulative Plus Project**
Volume and Delay by Movement **PM Peak Hour**

Intersection 210 **Mace Blvd/Co Rd 30B-Arc Dwy 3** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	1,027	788	76.7%	1.1	0.2	A
	Right Turn	20	15	76.0%	0.6	0.4	A
	Subtotal	1,047	803	76.7%	1.1	0.2	A
SB	Left Turn	24	16	65.8%	459.3	140.8	F
	Through	793	491	61.9%	446.7	80.6	F
	Right Turn						
	Subtotal	817	506	62.0%	446.3	80.3	F
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	72	27	37.6%	769.3	91.1	F
	Through						
	Right Turn	100	38	37.5%	766.2	94.5	F
	Subtotal	172	65	37.6%	674.4	249.1	F
Total		2,036	1,374	67.5%	144.0	13.4	F

Intersection 212 **ARC Dwy 5/Co Rd 32A** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn	243	181	74.4%	271.2	160.3	F
	Through						
	Right Turn	197	141	71.8%	285.0	160.9	F
	Subtotal	440	322	73.2%	276.5	158.8	F
EB	Left Turn	65	31	47.7%	3.0	1.4	A
	Through	513	251	48.9%	0.8	0.2	A
	Right Turn						
	Subtotal	578	282	48.8%	1.0	0.3	A
WB	Left Turn						
	Through	122	113	92.6%	88.8	79.1	F
	Right Turn	43	42	97.2%	75.4	78.0	F
	Subtotal	165	155	93.8%	85.7	78.7	F
Total		1,183	759	64.2%	96.7	41.3	F

SimTraffic Post-Processor | **Aggie Research Campus**
Average Results from 10 Runs | **Cumulative Plus Project w/ Operational Improvements**
Volume and Delay by Movement | **AM Peak Hour**

Intersection 9 | **Mace Blvd/Alhambra Blvd-ARC Dwy 1** | **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	320	202	63.1%	112.4	60.4	F
	Through	700	451	64.5%	17.9	4.8	B
	Right Turn	350	231	66.1%	7.1	1.1	A
	Subtotal	1,370	884	64.6%	35.9	15.0	D
SB	Left Turn	200	169	84.6%	230.9	39.7	F
	Through	806	649	80.5%	238.1	25.7	F
	Right Turn	50	40	80.4%	210.9	70.2	F
	Subtotal	1,056	858	81.3%	235.7	20.7	F
EB	Left Turn	20	19	96.5%	92.0	40.4	F
	Through	212	205	96.6%	93.5	31.9	F
	Right Turn	498	488	98.1%	115.1	55.6	F
	Subtotal	730	713	97.6%	108.5	47.6	F
WB	Left Turn	182	115	63.1%	487.7	145.0	F
	Through	46	44	95.4%	65.7	51.6	E
	Right Turn	28	27	96.4%	48.8	88.7	D
	Subtotal	256	186	72.6%	341.8	119.4	F
Total		3,412	2,641	77.4%	136.1	13.4	F

Intersection 10 | **Second St/Fermi Place** | **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	10	12	122.0%	21.6	11.0	C
	Through	10	10	98.0%	19.8	13.8	B
	Right Turn	50	53	105.4%	6.0	0.8	A
	Subtotal	70	75	106.7%	10.9	2.7	B
SB	Left Turn	83	82	98.9%	23.6	3.6	C
	Through	10	11	106.0%	24.0	13.3	C
	Right Turn	20	22	110.0%	4.6	2.2	A
	Subtotal	113	115	101.5%	20.1	3.9	C
EB	Left Turn	40	41	103.5%	24.1	6.4	C
	Through	370	365	98.5%	11.1	2.4	B
	Right Turn	30	30	101.0%	8.6	3.4	A
	Subtotal	440	436	99.1%	12.0	2.2	B
WB	Left Turn	155	103	66.3%	33.2	3.8	C
	Through	717	499	69.5%	17.3	2.0	B
	Right Turn	162	107	66.1%	7.6	0.8	A
	Subtotal	1,034	709	68.5%	18.3	1.9	B
Total		1,657	1,334	80.5%	16.0	1.2	B

SimTraffic Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Aggie Research Campus
Cumulative Plus Project w/ Operational Improvements
AM Peak Hour

Intersection 11 **Mace Blvd/Second St-Co Rd 32A** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	790	497	62.9%	172.5	11.2	F
	Through	1,278	807	63.1%	75.2	7.5	E
	Right Turn	470	297	63.1%	54.5	6.5	D
	Subtotal	2,538	1,600	63.0%	102.1	10.7	F
SB	Left Turn	64	56	87.7%	129.9	9.6	F
	Through	1,242	1,014	81.6%	144.6	9.8	F
	Right Turn	170	138	81.4%	100.8	6.8	F
	Subtotal	1,476	1,208	81.8%	138.3	9.1	F
EB	Left Turn	70	63	90.4%	42.5	16.9	D
	Through	53	51	95.3%	47.6	13.6	D
	Right Turn	430	424	98.6%	5.3	0.5	A
	Subtotal	553	538	97.3%	14.3	4.0	B
WB	Left Turn	207	206	99.6%	48.4	31.1	D
	Through	59	59	100.3%	40.1	9.1	D
	Right Turn	22	21	97.3%	26.2	33.4	C
	Subtotal	288	287	99.6%	45.1	26.1	D
Total		4,855	3,633	74.8%	97.2	7.8	F

Intersection 12 **ARC Dwy 4-Mace Park and Ride Entrance/Co Rd 32A** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	21	20	92.9%	15.7	5.1	C
	Through						
	Right Turn	12	11	90.8%	2.4	1.9	A
	Subtotal	33	30	92.1%	12.6	5.5	B
SB	Left Turn	30	29	97.3%	22.3	6.3	C
	Through	2	2	85.0%	9.6	17.0	A
	Right Turn	108	106	98.1%	4.6	0.8	A
	Subtotal	140	137	97.8%	8.5	1.8	A
EB	Left Turn	231	152	65.6%	20.4	2.8	C
	Through	280	197	70.5%	8.7	1.1	A
	Right Turn	76	54	71.4%	4.8	1.5	A
	Subtotal	587	403	68.7%	12.4	1.3	B
WB	Left Turn	22	19	87.3%	24.1	4.5	C
	Through	159	160	100.8%	13.8	1.8	B
	Right Turn	50	54	108.0%	7.6	2.5	A
	Subtotal	231	234	101.1%	13.3	1.8	B
Total		991	804	81.1%	12.0	0.7	B

SimTraffic Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Aggie Research Campus
Cumulative Plus Project w/ Operational Improvements
AM Peak Hour

Intersection 13 **Mace Blvd/I-80 WB Ramps** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)		
			Average	Percent	Average	Std. Dev.	LOS
NB	Left Turn	380	247	65.1%	125.4	12.5	F
	Through	1,323	885	66.9%	172.1	21.6	F
	Right Turn						
	Subtotal	1,703	1,132	66.5%	161.6	19.7	F
SB	Left Turn						
	Through	1,482	1,296	87.4%	89.9	54.1	F
	Right Turn	397	346	87.2%	35.8	30.7	D
	Subtotal	1,879	1,642	87.4%	78.4	48.4	E
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	520	308	59.3%	138.1	8.9	F
	Through	10	6	59.0%	106.7	79.5	F
	Right Turn	1,215	717	59.0%	273.6	19.7	F
	Subtotal	1,745	1,032	59.1%	232.5	16.8	F
Total		5,327	3,806	71.4%	143.6	19.3	F

Intersection 14 **Mace Blvd/Chiles Rd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)		
			Average	Percent	Average	Std. Dev.	LOS
NB	Left Turn	10	7	65.0%	158.0	31.1	F
	Through	686	428	62.4%	190.1	28.4	F
	Right Turn	50	35	70.0%	144.9	42.3	F
	Subtotal	746	470	62.9%	186.4	29.4	F
SB	Left Turn	292	211	72.3%	181.0	43.8	F
	Through	363	268	73.8%	51.6	14.3	D
	Right Turn	381	284	74.4%	21.3	10.4	C
	Subtotal	1,036	763	73.6%	78.8	22.3	E
EB	Left Turn	1,122	716	63.8%	130.9	21.3	F
	Through	220	138	62.8%	59.0	15.5	E
	Right Turn	150	95	63.1%	2.0	0.2	A
	Subtotal	1,492	948	63.6%	108.0	15.2	F
WB	Left Turn	30	26	85.3%	208.7	47.1	F
	Through	110	89	81.0%	220.2	27.7	F
	Right Turn	420	349	83.0%	204.6	21.9	F
	Subtotal	560	463	82.7%	208.9	20.9	F
Total		3,834	2,644	69.0%	132.5	11.2	F

Intersection 15 **I-80 EB Off-Ramp/Chiles Rd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn	888	699	78.7%	368.3	63.1	F
	Through						
	Right Turn	120	96	79.7%	336.3	68.9	F
	Subtotal	1,008	795	78.8%	364.1	62.0	F
EB	Left Turn						
	Through	604	264	43.7%	539.1	62.2	F
	Right Turn						
	Subtotal	604	264	43.7%	539.1	62.2	F
WB	Left Turn						
	Through	501	381	75.9%	12.7	1.7	B
	Right Turn						
	Subtotal	501	381	75.9%	12.7	1.7	B
Total		2,113	1,439	68.1%	303.2	31.6	F

Intersection 16 **Mace Blvd/Cowell Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	10	6	57.0%	320.0	111.5	F
	Through	314	189	60.1%	397.6	49.1	F
	Right Turn	70	44	63.1%	380.4	68.6	F
	Subtotal	394	239	60.6%	392.1	53.6	F
SB	Left Turn	90	63	70.4%	37.0	7.4	D
	Through	222	147	66.4%	17.5	3.4	B
	Right Turn	73	53	71.9%	8.1	1.7	A
	Subtotal	385	263	68.4%	20.1	2.1	C
EB	Left Turn	207	161	77.7%	345.8	78.8	F
	Through	100	81	80.9%	312.7	119.5	F
	Right Turn	20	16	78.0%	337.8	128.5	F
	Subtotal	327	257	78.7%	332.6	95.4	F
WB	Left Turn	40	38	94.0%	192.3	99.4	F
	Through	90	83	92.2%	194.0	92.0	F
	Right Turn	118	118	100.2%	205.6	93.1	F
	Subtotal	248	239	96.3%	199.7	93.1	F
Total		1,354	998	73.7%	223.5	39.0	F

Intersection 17 **Mace Blvd/El Marcero Dr** **All-way Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	20	13	64.0%	970.4	223.4	F
	Through	248	139	56.2%	1066.9	156.3	F
	Right Turn	10	6	58.0%	992.2	344.8	F
	Subtotal	278	158	56.8%	1060.7	158.0	F
SB	Left Turn	70	47	67.3%	8.4	1.0	A
	Through	202	144	71.0%	11.7	1.6	B
	Right Turn	10	8	79.0%	3.8	2.2	A
	Subtotal	282	199	70.4%	10.8	1.5	B
EB	Left Turn	38	38	100.3%	76.3	44.7	F
	Through	10	12	115.0%	47.1	70.9	E
	Right Turn	10	10	96.0%	32.8	49.4	D
	Subtotal	58	59	102.1%	64.6	46.1	F
WB	Left Turn	10	8	79.0%	299.1	203.6	F
	Through	20	17	85.0%	371.6	113.5	F
	Right Turn	108	83	76.9%	369.5	120.0	F
	Subtotal	138	108	78.3%	364.5	104.9	F
Total		756	524	69.3%	333.8	26.0	F

Intersection 7 **Alhambra Blvd/Covell Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	150	106	70.7%	19.2	4.7	B
	Through						
	Right Turn	54	39	71.7%	7.7	6.0	A
	Subtotal	204	145	70.9%	16.5	4.6	B
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through	989	982	99.3%	8.0	1.1	A
	Right Turn	293	295	100.7%	5.3	0.8	A
	Subtotal	1,282	1,277	99.6%	7.3	1.0	A
WB	Left Turn	40	30	74.0%	21.0	3.5	C
	Through	520	383	73.6%	8.9	1.5	A
	Right Turn						
	Subtotal	560	412	73.6%	9.9	1.7	A
Total		2,046	1,834	89.6%	8.7	1.3	A

SimTraffic Post-Processor **Aggie Research Campus**
Average Results from 10 Runs **Cumulative Plus Project w/ Operational Improvements**
Volume and Delay by Movement **AM Peak Hour**

Intersection 8 **Harper Jr High Entrance/Covell Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	100	95	95.1%	20.9	3.3	C
	Through						
	Right Turn	10	10	104.0%	9.3	8.0	A
	Subtotal	110	106	95.9%	20.3	3.2	C
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through	913	898	98.4%	10.5	1.8	B
	Right Turn	130	129	99.2%	7.2	1.1	A
	Subtotal	1,043	1,027	98.5%	10.1	1.7	B
WB	Left Turn	160	104	65.2%	22.8	3.6	C
	Through	460	319	69.4%	20.5	5.5	C
	Right Turn						
	Subtotal	620	424	68.3%	21.0	3.7	C
Total		1,773	1,556	87.8%	13.8	1.7	B

Intersection 209 **Mace Blvd/ARC Dwy 2** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	648	435	67.1%	2.7	0.4	A
	Right Turn	100	68	67.6%	3.7	1.4	A
	Subtotal	748	502	67.2%	2.8	0.4	A
SB	Left Turn						
	Through	1,056	916	86.8%	92.8	11.5	F
	Right Turn						
	Subtotal	1,056	916	86.8%	92.8	11.5	F
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn						
	Through						
	Right Turn	10	10	97.0%	2.1	1.5	A
	Subtotal	10	10	97.0%	2.1	1.5	A
Total		1,814	1,428	78.7%	57.5	4.3	F

SimTraffic Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Aggie Research Campus
Cumulative Plus Project w/ Operational Improvements
AM Peak Hour

Intersection 210 **Mace Blvd/Co Rd 30B-ARC Dwy 3** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	610	413	67.7%	0.7	0.2	A
	Right Turn	48	32	66.0%	0.5	0.4	A
	Subtotal	658	445	67.6%	0.7	0.2	A
SB	Left Turn	71	69	97.3%	180.8	96.4	F
	Through	1,056	940	89.0%	214.2	92.8	F
	Right Turn						
	Subtotal	1,127	1,009	89.5%	212.1	92.9	F
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn						
	Through						
	Right Turn	10	10	99.0%	2.2	1.1	A
	Subtotal	10	10	99.0%	2.2	1.1	A
Total		1,795	1,464	81.5%	135.6	52.3	F

Intersection 212 **Project Dwy 5/Co Rd 32A** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn	37	36	98.1%	8.6	1.9	A
	Through						
	Right Turn	89	89	100.2%	4.7	1.0	A
	Subtotal	126	126	99.6%	5.8	1.2	A
EB	Left Turn	200	146	73.2%	6.1	1.1	A
	Through	122	89	73.0%	1.8	0.3	A
	Right Turn						
	Subtotal	322	235	73.1%	4.5	0.7	A
WB	Left Turn						
	Through	142	143	101.0%	2.5	0.6	A
	Right Turn	197	199	100.9%	1.4	0.3	A
	Subtotal	339	342	100.9%	1.9	0.3	A
Total		787	703	89.3%	3.4	0.4	A

Intersection 9 **Mace Blvd/Alhambra Blvd-ARC Dwy** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	476	406	85.4%	98.1	39.0	F
	Through	837	734	87.6%	23.3	3.8	C
	Right Turn	130	115	88.3%	8.4	2.5	A
	Subtotal	1,443	1,255	87.0%	47.5	14.6	D
SB	Left Turn	70	44	63.4%	917.9	150.8	F
	Through	755	470	62.3%	1017.9	208.3	F
	Right Turn	40	25	61.5%	952.1	182.6	F
	Subtotal	865	539	62.3%	1009.0	202.6	F
EB	Left Turn	10	11	106.0%	109.1	86.9	F
	Through	100	100	99.9%	100.2	77.5	F
	Right Turn	411	391	95.1%	109.7	119.8	F
	Subtotal	521	501	96.2%	108.0	111.6	F
WB	Left Turn	350	180	51.4%	536.9	154.9	F
	Through	143	94	65.5%	195.8	86.6	F
	Right Turn	150	98	65.3%	165.4	68.6	F
	Subtotal	643	371	57.8%	381.1	119.6	F
Total		3,472	2,667	76.8%	266.2	19.7	F

Intersection 10 **Second St/Fermi Place** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	30	29	96.7%	34.6	11.8	C
	Through	10	9	94.0%	26.8	19.6	C
	Right Turn	110	113	102.5%	17.9	6.9	B
	Subtotal	150	151	100.7%	22.0	6.6	C
SB	Left Turn	307	308	100.2%	44.4	18.3	D
	Through	10	10	104.0%	22.7	17.0	C
	Right Turn	90	89	99.3%	7.0	2.5	A
	Subtotal	407	407	100.1%	34.4	12.3	C
EB	Left Turn	110	107	97.1%	49.1	8.9	D
	Through	795	786	98.9%	36.9	23.1	D
	Right Turn						
	Subtotal	905	893	98.7%	38.0	20.1	D
WB	Left Turn	115	100	86.8%	56.2	9.5	E
	Through	396	320	80.8%	29.8	5.9	C
	Right Turn	195	155	79.5%	8.8	1.5	A
	Subtotal	706	575	81.4%	28.3	5.2	C
Total		2,168	2,026	93.5%	32.8	10.9	C

SimTraffic Post-Processor
Average Results from 10 Runs
Volume and Delay by Movement

Aggie Research Campus
Cumulative Plus Project w/ Operational Improvements
PM Peak Hour

Intersection 11 **Mace Blvd/Second St-Co Rd 32A** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	510	428	83.9%	174.4	6.6	F
	Through	1,160	988	85.2%	86.3	6.8	F
	Right Turn	141	119	84.5%	53.0	6.1	D
	Subtotal	1,811	1,535	84.8%	108.1	6.5	F
SB	Left Turn	163	116	71.2%	189.5	23.8	F
	Through	1,143	776	67.9%	194.8	20.5	F
	Right Turn	210	143	68.2%	133.9	14.9	F
	Subtotal	1,516	1,035	68.3%	186.8	19.1	F
EB	Left Turn	195	198	101.5%	68.2	62.8	E
	Through	182	179	98.2%	61.4	44.2	E
	Right Turn	890	874	98.2%	23.2	13.3	C
	Subtotal	1,267	1,251	98.7%	37.5	21.0	D
WB	Left Turn	436	349	80.1%	299.3	55.8	F
	Through	22	22	98.2%	67.1	25.6	E
	Right Turn	113	102	89.8%	44.9	26.9	D
	Subtotal	571	473	82.7%	231.9	41.1	F
Total		5,165	4,294	83.1%	116.9	7.8	F

Intersection 12 **ARC Dwy 4/Co Rd 32A** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	84	75	89.0%	265.4	217.3	F
	Through	26	23	90.0%	20.6	11.4	C
	Right Turn	34	32	93.5%	6.6	3.1	A
	Subtotal	144	130	90.3%	121.1	68.8	F
SB	Left Turn	180	177	98.3%	40.7	24.2	E
	Through						
	Right Turn	220	215	97.7%	122.8	117.4	F
	Subtotal	400	392	98.0%	84.8	70.0	F
EB	Left Turn	91	78	85.8%	44.7	9.9	E
	Through	364	309	84.8%	18.2	5.8	C
	Right Turn	31	26	83.9%	13.3	6.8	B
	Subtotal	486	413	84.9%	22.7	6.5	C
WB	Left Turn	12	10	85.0%	253.0	155.3	F
	Through	267	212	79.3%	267.3	114.4	F
	Right Turn	40	33	83.0%	280.5	144.6	F
	Subtotal	319	255	80.0%	269.9	117.2	F
Total		1,349	1,190	88.2%	95.7	41.2	F

Intersection 13 **Mace Blvd/I-80 WB Ramps** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	330	292	88.4%	41.9	3.7	D
	Through	724	620	85.6%	27.1	7.7	C
	Right Turn						
	Subtotal	1,054	911	86.5%	32.2	5.5	C
SB	Left Turn						
	Through	1,688	1,329	78.7%	137.7	25.4	F
	Right Turn	781	639	81.8%	81.0	22.4	F
	Subtotal	2,469	1,968	79.7%	119.7	24.2	F
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	580	513	88.4%	107.1	27.3	F
	Through						
	Right Turn	1,087	940	86.5%	190.7	53.9	F
	Subtotal	1,667	1,453	87.2%	161.4	44.4	F
Total		5,190	4,332	83.5%	113.7	15.0	F

Intersection 14 **Mace Blvd/Chiles Rd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	30	23	75.7%	100.2	26.3	F
	Through	658	585	88.9%	88.2	6.8	F
	Right Turn	180	158	87.6%	63.2	4.7	E
	Subtotal	868	765	88.1%	83.0	6.1	F
SB	Left Turn	368	322	87.4%	85.8	20.4	F
	Through	625	511	81.7%	35.0	2.8	C
	Right Turn	420	344	82.0%	13.3	2.4	B
	Subtotal	1,413	1,177	83.3%	42.7	7.4	D
EB	Left Turn	553	355	64.1%	76.5	6.6	E
	Through	320	209	65.2%	105.5	7.5	F
	Right Turn	90	57	63.2%	2.1	0.3	A
	Subtotal	963	620	64.4%	78.7	6.6	E
WB	Left Turn	80	76	94.8%	48.6	10.7	D
	Through	60	58	96.5%	51.5	11.7	D
	Right Turn	443	466	105.1%	25.3	4.3	C
	Subtotal	583	599	102.8%	31.1	4.5	C
Total		3,827	3,161	82.6%	56.9	2.7	E

Intersection 15 **I-80 EB Off-Ramp/Chiles Rd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn	321	322	100.2%	72.5	30.7	E
	Through						
	Right Turn	100	95	95.2%	4.4	0.8	A
	Subtotal	421	417	99.0%	58.3	24.0	E
EB	Left Turn						
	Through	642	299	46.6%	495.7	36.5	F
	Right Turn						
	Subtotal	642	299	46.6%	495.7	36.5	F
WB	Left Turn						
	Through	510	424	83.2%	13.7	1.4	B
	Right Turn						
	Subtotal	510	424	83.2%	13.7	1.4	B
Total		1,573	1,140	72.5%	157.2	9.6	F

Intersection 16 **Mace Blvd/Cowell Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	20	20	98.0%	164.7	32.6	F
	Through	391	349	89.3%	231.4	37.1	F
	Right Turn	30	26	85.0%	226.7	46.4	F
	Subtotal	441	394	89.4%	228.3	37.9	F
SB	Left Turn	148	119	80.7%	43.4	7.2	D
	Through	284	227	80.1%	20.9	4.1	C
	Right Turn	228	184	80.7%	9.4	2.1	A
	Subtotal	660	531	80.4%	22.1	3.2	C
EB	Left Turn	243	227	93.6%	158.9	67.1	F
	Through	120	123	102.3%	137.6	73.9	F
	Right Turn	30	29	96.3%	130.7	84.0	F
	Subtotal	393	379	96.4%	150.7	69.6	F
WB	Left Turn	20	20	101.5%	54.5	16.6	D
	Through	60	62	102.7%	36.9	13.6	D
	Right Turn	92	91	99.3%	30.3	11.1	C
	Subtotal	172	173	100.8%	35.9	11.1	D
Total		1,666	1,477	88.7%	108.7	22.5	F

Intersection 17 **Mace Blvd/El Marcero Dr** **All-way Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	20	18	91.0%	206.3	121.9	F
	Through	359	332	92.4%	237.7	124.0	F
	Right Turn	10	9	91.0%	211.1	112.4	F
	Subtotal	389	359	92.3%	235.5	122.7	F
SB	Left Turn	118	99	84.2%	9.4	1.5	A
	Through	198	164	82.6%	11.3	1.0	B
	Right Turn	18	14	78.3%	8.3	2.1	A
	Subtotal	334	277	82.9%	10.4	1.1	B
EB	Left Turn	11	11	97.3%	10.5	9.3	B
	Through	10	10	98.0%	6.8	4.4	A
	Right Turn	10	10	96.0%	3.2	1.3	A
	Subtotal	31	30	97.1%	7.9	3.2	A
WB	Left Turn	10	11	106.0%	14.1	20.4	B
	Through	20	21	107.0%	17.8	12.8	C
	Right Turn	71	69	97.6%	26.9	13.0	D
	Subtotal	101	101	100.3%	24.2	12.8	C
Total		855	767	89.7%	116.0	55.4	F

Intersection 7 **Alhambra Blvd/Covell Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn	160	132	82.4%	18.8	2.7	B
	Through						
	Right Turn	20	19	92.5%	6.5	2.8	A
	Subtotal	180	150	83.5%	17.0	3.0	B
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through	767	761	99.2%	9.6	1.5	A
	Right Turn	220	222	101.1%	6.4	0.5	A
	Subtotal	987	983	99.6%	8.9	1.2	A
WB	Left Turn	24	20	84.6%	40.3	14.8	D
	Through	1,143	966	84.5%	27.3	9.1	C
	Right Turn						
	Subtotal	1,167	986	84.5%	27.6	9.2	C
Total		2,334	2,120	90.8%	18.7	4.9	B

SimTraffic Post-Processor | **Aggie Research Campus**
Average Results from 10 Runs | **Cumulative Plus Project w/ Operational Improvements**
Volume and Delay by Movement | **PM Peak Hour**

Intersection 8 **Harper Jr High Dwy/Covell Blvd** **Signal**

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)		
			Average	Percent	Average	Std. Dev.	LOS
NB	Left Turn	40	39	96.8%	14.7	5.7	B
	Through						
	Right Turn	10	10	98.0%	3.9	4.4	A
	Subtotal	50	49	97.0%	13.5	5.4	B
SB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
EB	Left Turn						
	Through	757	735	97.1%	43.4	49.8	D
	Right Turn	30	27	91.3%	33.5	42.5	C
	Subtotal	787	762	96.9%	43.0	49.3	D
WB	Left Turn	20	18	88.5%	32.8	11.6	C
	Through	1,127	941	83.5%	22.2	7.3	C
	Right Turn						
	Subtotal	1,147	959	83.6%	22.3	7.3	C
Total		1,984	1,770	89.2%	29.0	21.9	C

Intersection 209 **Mace Blvd/ARC Dwy 2** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph)		Total Delay (sec/veh)		
			Average	Percent	Average	Std. Dev.	LOS
NB	Left Turn						
	Through	917	779	85.0%	4.3	0.6	A
	Right Turn	80	67	84.0%	4.7	1.7	A
	Subtotal	997	847	84.9%	4.3	0.6	A
SB	Left Turn						
	Through	865	590	68.2%	167.4	52.3	F
	Right Turn						
	Subtotal	865	590	68.2%	167.4	52.3	F
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn						
	Through						
	Right Turn	130	134	102.8%	6.9	1.4	A
	Subtotal	130	134	102.8%	6.9	1.4	A
Total		1,992	1,570	78.8%	54.4	5.1	F

Intersection 210 **Mace Blvd/Co Rd 30B-Arc Dwy 3** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through	1,027	894	87.1%	0.8	0.1	A
	Right Turn	20	20	100.5%	0.8	0.5	A
	Subtotal	1,047	914	87.3%	0.8	0.1	A
SB	Left Turn	24	18	75.4%	473.2	107.1	F
	Through	793	585	73.8%	491.0	81.4	F
	Right Turn						
	Subtotal	817	603	73.8%	490.5	81.1	F
EB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
WB	Left Turn	72	28	39.2%	759.3	79.8	F
	Through						
	Right Turn	100	39	39.2%	764.3	69.4	F
	Subtotal	172	67	39.2%	759.0	75.3	F
Total		2,036	1,585	77.8%	175.3	27.1	F

Intersection 212 **ARC Dwy 5/Co Rd 32A** **Side-street Stop**

Direction	Movement	Demand Volume (vph)	Served Volume (vph) Average	Served Volume (vph) Percent	Total Delay (sec/veh) Average	Total Delay (sec/veh) Std. Dev.	LOS
NB	Left Turn						
	Through						
	Right Turn						
	Subtotal						
SB	Left Turn	243	203	83.4%	262.6	200.1	F
	Through						
	Right Turn	197	162	82.0%	249.7	178.3	F
	Subtotal	440	364	82.8%	254.7	186.7	F
EB	Left Turn	65	60	92.9%	5.7	4.4	A
	Through	513	457	89.0%	3.6	5.0	A
	Right Turn						
	Subtotal	578	517	89.5%	3.9	4.9	A
WB	Left Turn						
	Through	122	115	94.2%	69.7	101.2	F
	Right Turn	43	44	101.6%	69.4	92.3	F
	Subtotal	165	159	96.1%	69.1	98.5	F
Total		1,183	1,040	87.9%	66.9	36.6	F