

Appendix A

Notice of Preparation and Initial Study

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Notice of Preparation of Environmental Impact Report

TO:

FROM: City of Paso Robles

SUBJECT: Notice Of Preparation of a Draft Environmental Impact Report pursuant to section 15082 of the CEQA Guidelines

PROJECT TITLE: Beechwood Specific Plan and General Plan Amendment

STATE CLEARINGHOUSE NUMBER (not yet issued)

The City of Paso Robles will be the lead agency for a project-level environmental impact report (EIR) for the project identified above. We need to know the views of your agency as to the scope and content of the environmental information that is germane to your agency's statutory responsibilities in connection with the proposed project.

The project description, location and the scope of environmental study are summarized below and contained in the attached materials. An initial study was not prepared for the project. Your agency views on the potential impacts and study scope for the EIR is requested. Transportation agencies please note, the proposed scope of the transportation impact study for the EIR is included in the attached materials.

Please provide:

1. Name of contact person in your agency, address, email and telephone number,
2. Permit of approval authority: please provide summary and relevant sections of legislation, or current regulatory guidance.
3. Environmental information needed: Describe what environmental information needs to be addressed in the EIR to enable your agency to use the EIR as a basis for your approval or permit.
4. Permit Conditions: Please provide a list of standard permit conditions that your agency will likely apply to the Proposed Project.
5. Alternatives: Please describe any alternatives to the Proposed Project your agency recommends.
6. Reasonably foreseeable projects: Please describe projects, plans or programs that might influence the Proposed Project or EIR analysis.
7. Relevant background information: please provide any information relevant to your permit /approval authority that might assist the City in the preparation of the EIR.

Based on previous environmental analysis contained in the City General Plan Update EIR 2003 and the Annexation EIR for the Beechwood property (2004) the following topics have been identified for study in this EIR. The Beechwood Specific Plan will tier from these two earlier EIRs that addressed potential effects and made CEQA findings for the subject property(s):

-Aesthetics	-Agriculture and Forestry Resources	-Air Quality
-Biological Resources	-Cultural Resources	-Geology/Soils
-Greenhouse Gas Emissions	-Hazards & Hazardous Materials	-Hydrology/Water Quality
-Land Use/Planning	-Mineral Resources	-Noise
-Population/Housing	-Public Services	-Recreation
-Transportation/Traffic	-Tribal Cultural Resources	-Utilities/Service Systems

Due to time limits mandated by State law, your response must be sent at the earliest possible date, but *not later than 30 days* after receipt of this notice.

Please send your response to: Firma Consultants, Attn: Lindsay Corica, 187 Tank Farm Road, San Luis Obispo CA 93401. email: lindsay@firmaconsultants.com

Signature:

A handwritten signature in black ink, appearing to read 'Lindsay Corica'.

Lindsay Corica, Firma Consultants Inc.

Title: EIR Consultant for the City of Paso Robles

Date: June 25, 2018

Phone: 805-781-9800

Attachments:

- (A) Project Description
- (B) Transportation Impact Study Scope
- (C) Map 01 Project Location
- (D) Rough Draft Specific Plan Maps
 - Map 2 Proposed Land Use
 - Map 3 Proposed Circulation Plan
 - Map 4 Preliminary Jurisdictional Waters

ATTACHMENT A PROJECT DESCRIPTION

BEECHWOOD COMMUNITY SPECIFIC PLAN & GENERAL PLAN AMENDMENT

Location

The project is located at the southeast corner of the City where unincorporated areas of the County meet the City of Paso Robles. The Proposed Project site is located approximately 2.5 miles east from State Route 101, refer to Project Location Map (attached). The plan area is 211 acres, and ownership is comprised of a mix of owners as detailed below (APN 009-863-001 through -013).

Background

The 211 acre Beechwood Specific Plan site was annexed into the City of Paso Robles on October 21, 2004 by action of the San Luis Obispo County Local Agency Formation Commission (LAFCO). The property was brought into the City's sphere of influence years earlier and the annexation process formalized the inclusion of the property into the City. In order to accommodate the orderly development of the property and mitigate potential negative impacts from development, the City placed a Specific Plan Overlay on the property, namely, the Beechwood Specific Plan. The General Plan land use density for the properties comprising the Beechwood Specific plan is 674 residential dwelling units and 4.6 acres of commercial retail land use.

Proposed Project

The Beechwood Community Specific Plan calls for 911 residential units at a mix of densities, small scale commercial zoning, preservation of open space and sensitive habitat, development of the vehicular, bicycle and pedestrian circulation network, and supporting on and off-site infrastructure.

Approval of the proposed land use density will require a General Plan Amendment.

The Beechwood Specific Plan is still in rough draft form at the time of this Notice. The draft Specific Plan is anticipated to be available near the end of the CEQA process as the final Project scope may be modified by the CEQA review and other considerations. The Proposed Land Use Map 02 attached indicate the key project components.

This Project Description provides an overview discussion of the Beechwood Specific Plan (BSP). The BSP will address:

- Ownership and Acreage
- Specific Plan Vision,
- Existing Site Conditions,
- Site Grading Concept,
- Circulation System and Pedestrian and Bicycle Mobility,
- Drainage Facilities and Stormwater Management,
- Water Facilities,

- Sewer Collection Facilities,
- Water Conservation Strategies,
- Communication Facilities, Power, and Gas Infrastructure,
- Community Character,
- Parks and Open Space,
- Project Signage and Branded Neighborhoods,
- Housing Product Diversity and Architectural Themes and Guidelines,
- Commercial Land Uses and Alternatives, and
- Project Phasing and Shared Infrastructure Financing.

Ownership and Acreage

The BSP area is composed of multiple parcels with several ownership entities. The following table lists each parcel designation, ownership entity, parcel size, and the proposed land use density.

Table A. Ownership and Acreage					
Subarea	Owner	Area (ac)	Proposed Density (units)	Land Use	Units per Acre
A	Harrod	9.75	48	RSF (LD)	4.9
B	Harrod	19.8	84	RSF (LD)	4.2
C	Harrod	19.95	40	RSF (LD)	2.0
D	Pensco	19.95	74	RSF (LD)	3.7
E	Erskine	19.95	84	RSF (LD)	4.2
F	Huebner	19.95	84	RSF (LD)	4.2
G	NAP	9.65	32	RSF (LD)	3.3
H	Harrod	15.8	56	RSF (LD)	3.5
I Total	Erskine	38.02			
I-1	Erskine	32.28	130	RSF (LD)	4.0
I-2	Erskine	1.98	72	RSF (HD)	36.4
I-3	Erskine	0.84	11	COM (MU)	13.1
J Total	Harrod	38.22			
J-1	Harrod	17.37	80	RSF (LD)	4.6
J-2	Harrod	8.72	56	RSF (MD)	6.4
J-3	Harrod	5.86	56	RSF (HD)	9.6
J-4	Harrod	4.56	60	COM (MU)	13.1

Beechwood Specific Plan Vision & Project Objectives

The BSP project has been designed to meet the needs of City's growing population by providing a mix of residential densities, diverse residential product types, and small scale commercial zoning with an emphasis on open space trails, on- and off- street bicycle paths, both active and passive recreation including development of a community park with potential sports field. Other detailed elements include detached pedestrian sidewalks, and open space that provides natural buffers between homes, but serves to collect and pre-treat street generated stormwater runoff. The new streetscapes will include meandering sidewalks amongst the existing oak trees, bike lanes that take cyclists easily from one residential neighborhood to

another. Various open spaces will preserve existing oak trees where feasible as well as integrate existing and enhanced wetlands into the project.

The Applicant's documents state: "The overarching goal of the project is to create a sense of place that reflects the natural beauty of Paso Robles and at the same time provide a healthy environment for children and those in their retirement years."

Existing Site Conditions

The project site is composed of gently rolling terrain that is divided by a meandering ridge that runs from East to West through the middle of the property. The watershed is roughly divided between the northern and southern portions of the site. Along the southern half of the site, the natural runoff flows to the southwest corner of the property at Creston Road and Beechwood Drive. The northern half of the site drains northwesterly along Meadowlark Road, where the easterly portion of the site drains into Oriole Way and the most northwesterly part of the site drains toward intersection of Meadowlark Road and Beechwood Drive.

The site has many old-growth oak trees lend to property character of a turn-of-the-century ranch. The property has been periodically planted with annual grain for many years and has been grazed periodically to minimize the threat of fire. In several areas of the site, wetlands meander through and around the topography which provides habitat for local plant species. There are a few areas of moderate slopes with oak trees, and those areas are designated as open space areas. The soils within the property have moderate permeability and are suitable for development.

A biological assessment of the site has been conducted and there are no special status plants except those within the designated wetland areas. The existing oak trees are a significant biological resource and the project objective is to retain as many of the healthy trees as possible.

All previous biological assessments were conducted in consultation with the appropriate regulatory agency. The endangered species assessments were coordinated through the U.S. Fish and Wildlife Service (USFWS) and the California Department of Fish and Wildlife (CDFW). The wetland assessments and mitigation strategies were coordinated through the Army Corps of Engineers (ACOE) and the Regional Water Quality Control Board (RWQCB). Going forward these agencies will provide further review and oversight as the project design and mitigation strategies are implemented for permitting.

Site Grading Concept

As highlighted earlier, the site is composed of gently sloping hills. The rolling topography will provide an opportunity for the project to be integrated into the natural landform without significant cuts and fills. While the grading scheme and storm water management strategies will be based on conforming to existing terrain, where cuts and do fills occur, the earth form will be contour-graded so that the slopes will appear rounded and natural in character.

The majority of the lots will be graded to provide building pads that will accommodate concrete slab foundations. This construction method reduces cost and allows for faster production which in turn helps to keep overall construction costs lower.

Circulation System and Pedestrian and Bicycle Mobility

The project site is bounded by three roadways: Creston Road, Beechwood Drive and Meadowlark Road. These existing roads are further described below. The project will improve the major roads to City standards. Improvements vary from widening roads at some places or generally making roads more narrow. Refer to Map 3 for a rough draft of the proposed Circulation Plan.

Creston Road, which runs along the southern boundary of the site, is an arterial that connects the city with the rural county areas to the east. The project will be conditioned to improve this major road to city standards. Narrowing the width of Creston road would result in slower vehicle speeds, create less stormwater runoff, and be of a more intimate, neighborhood scale.

Beechwood Drive, which bounds the site along its western boundary, will be widened from Creston Road to Meadowlark Road along the project frontage. Providing on-street parking near the intersection at Meadowlark Road is another project objective considering the drop-off at Virginia Peterson Elementary School.

Meadowlark Road will be narrowed to reduce speed and increase safety. Other measures to reduce existing high vehicle speeds could include stop signs or raised speed humps at the intersections. Reducing the road width will also create additional right of way area (behind the new curb line along the project frontage), and is intended to be used for water quality and detached multi-use pathway purposes.

Airport Road will be extended, creating a new arterial road through the site from Meadowlark Road to Creston Road and will provide new left-turn lanes and ensure safe entry into the various access points of the new neighborhoods.

Central Parkway refers to the new collector road that extends along the east/west ridge of the project. The new neighborhoods on either side of this collector will access Central Parkway at a proposed roundabout where speeds will be reduced.

The BSP includes several miles of pathways intended to encourage pedestrian and bike activity. Through a circulation network of interconnected multi-use pathways along the streets and through the open space a pedestrian friendly neighborhood will be accomplished, and promote non-vehicular travel. Refer to Map 03 attached for the project's Proposed Circulation Plan, prepared for preliminary purposes.

Drainage Facilities and Stormwater Management

The BSP will provide stormwater system of collection, management, and detention facilities that shall comply with Low Impact Development strategies. One specialized component of this integrated system will be application of measures implemented to protect and enhance the

existing and new wetland features within the project. The applicant team and project biologists will be coordinating design elements of the system with the City, the RWQCB, and ACOE.

The creation of a new wetland along Creston Road at the intersection with Beechwood Drive is an integral component of the wetland mitigation program. The Creston Road wetland enhancement project will be in addition to expanding the existing wetland areas along Meadowlark Road. Refer to Map 04 attached for Preliminary Jurisdictional Waters and potential wetland creation areas.

Water Facilities

The City Secured a stable water portfolio several years ago with the specific goal of providing a reliable source of water for the City's future growth. As required by State Law (SB 610) the City will prepare a Water Supply Assessment to document the long term reliability of water available to meet the needs of the project.

The existing water delivery infrastructure in the streets adjacent to the property is currently of sufficient size to provide the necessary flows for domestic service and fire protection demands. The City of Paso Robles' Capital Improvement Plan shows that a transmission main is to be extended through the Beechwood property, and City staff will determine the ultimate size of this required infrastructure. Other water facilities include, but are not limited to: new domestic water service and fire hydrants to be provided throughout the project as the various phases are developed.

Sewer Collection Facilities

The City's sewer Master Plan proposes two connection points for the project to existing facilities in Beechwood Drive; one at Silverwood Way and another at Meadowlark Road. The EIR analysis will confirm that existing sewer facilities surrounding the project area have been designed to support the Beechwood development.

An onsite collection system will need to be installed throughout the subdivision to support the proposed development. Due to the topographic variations of the site, a sewer lift station will need to be installed in Creston Road to accommodate the southerly portion of the BSP. The applicant's engineers and City staff will work together to identify the best location for this needed infrastructure.

Water Conservation Strategies

An overall goal of the BSP is to maximize water conservation and minimize water consumption at all levels within the project area. The BSP will employ the latest in indoor water conservation fixtures. This includes low water use shower heads, toilets, and faucets.

In regards to outdoor consumption, a focus on an efficient landscape strategy will utilize draught resistant plant materials and high water use area such as lawn would be minimized to Park or other open space. Furthermore, a strategy to provide educational materials on water conservation to new home owners would potentially elevate the public's awareness of water conservation.

Communication Facilities, Power, and Gas Infrastructure

The immediate neighborhood surrounding the Beechwood area has the necessary infrastructure needed to serve the communication, electrical, and natural gas needs of the proposed project.

Community Character, Parks and Open Space

The existing natural environment of the Beechwood property is characterized by rolling hills with scattered oak trees. There are pockets of dense eucalyptus trees and other ornamental vegetation, but most non-native vegetation would be removed in order to introduce a more consistent planting theme that will set the character for the subdivision. Through the planning process the applicant will articulate an overall landscaping palette that will offer a variety of flora that reflects the North County San Luis Obispo environment, while at the same time prioritizing water conservation.

Overall, the project will incorporate approximately 30 acres of parks and open space. Since the property is owned by several groups with different base parcel sizes, each ownership area will be required to provide an appropriately sized park/open space area commensurate with their number of residential units. The neighborhood scale parks will be focused on the needs of the local residents and not focused on regional facilities or organized play fields.

Housing Product Diversity and Architectural Themes and Guidelines

In an effort to promote a diversity of residential character within the community, the BSP will identify a set of architectural themes and details that respond to specific types of construction styles and materials. For instance, Craftsman, Spanish Colonial, Post Modern Ranch, or California Contemporary and others will be detailed in the BSP as a guide, or template, from which the owners can choose.

The individual ownership entities recognize that different housing product types are needed to respond to the diverse housing needs of the marketplace. Some buyers may need space to accommodate multigenerational families, others may require less square footage, and yet some may want an apartment unit to rent. In recognition of the dynamics of housing market forces, the Beechwood Master Plan has prescribed the density range of a particular ownership parcel and the owners will build the product type that they feel suits their development niche.

Commercial Land Uses

The General Plan Land Use Element indicated that neighborhood commercial may be permitted within the Beechwood Specific Plan Area and BSP includes 4.6 acres of commercial land use.

Project Phasing and Shared Infrastructure Financing

As the project progresses through the Specific Plan process the issue of defining the timing scenarios relative to the cost considerations will need to be addressed, particularly in relation to phasing. There are shared infrastructure costs that will need to be defined in order to arrive at an equitable distribution of the costs of mutually beneficial amenities and infrastructure.

ATTACHMENT B: TRANSPORTATION IMPACT STUDY SCOPE

The EIR Transportation Impact Study development scenario and street segment / intersection analyses scope is as follows:

The scenarios to be quantitatively analyzed are summarized in Table 1. An additional yet to be determined Project Alternative will be discussed qualitatively.

Table 1: Analysis Scenarios			
	Existing	Near Term	Cumulative
No Project	x	x	x
674 Units	x	x	x
911 Units	x	x	x

Intersections:

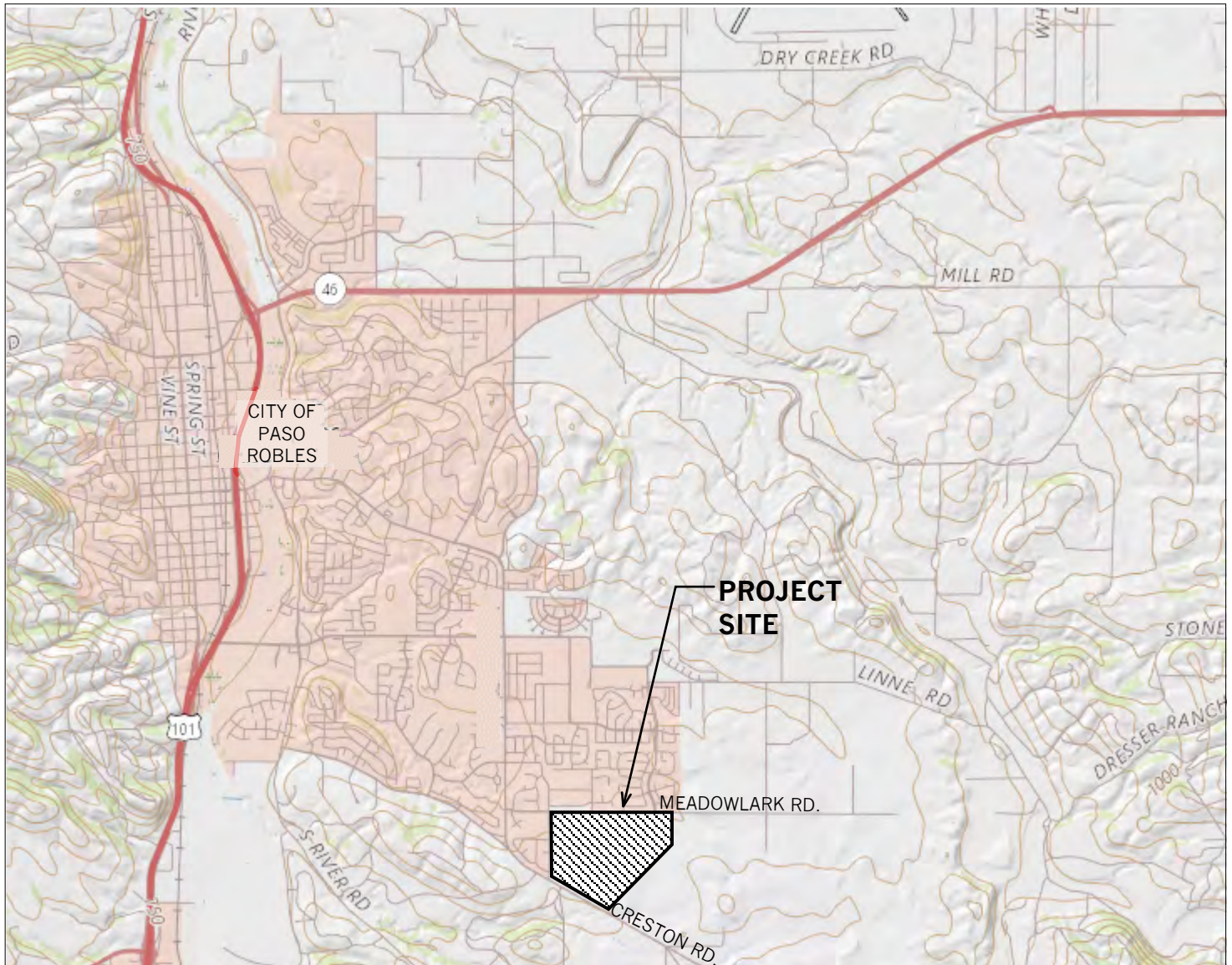
1. State Route 46 E/Golden Hill Road
2. State Route 46 E/Union Road
3. Golden Hill Road/Union Road
4. 13th Street/Riverside Avenue
5. 13th Street/Paso Robles Street
6. River Road/Creston Road
7. Creston Road/Golden Hill Road
8. Creston Road/Niblick Road
9. Creston Road/Stoney Creek Drive
10. Creston Road/Meadowlark Road
11. Creston Road/Charolais Road
12. Riverside Ave/Pine St/US 101 SB Ramp
13. 1st Street-Niblick Road/Spring Street
14. Niblick Road/South River Road
15. South River Road/Riverbank Lane
16. South River Road/Bridgeway Lane
17. South River Road/Charolais Road
18. Charolais Road/Holstein Drive
19. Charolais Road/Otero Lane
20. Charolais Road/St Andrews Circle
21. Charolais Road/Rambouillet Road
22. Meadowlark Road/Oriole Way

The following segments of US 101 will be studied during the weekday AM and PM peak hours:

1. US101mainline north of StateRoute46E
2. US101mainline south of StateRoute46E
3. US 101 mainline north of State Route 46W
4. U.S.101NB at SR46E(on and off ramps)
5. U.S.101SB at SR46E(on and off ramps)
6. U.S.101SB atRiversideAve-17thStreet(on and off ramps)
7. U.S. 101 SB on at Spring Street (on ramp)
8. U.S.101NBoff at SpringStreet(offramp)
9. U.S.101NBoff at PasoRoblesStreet(offramp)
10. U.S. 101 NB on at Paso Robles Street (on ramp)

The following roadway segments will be studied using average daily traffic (ADT) volumes:

1. Creston Road - River Road to Golden Hill Road
2. Creston Road - Golden Hill Road to Niblick Road
3. Creston Road - Niblick Road to Cedarwood Drive
4. Creston Road - Cedarwood Drive to Charolais Road
5. Golden Hill Road - Creston Road to Union Road
6. Golden Hill Road - Union Road to SR 46E
7. Niblick Road - South River Road to Spring Street
8. Niblick Road - Creston Road to South River Road
9. Charolais Road - South River Road to Creston Road
10. South River Road - Lake Ysabel Road to Spanish Camp Road South
11. South River Road - Charolais Road to Niblick Road
12. Barley Grain Road - Creston Road to Spanish Camp Road



map source: esri ArcGIS



PROJECT LOCATION



MAP
1



MAP LEGEND:

- RESIDENTIAL SINGLE FAMILY – 4/5 DU/AC**
Single Level, Two-Story
- RESIDENTIAL MULTI FAMILY – 12 DU/AC**
Town Home, Duplex, Tri-Plex
- RESIDENTIAL MULTI FAMILY – 20 DU/AC**
Apartments, Condominiums
- COMMERCIAL MIXED USE**
Community & Sub-Regional Retail
- PARK / OPEN SPACE**
- PROPOSED TRAIL NETWORK**
8-Foot Multipurpose Trail

map source: RICK Engineering Company
date: April 2018



PROPOSED LAND USE



MAP
2



MAP LEGEND:

- New Arterial Road- Airport Road
- - - Existing Arterial Road - Creston Road
- New Collector - Central Parkway
- - - Existing Collector - Beechwood Drive
Meadowlark Road
- Local Residential
- - - Class 2 Bike Lane
- ⊙ Traffic Calming Device

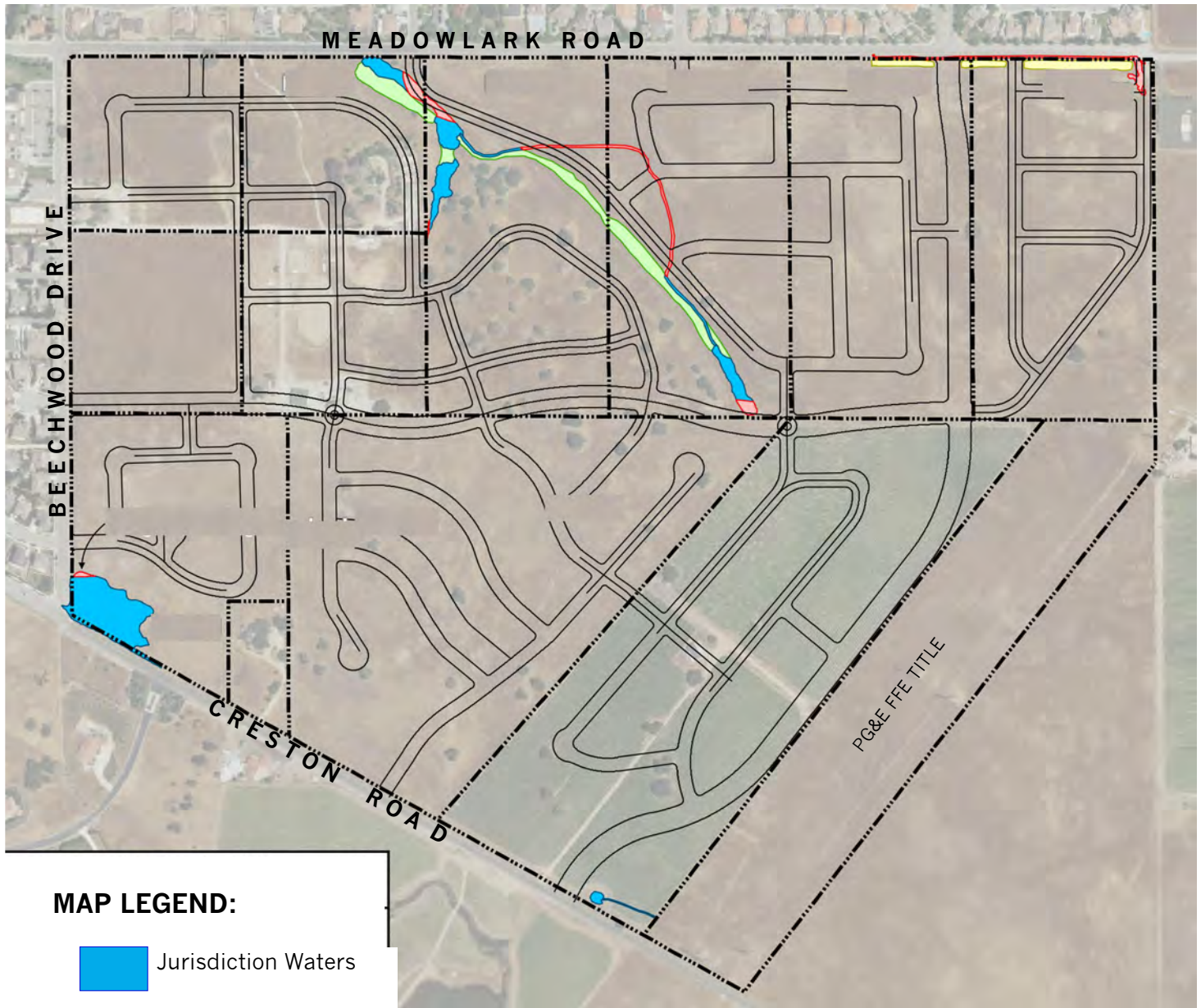
map source: RICK Engineering Company
date: April 2018



PROPOSED CIRCULATION PLAN



MAP
3



MAP LEGEND:

- Jurisdiction Waters
- Potential Impact to Jurisdictional Water
- Wetland Creation Potential 2:1 Mit. Area
- Wetland Creation Potential 3:1 Mit. Area

PRELIMINARY MITIGATION TABLE

Property Owner	Prelim. to be impacted	Required 2:1 Mitigation	Required 3:1 Mitigation	To Be Created
Harrod	0.24 acre	-----	0.72 acre	0.79 acre
Erskine	0.05 acre	0.10 acre	-----	0.13 acre
Pensco	0.17 acre	-----	0.52 acre	0.54 acre
Huebner	0.16 acre	0.32 acre	-----	0.37 acre

map source: Althouse & Meade, Inc.
date: April 2018



PRELIMINARY JURISDICTIONAL WATERS



MAP
4

NOP Response Letters

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DEPARTMENT OF TRANSPORTATION

50 HIGUERA STREET
SAN LUIS OBISPO, CA 93401-5415
PHONE (805) 549-3101
FAX (805) 549-3329
TTY 711

<http://www.dot.ca.gov/dist05/>



*Making Conservation
a California Way of Life.*

July 27, 2018

SLO 46 PM 31.31
SCH#2018061064

Susan DeCarli, City Planner
City of Paso Robles
1000 Spring Street
Paso Robles, CA 93446

**COMMENTS FOR THE NOTICE OF PREPARATION (NOP) FOR THE BEECHWOOD
SPECIFIC PLAN AND GENERAL PLAN AMENDMENT DRAFT ENVIRONMENTAL
IMPACT REPORT (EIR)**

Dear Ms. DeCarli:

The California Department of Transportation (Caltrans) thanks you for the opportunity to review the NOP for the Beechwood Specific Plan and General Plan Amendment. Caltrans has reviewed the above referenced project and offers the following comments at this time.

1. Caltrans supports local planning efforts that are consistent with State planning priorities intended to promote equity, strengthen the economy, protect the environment, and promote public health and safety. We accomplish this by working with local jurisdictions to achieve a shared vision of how the transportation system should and can accommodate interregional and local travel.
2. Projects that support smart growth principles which include improvements to pedestrian, bicycle, and transit infrastructure (or other key Transportation Demand Strategies) are supported by Caltrans and are consistent with our mission, vision, and goals.
3. The traffic study should include information on existing traffic volumes within the study area, including the State transportation system, and should be based on recent traffic volumes less than two years old. Counts older than two years cannot be used as a baseline. Caltrans request the methodology used for the analysis, Synchro Model, and calculations be provided to us for review.
4. At any time during the environmental review and approval process, Caltrans retains the statutory right to request a formal scoping meeting to resolve any issues of concern. Such formal scoping meeting requests are allowed per the provisions of the California Public Resources Code Section 21083.9 [a] [1].

*"Provide a safe, sustainable, integrated and efficient transportation system
to enhance California's economy and livability"*

RECEIVED
2018
City of Paso Robles
Community Development Dept.

Ms. Susan DeCarli

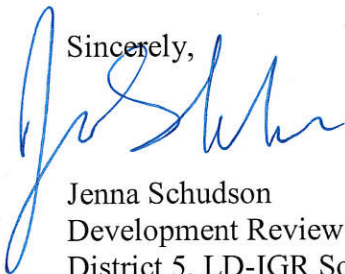
July 27, 2018

Page 2

5. Any work within the State's right-of-way will require an encroachment permit from Caltrans, and must be done to our engineering and environmental standards, and at no cost to the State. The conditions of approval and the requirements for the encroachment permit are issued at the sole discretion of the Permits Office, and nothing in this letter shall be implied as limiting those future conditioned and requirements. For more information regarding the encroachment permit process, please visit our Encroachment Permit Website at:
<http://dot.ca.gov/dist05/permit/index.htm>.

We look forward to continued coordination with the City on this project. Early review and consultation of the traffic study is encouraged. If you have any questions, or need further clarification on items discussed above, please contact me at (805) 549-3432 or Jenna.Schudson@dot.ca.gov.

Sincerely,



Jenna Schudson
Development Review Coordinator
District 5, LD-IGR South Branch



Air Pollution Control District
San Luis Obispo County

RECEIVED

JUL 30 2018

City of Paso Robles
Community Development Dept.

July 26, 2018

Mrs. Susan DeCarli, City Planner
City of Paso Robles Community Development Dept.
1000 Spring Street
Paso Robles CA 93446

SUBJECT: APCD Comments Regarding the Beechwood Specific Plan/General Plan
Amendment NOP

Dear Mrs. DeCarli,

Thank you for including the San Luis Obispo County Air Pollution Control District (APCD) in the environmental review process. We have completed our review of the Notice of Preparation for the Beechwood Specific Plan Draft Environmental Impact Report (DEIR). The Beechwood property is in Paso Robles bounded by Meadowlark Road to the north, Beechwood Drive to the west, Creston Road to the southwest and a PG&E easement to the southeast.

The Beechwood Community Specific Plan calls for 911 residential units at a mix of densities, small scale commercial zoning, preservation of open space and sensitive habitat, development of the vehicular, bicycle and pedestrian circulation network. The 211-acre property is proposed to include approximately 30-acres of open space and parks, 1.8 acres of wetlands, 5.4-acres of commercial space, with the remaining 173.75-acres dedicated to residences, roads, trails, and easements.

The following are APCD comments that are pertinent to this project.

1. Contact Person:

Melissa Guise
Air Pollution Control District
3433 Roberto Court
San Luis Obispo, CA 93401
(805) 781-4667

2. Permit(s) or Approval(s) Authority:

Demolition/Asbestos

Demolition activities can have potential negative air quality impacts, including issues surrounding proper handling, abatement, and disposal of asbestos containing material (ACM). Asbestos containing materials could be encountered during the demolition or

remodeling of existing structures or the disturbance, demolition, or relocation of above or below ground utility pipes/pipelines (e.g., transit pipes or insulation on pipes). **If this project will include any of these activities, then it may be subject to various regulatory jurisdictions, including the requirements stipulated in the National Emission Standard for Hazardous Air Pollutants (40CFR61, Subpart M - asbestos NESHAP).** These requirements include but are not limited to: 1) written notification, within at least 10 business days of activities commencing, to the APCD, 2) asbestos survey conducted by a Certified Asbestos Consultant, and, 3) applicable removal and disposal requirements of identified ACM. Please contact the APCD Engineering & Compliance Division at (805) 781-5912 or go to slocleanair.org/rules-regulations/asbestos.php for further information. To obtain a Notification of Demolition and Renovation form go to the "Other Forms" section of slocleanair.org/library/download-forms.php.

Developmental Burning

Effective February 25, 2000, **the APCD prohibited developmental burning of vegetative material within San Luis Obispo County.** If you have any questions regarding these requirements, contact the APCD Engineering & Compliance Division at (805) 781-5912.

Construction Permit Requirements

Based on the information provided, we are unsure of the types of equipment that may be present during the project's construction phase. Portable equipment, 50 horsepower (hp) or greater, used during construction activities may require California statewide portable equipment registration (issued by the California Air Resources Board) or an APCD permit.

The following list is provided as a guide to equipment and operations that may have permitting requirements but should not be viewed as exclusive. For a more detailed listing, refer to the Technical Appendices, page 4-4, in the APCD's 2012 CEQA Handbook.

- Power screens, conveyors, diesel engines, and/or crushers;
- Portable generators and equipment with engines that are 50 hp or greater;
- Electrical generation plants or the use of standby generator;
- Internal combustion engines;
- Rock and pavement crushing;
- Unconfined abrasive blasting operations;
- Tub grinders;
- Trommel screens; and,
- Portable plants (e.g. aggregate plant, asphalt batch plant, concrete batch plant, etc).

To minimize potential delays, prior to the start of the project, please contact the APCD Engineering & Compliance Division at (805) 781-5912 for specific information regarding permitting requirements.

Residential Wood Combustion

Under APCD Rule 504, **only APCD approved wood burning devices can be installed in new dwelling units.** These devices include:

- All EPA-Certified Phase II wood burning devices;
- Catalytic wood burning devices which emit less than or equal to 4.1 grams per hour of particulate matter which are not EPA-Certified but have been verified by a nationally-recognized testing lab;

- Non-catalytic wood burning devices which emit less than or equal to 7.5 grams per hour of particulate matter which are not EPA-Certified but have been verified by a nationally-recognized testing lab;
- Pellet-fueled woodheaters; and
- Dedicated gas-fired fireplaces.

If you have any questions about approved wood burning devices, please contact the APCD Engineering and Compliance Division at (805) 781-5912.

3. Environmental Information:

The project under development has the potential for significant impacts to local air emissions, ambient air quality, sensitive receptors, and the implementation of the Clean Air Plan (CAP). A complete air quality analysis should be included in the DEIR to adequately evaluate the overall air quality impacts associated with implementation of the proposed project. This analysis should address both short-term (construction) and long-term (operational) emissions impacts (including traditional air pollutants, air toxics and greenhouse gas emissions). The following is an outline of items that should be included in the analysis:

The "2012 CEQA Air Quality Handbook" (the Handbook) can be used as guidance for assessing the air quality impacts for this project and defining mitigation measures. A copy can be accessed on the APCD web page at:

http://www.slocleanair.org/images/cms/upload/files/CEQA_Handbook_2012_v2%20%28Updated%20Sept%202015%29.pdf

- a) A description of existing air quality and emissions in the impact area, including the attainment status of the APCD relative to state and federal air quality standards and any existing regulatory restrictions to development. The most recent Clean Air Plan (CA) should be consulted for applicable information and the APCD should be consulted to determine if there is more up to date information available.
- b) A detailed description of all phases of the project should be included in the DEIR. Based on the description, a detailed quantitative air emissions analysis at the project scale needs to be completed and all emissions from each phase of the project need to be quantified. A complete emission analysis should be performed on all relevant construction and operational phase emission sources using the latest approved version of CalEEMod (caleemod.com), EMFAC, OFF-ROAD, AP-42 "Compilation of Air Pollutant Emission Factors" or other APCD approved emission calculator tools. This analysis should include both stationary and mobile sources, regardless if APCD permits are needed for the equipment. All assumptions used in the air emissions calculations should be included in the DEIR. Modeling results should include detailed output reports that include data input parameters, assumptions, and default modification if applicable. The quantitative analysis needs to address criteria pollutants, greenhouse gases, air toxics, and diesel particulate matter and be compared to APCD's CEQA construction and operational phase thresholds. The DEIR needs to identify appropriate mitigation measures for air quality impacts that exceed these thresholds.

- c) As indicated above greenhouse gases should be quantified as part of the project. The short-term greenhouse gas impacts from the construction should be amortized over the life of the project and added to the operational phase impacts. Additionally, if the project will result in any loss and or conversion of vegetated land (i.e., cropland, forestland, grassland, wetlands, other) the GHG emissions associated with that loss or conversion should be quantified and mitigated as appropriate.
 - d) To aid in the air quality analysis, the traffic study should include the total daily traffic volumes projected. The traffic study results can be used in the quantitative and qualitative analyses by providing a tool for comparing trip generation between different alternatives and evaluating effectiveness of mitigation methods for reducing traffic impacts.
 - e) The DEIR should include a range of feasible alternatives to the proposed project that could effectively minimize air quality impacts. A thorough emission analysis should be conducted for each of the propose alternative identified. All calculations and assumptions used should be fully documented in an appendix to the DEIR. Examples of alternatives include but are not limited to:
 - Flexible zoning to promote mixed use and design standards that protect mixed use.
 - Increase the amount of neighborhood scale mixed use.
 - Additional density beyond proposed zoning allowances.
 - Design standards that require narrow streets and minimum front setbacks on structures.
 - Limiting the size of each arterial through the development. This reduces the need for noise barriers such as cinder block walls along roadways, decreases roadway widths, and slows the speed of traffic, creating an atmosphere that encourages walking and bicycling.
 - f) A cumulative impact analysis should be performed to evaluate the combined air quality impacts of this project and impact from existing and propose future development in the area. This should encompass all planned construction activities within one mile of the project.
 - g) Mitigation measures to reduce or avoid significant air quality impacts should be recommended. The DEIR should address any proposed off-site mitigation measures and describe feasible mitigation measure to reduce air quality impacts on-site. Off-site mitigation may be required in the event that emission cannot be reduced on-site below APCD specified thresholds.
4. Permit Stipulation/Conditions:

It is recommended reference material include the 2012 version of the "CEQA Air Quality Handbook" (the Handbook). It can be accessed on the APCD website http://www.slcleanair.org/images/cms/upload/files/CEQA_Handbook_2012_v2%20%28Updated%20Sept%202015%29.pdf

5. Alternatives:

Any alternatives described in the DEIR should involve the same level of air quality analysis as described in section 3 listed above.

6. Reasonably Foreseeable Projects, Programs or Plans:

The DEIR should identify the other nearby pending development projects including the Olsen Ranch just northeast of Beechwood and Chandler Ranch northwest of Olsen Ranch and include these future developments in the DEIR's cumulative impact evaluation.

7. Relevant Information:

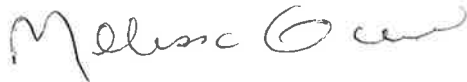
As mentioned earlier, the CEQA Air Quality Handbook should be referenced in the DEIR for determining the significance of impacts and level of mitigation recommended.

8. Further Comments:

No further comments.

Again, thank you for the opportunity to comment on this proposal. If you have any questions or comments, feel free to contact me at (805) 781-4667.

Sincerely,



Melissa Guise
Air Quality Specialist

MAG/arr

cc: Tim Fuhs, Engineering & Compliance Division, APCD
Dora Drexler, Engineering & Compliance Supervisor, APCD

Attachments:

h:\plan\ceqa\project_review\2000\2800\2846-3\2846-3.docx



June 26, 2018

Firma Consultants
Attn: Lindsay Corica
187 Tank Farm Rd
San Luis Obispo, CA 93401

Subject: Public Works Comments on the Notice of Preparation of a Draft Environmental Impact Report (DEIR), Beechwood Community Specific Plan & General Plan Amendment

Thank you for the opportunity to provide information on subject project. It has been reviewed by several divisions of Public Works, and this represents our consolidated response.

1. Contact person: Development Services Manager, County Government Center Room 207, San Luis Obispo CA 93408. (805) 781-5252.
2. Public Works is responsible for reviewing public improvements including streets and utilities, as well as drainage and flood hazard, under the provisions of the Real Property Division Ordinance and the Land Use Ordinance, and encroachment within the public right-of-way under County Municipal Codes (Title 13) and the Streets and Highway Code.
3. For our use, the report must address project anticipated impacts to traffic, circulation, utility services, drainage, stormwater, and flood hazard. We request the following areas of study be incorporated into the analysis:
 - a. Transportation Impact Study Scope
 - i. Add the following intersections
 1. Barley Grain Rd at Creston Rd
 2. Barley Grain Rd at Spanish Camp Rd
 3. Spanish Camp Rd at River Rd
 4. Creston Rd at Neal Springs Rd
 5. Templeton Rd at El Pomar Dr
 6. El Pomar Dr at Neal Springs Rd
 7. Neal Springs Rd at River Rd
 8. Neal Springs Rd at Creston Rd
 - ii. Add the following roadway segments
 1. Spanish Camp Rd between River Rd and Barley Grain Rd
 2. River Rd between the city limits and Neal Springs Rd
 3. Creston Rd between the project site and Neal Springs Rd
 4. Neal Springs Rd between Creston Rd and El Pomar Dr
 5. El Pomar Dr between Neal Springs Rd and Templeton Rd
4. A list of "standard permit conditions" is available from our office and available upon request. Minimum conditions would address the following improvements: access (roads and circulation), drainage (flooding and post construction stormwater), utilities, and the maintenance responsibilities associated with those improvements.
5. We do not have any alternative projects to suggest for evaluation.

6. Aside from regularly scheduled infrastructure maintenance this department does not have any reasonably foreseeable projects, programs or plans in the area of this proposed development.
7. The following information may be relevant for consideration:
 - a. Public Improvement Standards,
(<http://www.slocounty.ca.gov/PW/DevServ/PublicImprovementStandards.htm>)
 - b. Traffic Circulation Studies, (http://www.slocounty.ca.gov/PW/Traffic/Traffic_Studies.htm)
 - c. County Bikeways Plan (http://www.slocounty.ca.gov/PW/Bicycles/Bike_Plan.htm)
 - d. Pavement Management Report,
(http://www.slocounty.ca.gov/PW/Traffic/Road_Pavement_Condition_Report.htm)
 - e. Road Maintenance Report,
(http://www.slocounty.ca.gov/Assets/PW/Traffic/Road_Reports/2013-14+Road+Maintenance+Report.pdf)
 - f. Bridge Maintenance Program
(<http://www.slocounty.ca.gov/Assets/PW/Traffic/Bridge+Maintenance+Program+Report.pdf>)
 - g. Post construction stormwater requirements,
(<http://www.slocounty.ca.gov/planning/drainage/stormwater2014.htm>)
 - h. County Codes Title 23.05 Grading & Drainage; and Title 22.14.060 Flood Hazard
(http://www.slocounty.ca.gov/planning/General_Plan_Ordinances_and_Elements/Land_Use_Ordinances.htm)

Please provide us notification that the Draft EIR is available for review via the web and the related web address where the document may be viewed. If you have any questions or comments please contact our Development Services Manager at 805/781-1596, or at the above address.

Sincerely,

Glenn Marshall, RCE
Development Services Manager

Appendix B

Biology Reports and Consultation Letters

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Biological Report

for

Beechwood Estates

City of Paso Robles
San Luis Obispo County



Prepared for
Beechwood Ownership Group
Paso Robles, CA

by

ALTHOUSE AND MEADE, INC.
BIOLOGICAL AND ENVIRONMENTAL SERVICES
1602 Spring Street
Paso Robles, CA 93446
(805) 237-9626

June 2018

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Cover Page: View west of Study Area, facing west. April 26, 2018.

Synopsis

- This biological report examines an approximately 213 acre Study Area on property located northeast of the corner of Creston Road and Beechwood Drive in Paso Robles. The Study Area extends north to Meadowlark Road and approximately 0.75 miles to the east.
- The Applicant proposes a residential housing development with open space, a park, mixed use and roadways.
- Habitat types identified and mapped in the Study Area consist of annual grassland, vineyard, blue oak savanna, anthropogenic, cropland, and wetland. Of these six habitat types, only wetlands are sensitive natural communities and will require mitigation measures. No other sensitive natural communities are present in the Study Area.
- Botanical surveys conducted in spring 2018 identified 129 species, subspecies, and varieties of vascular plants in the Study Area. Four special status plant species have a moderate to high potential to occur within the Study Area. Special status plant species were not detected in the Study Area in 2018.
- Wildlife species detected in the Study Area include 2 reptile, 48 birds, and 5 mammals. Eleven special status animal species have low to moderate potential to occur within the Study Area. Special status animal species were not detected in the Study Area.

1.0 Introduction

This report provides information regarding biological resources associated with Beechwood Estates, a residential subdivision project proposed on an approximately 213-acre site (Study Area) in the City of Paso Robles, San Luis Obispo County, California. Results are reported for botanical and wildlife surveys of the Study Area conducted between March through July 2017 and April and May 2018. A habitat inventory and results of database and literature searches of special status species reports within the surrounding 7.5-minute quadrangle search of the site are included. Special status species that could occur in the Study Area or be affected by the proposed project are discussed, and lists of plant and animal species that were identified or are expected in the Study Area are provided. Potential impacts are discussed, and recommended mitigation measures are included.

1.1 Project Location and Description

The Study Area is located between Beechwood Drive, Meadowlark Road, and Creston Road just inside the southeastern limits of the City of Paso Robles. The Study Area consists of twelve Assessor's parcels (APNs 009-863-001, -002, -003, -004, -006, -007, -008, -009, -010, -011, -012, and -013) totaling approximately 213 acres of land. Approximate coordinates for the center of the Study Area are latitude 35.59765° N, and longitude 120.64825° W (WGS 84). The Study Area is located within the Templeton United States Geological Survey (USGS) 7.5 minute quadrangle. Elevation varies from approximately 835 to 900 feet above mean sea level.

The applicant proposes a residential subdivision project comprised of a residential housing development and about 5.6 acres of mixed use area, 6.6 acres of park, and 8.7 acres of open space.

1.2 Responsible Parties

TABLE 1. RESPONSIBLE PARTIES. Applicant, biological consultant, lead agency and owner agent are provided.

Applicant	Biological Consultant
Beechwood Group	Althouse and Meade, Inc. 1602 Spring Street Paso Robles, CA 93446 (805) 237-9626 Contact: Daniel E. Meade, Ph.D.
Lead Agency	Owner Agent
City of El Paso de Robles Community Development Department, Planning Division 1000 Spring Street Paso Robles, CA 93446 (805) 237-3970	Dan Lloyd PO Box 378 Cayucos, CA 93430 805-441-2454

2.0 Regulatory Framework

2.1 Federal Regulations

Endangered Species Act. The federal Endangered Species Act (ESA) provides the legal framework for the listing and protection of species (and their habitats) identified as being endangered or threatened with extinction. Actions that jeopardize endangered or threatened species and the habitats upon which they rely are considered a ‘take’ under the Endangered Species Act. Take of a federally listed threatened or endangered species is prohibited without a special permit. The Endangered Species Act allows for take of a threatened or endangered species incidental to development activities once a habitat conservation plan has been prepared to the satisfaction of the USFWS and an incidental take permit has been issued. The Endangered Species Act also allows for the take of threatened or endangered species after consultation has deemed that development activities will not jeopardize the continued existence of the species. The federal Endangered Species Act also provides for a Section 7 Consultation when a federal permit is required, such as a Clean Water Act Section 404 permit.

“Critical Habitat” is a term within the federal Endangered Species Act designed to guide actions by federal agencies (as opposed to state, local, or other agency actions) and defined as “an area occupied by a species listed as threatened or endangered within which are found physical or geographical features essential to the conservation of the species, or an area not currently occupied by the species which is itself essential to the conservation of the species.”

Migratory Bird Treaty Act. All migratory bird species that are native to the U.S. or its territories are protected under the federal Migratory Bird Treaty Act, as amended under the Migratory Bird Treaty Reform Act of 2004. The Migratory Bird Treaty Act is generally protective of migratory birds.

2.2 State Regulations

California Environmental Quality Act (CEQA). CEQA requires that biological resources be considered when assessing the environmental impacts that are the result of proposed actions. The lead agencies determine the scope of what is considered an impact and what constitutes an “adverse effect” on a biological resource.

California Fish and Game Code. The California Fish and Game Code regulates the taking or possession of birds, mammals, fish, amphibians, and reptiles, as well as natural resources such as wetlands and waters of the state. It includes the California Endangered Species Act, Streambed Alteration Agreement regulations, and California Native Plant Protection Act. Fish and Game Code states that it is “unlawful to take, possess, or needlessly destroy the nest or eggs of any bird, except as otherwise provided by this code or any regulation made pursuant thereto,” and “unlawful to take, possess, or destroy any birds of prey or to take, possess, or destroy the nest or eggs of any such bird” unless authorized.

California Endangered Species Act. The California Endangered Species Act (CESA), similar to the federal Endangered Species Act, contains a process for listing of species and regulating potential impacts to listed species. State threatened and endangered species include both plants and wildlife, but do not include invertebrates. The designation “rare species” applies only to California native plants. State threatened and endangered plant species are regulated largely under

the Native Plant Preservation Act in conjunction with the California Endangered Species Act. State threatened and endangered animal species are legally protected against “take.” The CESA authorizes California Department of Fish and wildlife (CDFW) to enter into a memorandum of agreement for take of listed species to issue an incidental take permit for a state-listed threatened and endangered species only if specific criteria are met. Section 2080 of the CESA prohibits the take of species listed as threatened or endangered pursuant to the Act. Section 2081 allows CDFW to authorize take prohibited under Section 2080 provided that: 1) the taking is incidental to an otherwise lawful activity; 2) the taking will be minimized and fully mitigated; 3) the applicant ensures adequate funding for minimization and mitigation; and 4) the authorization will not jeopardize the continued existence of the listed species.

California Native Plant Protection Act. Section 1900-1913 of the California Fish and Game Code contains the regulations of the Native Plant Protection Act of 1977. The intent of this act is to help conserve and protect rare and endangered plants in the state.

Natural Community Conservation Planning (NCCP) Act of 1991. The NCCP Act is designed to conserve natural communities at the ecosystem scale while accommodating compatible land use. CDFW is the primary state agency that implements the NCCP. The NCCP plan provides for the comprehensive management and conservation of multiple wildlife species. It identifies and provides for regional protection of natural wildlife diversity while allowing for compatible and appropriate development and growth.

3.0 Methods

3.1 Mapping

Mapping efforts utilized Samsung Galaxy Tab 4 tablets equipped with Garmin GLO GPS Receivers and a third-party mapping application. Biological resource constraints were mapped in the field on site. Hand notation of habitats on high resolution aerials were digitized into polygon layers. Maps were created using aerial photo interpretation, field notation, and spatial data imported to Esri ArcGIS, a Geographic Information System (GIS) software program. Data were overlaid on a 2016 National Agriculture Imagery Program (NAIP) aerial of San Luis Obispo County (USDA 2016).

3.2 Literature Review

Relevant literature, including relevant plans, policies, and biological information, was reviewed to determine what biological resources may occur near or in the project area. Research included:

- Review of agency plans pertaining to special-status species;
- Queries of special-status species occurrence records in agency databases;
- Review of literature and consultant reports on biological resources in the region.

We conducted a search of the California Natural Diversity Database (CNDDDB April 2018 data) and the California Native Plant Society (CNPS) On-line Inventory of Rare and Endangered Plants of California for special status species known to occur in the USGS 7.5-minute quadrangles

surrounding the Study Area: Templeton, Adelaida, Paso Robles, Estrella, York Mountain, Creston, Atascadero, and Santa Margarita.

Additional special status species research consisted of reviewing previous biological reports for the area and searching online museum and herbarium specimen records for locality data within San Luis Obispo County. We reviewed online databases of specimen records maintained by the Museum of Vertebrate Zoology at the University of California, Berkeley, the California Academy of Sciences, and the Consortium of California Herbaria. Additional special status species with potential to occur on or near the Study Area were added to our special status species review list (refer to Table 3 and Table 4).

Special status species lists produced by database and literature searches were cross-referenced with the described habitat types in the Study Area to identify all potential special status species that could occur on or near the Study Area. Each special status species that could occur on or near the Study Area is individually discussed (refer to Sections 5.2.2 and 5.3.2).

After review of the literature, the following criteria were used to determine the potential for special-status species to occur within the project area:

- **Present:** The species was observed in the project area during field surveys.
- **High Potential:** High habitat quality combined with CNDDDB occurrences or other records indicate the species is likely to occur on the project site. Individuals may not have been observed in the project area during field surveys; however, the species likely occurs in the project vicinity and could move into the project site in the future.
- **Moderate Potential:** CNDDDB occurrences or surveys have recorded the species within 10 miles of the project area and suitable habitat is present. The species could be present, at least seasonally or as a transient.
- **Low Potential:** Marginally suitable habitat may occur in the project area, but individuals were not observed during surveys and are not expected to be present.
- **No Potential:** Species, sign, or habitat were not observed on the site during surveys and suitable habitat is not present.

3.3 Biological Surveys

The Study Area was originally surveyed for biological resources on March 14, April 14, May 7, May 29, and July 8, 2014 by Althouse and Meade, Inc. Principal Scientist Daniel Meade, Senior Biologist Meg Perry, and Biologists Kyle Weichert and Kristin LaForge. A formal wetland delineation was conducted in April and May 2017 by Senior Environmental Scientist Jacqueline Tilligkeit and Biologist Jeremy Pohlman. Updated spring surveys were conducted in April and May 2018 by Senior Biologist Jessica Griffiths and Biologists Kristen Andersen and Shannon Henke (Table 2).

TABLE 2. BIOLOGICAL SURVEYS.

Survey Date	Biologist(s)	Weather Observations	Activities
March 14, 2014	Meg Perry	60 – 65 °F, warm, high clouds, breezes, 2-5 mph	Habitat assessment

Survey Date	Biologist(s)	Weather Observations	Activities
April 14, 2014	Kyle Weichert	65 – 80 °F, warm, clear, 0-3 mph	Botanical survey, wildlife survey
May 7, 2014	Kyle Weichert Kristin LaForge	60 – 70 °F, clear, breezy, 0-10 mph	Botanical survey
May 29, 2014	Kyle Weichert	60-75 °F, cool, clear, 0-3 mph	Botanical survey
July 8, 2014	Dan Meade	80-85 °F, clear, warm, 0-5 mph	Habitat assessment, overview
April 14, 2017	Jacqueline Tilligkeit	60 – 70 °F, clear skies, 6-9 mph wind	Investigation of wetland locations
April 24, 2017	Jacqueline Tilligkeit Jeremy Pohlman	68 – 73 °F, clear skies, 12-18 mph wind	Wetland delineation, sample site observations
May 5, 2017	Jeremy Pohlman	68 – 80 °F, overcast, trace precipitation, 12 mph wind	Wetland delineation, sample site observations
April 17, 2018	Shannon Henke	60 °F, 5% cloud cover, 9 mph wind	Botanical survey
April 26, 2018	Kristen Andersen	68 – 75 °F, mostly cloudy, 0 -2 mph wind	Botanical survey, wildlife survey
May 3, 2018	Kristen Andersen	72 – 78 °F, clear skies, 0 – 5 mph wind	Botanical survey, wildlife survey
May 15, 2018	Jessica Griffiths	59 °F , overcast, 0 mph wind	Lewis' woodpecker survey, nesting survey

3.4 Botanical

Each habitat type occurring in the Study Area was inspected, described, and catalogued (Section 5.0). All plant and animal species observed in the Study Area were identified and recorded (Sections 5.5 and 5.6). Transects conducted for general vegetation surveys were meandering with an emphasis on locating habitat appropriate for special status plants. Botanical surveys were floristic in nature and followed a complete survey protocol which consists of a 100 percent visual examination of the Study Area using pedestrian transects. Transects were utilized to map boundaries of different vegetation types, describe general conditions and dominant species, compile species lists, and evaluate potential habitat for special status species. Identification of botanical resources included field observations and laboratory analysis of collected material (Table 7). Botanical surveys were conducted in spring 2018 according to agency guidelines (United States Fish and Wildlife 2000, California Department of Fish and Wildlife 2018 and California Native Plant Society 2001). Botanical surveys were appropriately timed to identify all special status plant species known from the region (refer to Section 5.5, and Table 7) that have potential to occur in the Study Area. Botanical nomenclature used in this document follows the Jepson Manual, Second Edition (Baldwin et al. 2012). We also provide Jepson Manual First Edition names in brackets where nomenclature has recently changed.

3.5 Wildlife

Wildlife documentation included observations of animal presence, nests, tracks, and other wildlife sign. Observations of wildlife were recorded during field surveys in all areas of the Study Area (Section 5.6). Birds were identified by sight, using 10 power binoculars, or by vocalizations. Reptiles and amphibians were identified by sight, often using binoculars, and by hand-captures; traps were not used. Mammals recorded in the Study Area were identified by sight and tracks.

3.5.1 *Lewis' woodpecker survey*

Every mature oak tree within the Study Area was surveyed for potential Lewis' woodpecker (*Melanerpes lewis*) nest cavities. Potential nest cavities were mapped and observed for at least 20 minutes to determine whether they were active. Follow up visits were conducted as necessary to confirm nest activity. The entire Study Area was surveyed to determine presence or absence of nesting Lewis' woodpeckers.

4.0 Existing Conditions

4.1 Environmental Setting

The Study Area is located inside the southeastern edge of the current boundary of the City of Paso Robles. The western and northern borders of the Study Area interface with developed suburban neighborhoods while the southern and eastern edges border agricultural land. The Study Area mainly consists of rolling hills with annual grassland and blue oak savanna. Previous use of the land was for dry-farmed grain crops. Mature blue oak trees are widely spaced except for one group of 15 trees near a residence at the end of Cattleman Way.

Four residences and associated barns, out-buildings, animal pens, an arena, and parking areas exist near the center and along the west and south sides of the Study Area. Many ornamental plants and trees have been planted around each of the residences.

About 39 acres of actively managed vineyard is located in the southeast corner of the Study Area. An understory of weedy and introduced forbs and grasses occur between vineyard rows. Several blue oak trees are present among vineyard rows in the southern portion of the vineyard.

Two short ephemeral drainages flow in a northwest direction through the cropland to the northwest corner of the Study Area. A third short ephemeral drainage flows west, on the southern Study Area boundary, along Creston Road, and a fourth drainage originates on the neighboring PG&E easement to the east and drains along the southeastern corner of the vineyard into a bowl-like pool feature in the southern portion of the vineyard. This feature drains offsite south through a culvert under Creston Road.

4.2 Soils

The United States Department of Agriculture (USDA) Soil Survey Geographic (SSURGO) data (2007) and Soil Survey of San Luis Obispo County, California, Paso Robles Area (1983) and USDA SSURGO Data (Tabular data version 4, Spatial data version 1, 2008) delineate four soil map units that intersect the Study Area boundaries (Figure 4). The majority of the Study Area is mapped as Arbuckle-San Ysidro complex, 2 to 9 percent slopes (106) and covers the most of the south and western two-thirds of the Study Area. There are also large patches of Arbuckle-Positas Complex, 9 to 15 percent slopes (102) and Cropley clay, 2 to 9 percent slopes (133) located in the

northeastern third of the Study Area. There is also a small amount of Rincon clay loam, 2 to 9 percent slopes (188). A custom soil report for the Study Area can be found as Appendix A. The soil survey was developed at a 1 to 24,000 scale by the Natural Resource Conservation Service (NRCS) and is not meant to be applied at the acre-scale. It may not indicate small inclusions and variations in the Study Area.

5.0 Results

5.1 Special Status Species

The CNDDDB and the CNPS On-line Inventory of Rare and Endangered Plants and Animals of California contain records for 76 special status species within the designated search area (refer to Appendices B and C). The search area includes the following USGS 7.5-minute quadrangles that include and surround the Study Area: Templeton, Adelaida, Paso Robles, Estrella, York Mountain, Creston, Atascadero, and Santa Margarita. Additional special status species were added to the list from our knowledge of the area. These species are marked with an asterisk (*). Because the search area is so large over varied terrain, species with very restricted habitat requirements far from the Study Area are often reported in the search results, but do not occur locally.

Appropriate habitat and soil conditions are present in the Study Area for four special status plants and nine special status animals (Tables 3 and 4). Figure 5 in Section 8.0 depicts the current GIS data for special status species and critical habitat mapped in the vicinity of the Study Area by the CNDDDB and the U.S. Fish and Wildlife Service (USFWS). A Biological Resource Map indicating locations of habitat types and special status species detected on the Study Area in 2018 is provided in Section 8.0.

5.1.1 Introduction to California Rare Plant Ranks (Formerly CNPS Lists)

Plant species are considered rare when their distribution is confined to localized areas, when there is a threat to their habitat, when they are declining in abundance, or are threatened in a portion of their range. The California Rare Plant Rank (CRPR) categories range from species with a low threat (CRPR 4) to species that are presumed extinct (CRPR 1A). The plants of CRPR 1B are rare throughout their range. All but a few species are endemic to California. All of them are judged to be vulnerable under present circumstances, or to have a high potential for becoming vulnerable.

5.1.2 Introduction to CNDDDB Definitions

"Special Plants" is a broad term used to refer to all the plant taxa inventoried by the CNDDDB, regardless of their legal or protection status (CDFW April 2018). Special Plants include vascular plants and high priority bryophytes (mosses, liverworts, and hornworts).

"Special Animals" (SA) is a general term that refers to all of the animal taxa inventoried by the CNDDDB, regardless of their legal or protection status (CDFG April 2018). The Special Animals list is also referred to by the California Department of Fish and Wildlife (CDFW), formerly California Department of Fish and Game (CDFG), as the list of "species at risk" or "special status species". These taxa may be listed or proposed for listing under the California and/or Federal Endangered Species Acts, but they may also be species deemed biologically rare, restricted in range, declining in abundance, or otherwise vulnerable.

Each species included on the Special Animals list has a corresponding Global and State Rank (refer to Table 4). This ranking system utilizes a numbered hierarchy from one to five following the Global (G-rank) or State (S-rank) category. The threat level of the organism decreases with an increase in the rank number (1=Critically Imperiled, 5=Secure). In some cases where an uncertainty exists in the designation, a question mark (?) is placed after the rank. More information is available at www.natureserve.org.

Animals listed as California Species of Special Concern (SSC) may or may not be listed under California or Federal Endangered Species Acts. They are considered rare or declining in abundance in California. The Special Concern designation is intended to provide the Department of Fish and Wildlife, biologists, land planners and managers with lists of species that require special consideration during the planning process in order to avert continued population declines and potential costly listing under federal and state endangered species laws. For many species of birds, the primary emphasis is on the breeding population in California. For some species that do not breed in California but winter here, emphasis is on wintering range. The SSC designation thus may include a comment regarding the specific protection provided such as nesting or wintering.

Animals listed as Fully Protected (FP) are those species considered by CDFW as rare or faced with possible extinction. Most, but not all, have subsequently been listed under the California Endangered Species Act (CESA) or the Federal Endangered Species Act (FESA). Fully Protected species may not be taken or possessed at any time and no provision of the CDFG code authorizes the issuance of permits or licenses to take any Fully Protected species.

5.2 Special Status Plant Species

5.2.1 Potential Special Status Plant List

There are four special status plant species reported from the region with potential to occur in the Study Area (Table 3). The full list of reported special status species is provided in Appendix B. Federal and California State status, global and State rank, and CNPS ranking status for each species are given. Typical blooming period, habitat preference, potential habitat on site, and whether or not the species was observed in the Study Area are also provided.

TABLE 3. POTENTIAL SPECIAL STATUS PLANT LIST.

	Common Name Scientific Name	Fed/State Status Global/State CRPR Rank	Blooming Period	Habitat Preference	Potential to Occur	Detected in Study Area?	Effect of Activity
1.	Oval-leaved Snapdragon <i>Antirrhinum ovatum</i>	None/None G3/None 4.2	May - November	Heavy, adobe-clay soils on gentle, open slopes, also disturbed areas; 200-1000 m. s SnJV, s SCoRI	Moderate. Appropriate soils and previously disturbed sloping habitat is present in the Study Area.	No	No Effect
2.	Santa Lucia Dwarf Rush <i>Juncus luciensis</i>	None/None G2G3/None 1B.2	April – July	Vernal pools, ephemeral drainages, wet meadow habitats, and streams;	High. Suitable ephemeral drainage habitat is present in the Study Area.	No	No Effect
3.	Shining Navarretia <i>Navarretia nigelliformis</i> subsp. <i>radians</i>	None/None G4T2/None 1B.2	May - July	Vernal pools, clay depressions, dry grasslands; 150-1000 m. SCoR	High. Clay soils and depressions could potentially support this species.	No	No Effect
4.	Spreading Navarretia <i>Navarretia fossalis</i>	FT/None G1/None 1B.1	April - June	Chenopod scrub, marshes and swamps, playatas, and vernal pools; 30-1300 m. SCoRO, SCo, to Baja Cal.	Moderate. Ephemeral wetlands are present in the Study Area.	No	No Effect

Habitat characteristics are from the Jepson Manual and the CNDDDB.

Abbreviations:

CCo: Central Coast
SCo: South Coast
SCoR: South Coast Ranges
SCoRO: Outer South Coast Ranges
SCoRI: Inner South Coast Ranges
SnFrB: San Francisco Bay
TR: Transverse Ranges

WTR: Western Transverse Ranges
SnJV: San Joaquin Valley
ScV: Sacramento Valley
SLO: San Luis Obispo
SN: Sierra Nevada
SnJt: San Jacinto Mtns
SnBr: San Bernardino

Teh: Tehachapi Mtn Area
CW: Central West
SW: South West
DMoj: Mojave Desert
PR: Peninsular Range

Status/Rank Abbreviations:

FE: Federally Endangered
FT: Federally Threatened
PE: Proposed Federally Endangered
PT: Proposed Federally Threatened

CE: California Endangered
CR: California Rare
CT: California Threatened
Cand. CE: Candidate for California Endangered

Cand. CT: Candidate for California Threatened

5.2.2 Special Status Plants Discussion

Analysis of known ecological requirements for special status plant species reported from the region (Table 3) and habitat conditions in the Study Area, suggest four special status plant species have moderate to high potential to occur in the Study Area. Santa Lucia dwarf rush and shining navarretia have high potential to occur, and oval-leaved snapdragon and spreading navarretia have moderate potential to occur. In order to be consistent with regulatory agency botanical survey guidelines (USFWS 2000, CDFW 2009), seasonally timed floristic surveys were conducted in spring 2018 to coincide with potential special status plant bloom times. We discuss the four species below and describe preferred habitat, range restrictions, known occurrences in the region, habitat suitability in the Study Area, and results of spring 2018 botanical surveys.

- A. **Oval-leaved Snapdragon** (*Antirrhinum ovatum*) is a CRPR 4.2 species with a limited distribution from Fresno County south to Ventura County. It occurs in a variety of habitats, including cismontane woodlands, grasslands, and vernal pools, where it blooms from May to November. It is thought to require fire and/or wet and dry years to suppress the growth of competing grasses. The Jepson Manual (2nd Ed.) describes *A. ovatum* as “Abundant every 20-50 years.” It was documented in the vicinity of Estrella in 1895, about 6.7 miles north of the Study Area (CNDDDB #1). It was also reportedly observed near Highway 46 and Union Road in Paso Robles, about 3 miles North of the Study Area, in 1991 (Biosystems 1991 in Althouse and Meade, Inc. 2012), but this occurrence has not been verified. Oval-leaved snapdragon was not observed in spring 2014 at a known reference site on the Carrizo Plain (Althouse and Meade, Inc. unpublished field notes). Soils and habitat in the Study Area are somewhat suited to this species, and this species has moderate potential to occur. Oval-leaved snapdragon was not observed in the Study Area during appropriately timed floristic surveys in April and May 2018.
- B. **Santa Lucia Dwarf Rush** (*Juncus luciensis*) is a CRPR 1B.2 species known from specimens collected in coastal counties from San Diego north to Monterey, and from scattered localities in northern California. It is a very small annual plant that grows in wet sandy soils in a variety of seasonally moist environments. It is caespitose (forming mats or growing in dense tufts or clumps), with small leaves and branches arising from the base, and rarely exceeds two inches in height. The closest reported occurrence to the Study Area is approximately one mile southeast in damp grain fields east of Paso Robles on Creston Road (CNDDDB #8). Suitable wet habitats are located within the Study Area for Santa Lucia dwarf rush, and the cessation of grain farming has increased the potential for this species to occur onsite. Appropriately timed botanical surveys in spring 2018 did not detect Santa Lucia dwarf rush.
- C. **Shining Navarretia** (*Navarretia nigelliformis* subsp. *radians*) is a CRPR 1B.2 subspecies known from vernal pools, valley and foothill grassland, and cismontane woodland habitats in Fresno, Merced, Monterey, San Benito, and San Luis Obispo Counties. It is known from numerous collection records on Camp Roberts, the closest of which is approximately 13.5 miles northwest of the Study Area (CNDDDB #49). Shining navarretia was observed by Althouse and Meade, Inc. biologists in May and June 2014 at a reference site about 2.8 miles north of the Study Area. One of the common navarretia species, *N. mitracarpa*, was identified in the Study Area. It differs from *N. nigelliformis* subsp. *radians* in that it has

violet-colored corollas, deeply lobed cotyledons, and upper leaf bracts that expand above the middle axis. Appropriate habitat for shining navarretia is present in Study Area, and cessation of grain farming has increased the potential for this species to occur onsite. Shining navarretia was not detected in the Study Area during appropriately timed spring 2018 surveys.

- D. Spreading Navarretia** (*Navarretia fossalis*) is a federally listed Threatened species endemic to California and Baja California. It is found in freshwater marsh and vernal pool habitats. It is typically known from southern California and Baja California, but a few records are from the Paso Robles area. The closest known record is a 1953 collection made northeast of Creston, about 7.9 miles southeast of the Study Area (CNDDDB #70). Potential habitat is present in wetland areas in the Study Area and this species has moderate potential to occur. Spreading navarretia was not found in the Study Area during appropriately timed spring 2018 botanical surveys.

5.3 Special Status Animals

5.3.1 Potential Special Status Animals List

Eleven special status animal species reported from the region have potential to occur in the Study Area (Table 4). The full list of reported special status animal species is provided in Appendix C. Federal and California State status, global and State rank, and CDFW listing status for each species are given. Typical nesting or breeding period, habitat preference, potential habitat on site, and whether or not the species was observed in the Study Area are also provided.

TABLE 4. POTENTIAL SPECIAL STATUS ANIMAL LIST.

	Common Name <i>Scientific Name</i>	Fed/State Status Global/State Rank CDFW Rank	Nesting/ Breeding Period	Habitat Preference	Potential to Occur	Detected in Study Area?	Effect of Activity
1.	American Badger <i>Taxidea taxus</i>	None/None G5/S4 SSC	February – May	Needs friable soils in open ground with abundant food source such as California ground squirrels.	Moderate. Suitable soils and open grassland habitat is present in the Study Area.	No	Potential Adverse Effect can be Mitigated
2.	Ferruginous Hawk <i>Buteo regalis</i>	None/None G4/S3S4 WL	October - April (Wintering)	Winters locally in open grassland or savannah habitats. More common in interior SLO County than coast.	Low. Appropriate wintering habitat does occur in the Study Area.	No	Potential Adverse Effect can be Mitigated
3.	Lewis’ Woodpecker* <i>Melanerpes lewis</i>	None/None G4/S4 WL	Late April - July	Open woodlands near streams, oak woodlands, orchards, and pinyon-juniper woodlands.	Moderate. Appropriate oak tree habitat is present in the Study Area.	No	Potential Adverse Effect can be Mitigated
4.	Loggerhead Shrike* <i>Lanius ludovicianus</i>	None/None G4/S4 SSC (Nesting)	March 15 - August 15	Open areas with appropriate perches, near shrubby vegetation for nesting.	Moderate. Moderate nesting habitat does occur in the Study Area.	Yes (not nesting)	Potential Adverse Effect can be Mitigated
5.	Northern California legless lizard <i>Anniella pulchra</i>	None/None G3/S3 SSC	n/a	Sandy or loose loamy soils under sparse vegetation in chaparral, coastal dunes or coastal scrub; soil moisture is essential.	Moderate. Appropriate habitat and moist soils are present in the Study Area.	No	Potential Adverse Effect can be Mitigated
6.	Pallid Bat <i>Antrozous pallidus</i>	None/None G5/S3 SSC	Spring - Summer	Rock crevices, caves, tree hollows, mines, old buildings, and bridges.	Moderate. The blue oak woodland and anthropogenic structures provide suitable habitat for a nesting colony.	No	Potential Adverse Effect can be Mitigated

	Common Name <i>Scientific Name</i>	Fed/State Status Global/State Rank CDFW Rank	Nesting/ Breeding Period	Habitat Preference	Potential to Occur	Detected in Study Area?	Effect of Activity
7.	San Joaquin Kit Fox <i>Vulpes macrotis mutica</i>	FE/CT G4T2T3/S2S3 SA	December – July	Annual grasslands or grassy open stages with scattered shrubby vegetation. Needs loose textured sandy soil and prey base.	Low. Low quality potential habitat is present in the Study Area.	No	Potential Adverse Effect can be Mitigated
8.	Swainson's Hawk* <i>Buteo swainsoni</i>	None/Threatened G5/S2 SA (Nesting)	March 15 - August 15	Breeds in grasslands with scattered trees, juniper-sage flats, riparian areas, savannahs, agricultural fields.	Low. The Study Area is outside the core breeding range and migration path of this species, but may provide limited foraging habitat.	No	Potential Adverse Effect can be Mitigated
9.	Townsend's Big-eared Bat <i>Corynorhinus townsendii</i>	None/None G3G4/S2S3 SSC	Spring - Summer	Caves, buildings, and mine tunnels. Cave like attics as day roosts. On coast roosts are normally within 100 m. of creeks.	Moderate. The anthropogenic structures found in the Study Area may provide suitable habitat for day roosts.	No	Potential Adverse Effect can be Mitigated
10.	Vernal Pool Fairy Shrimp <i>Branchinecta lynchi</i>	FT/None G3/S2S3 SA	Rainy Season	Clear water sandstone depression pools, grassed swale, earth slump, or basalt flow depression pools.	Low. Potential habitat is present in some of the seasonal depressions in the Study Area.	No	To Be Determined
11.	Western Spadefoot <i>Spea hammondi</i>	None/None G3/S3 SSC	January – August	Vernal pools in grassland and woodland habitats	Low. Suitable habitat is present in the ephemeral pool in the Study Area.	No	Potential Adverse Effect can be Mitigated

Habitat characteristics are from the Jepson Manual and the CNDDB.

*not listed in the CNDDB or CNPS for the search area, but possibly for the location.

**Fully Protected under the Bald and Golden Eagle Protection Act.

Abbreviations:

FE: Federally Endangered

FT: Federally Threatened

PE: Proposed Federally Endangered

PT: Proposed Federally Threatened

CE: California Endangered

CT: California Threatened

Cand. CE: Candidate for California Endangered

Cand. CT: Candidate for California Threatened

SA: CDFW Special Animal

SSC: CDFW Species of Special Concern

FP: CDFW Fully-Protected

WL: CDFW Watch List

5.3.2 Special Status Animals Discussion

Based on an analysis of known ecological requirements for the 22 special-status wildlife species reported or known from the region and the habitat conditions that were observed in the Study Area, six species have a moderate potential to occur (American badger, Lewis' woodpecker, loggerhead shrike, northern California legless lizard, pallid bat, and Townsend's big-eared bat), and five species have a low potential to occur in the Study Area (ferruginous hawk, San Joaquin kit fox, Swainson's hawk, vernal pool fairy shrimp, and western spadefoot toad). None of the special status animal species reported from the region are highly likely to occur. We discuss species with moderate and low potential to occur, and describe habitat, range restrictions, known occurrences, and survey results.

The following six special status animal species have moderate potential to occur within the Study Area due to the presence of moderately suitable habitat :

- A. **American Badger** (*Taxidea taxus*) is a California Species of Special Concern known from open grassland habitats throughout San Luis Obispo County and elsewhere in California. Badgers are highly mobile and hunt ground squirrels and other small and medium-sized prey. They are generally uncommon in the Paso Robles area, and although suitable open habitat is found in the Study Area, proximity to the urban edge of the City reduces the likelihood of badger presence. Badgers typically inhabit grasslands but do occasionally forage in cropland where California ground squirrels are abundant. Ground squirrels are found throughout the Study Area. No badgers or badger sign were observed in the Study Area during our wildlife surveys in 2018.
- B. **Lewis' Woodpecker** (*Melanerpes lewis*) is a CDFW Watch List species that is an uncommon, local winter resident occurring in open oak savannahs, and deciduous and coniferous habitats along eastern slopes of the Coast Ranges south to San Luis Obispo County. Lewis' woodpecker is a cavity nesting bird that forages primarily on insects in spring and summer; winter food consists mostly of cached acorns or nuts (CDFW 2014). Appropriate foraging and oak tree nesting habitat is present in the Study Area. Lewis' woodpeckers were not present in the Study Area during our focused spring 2018 woodpecker survey.
- C. **Loggerhead Shrike** (*Lanius ludovicianus*) is a California Species of Special Concern and resident in arid regions of San Luis Obispo County and elsewhere in California. It requires open areas with appropriate perches for hunting, and shrubby trees or bushes for nesting. Appropriate foraging grassland habitat is present, however, no shrubby vegetated nesting habitat is found in the Study Area. No loggerhead shrikes were observed in the Study Area during our spring 2018 wildlife surveys.
- D. **Northern California Legless Lizard** (*Anniella pulchra*) is a California Species of Special Concern that occurs from Contra Costa to Santa Barbara County. It has a Global Rank of G3 and a State Rank of S3, both of which indicate that this species is considered Vulnerable. This species includes the subspecies formerly treated as *A. pulchra nigra* and *A. pulchra pulchra* which was shown to be an invalid designation (Pearse and Pogson 2000). Northern California legless lizard inhabits friable soils in a variety of habitats from coastal dunes to oak woodlands and chaparral. Adapted to subterranean life, the legless lizard thrives near native coastal shrubs that produce an abundance of leaf litter and have

strong roots systems (Kuhn et al. 2005). Areas of exotic vegetation and open grassland do not provide suitable habitat for the silvery legless lizard since these plant communities support smaller populations of insect prey and offer little protection from higher ground temperatures and soil desiccation (Jennings and Hayes 1994; Slobodchikoff and Doyen 1977). The closest reported occurrence of the northern California legless lizard is located approximately 6 miles south of the Study Area (CNDDDB #66), in 2007, where habitat consisted of mature coast live oak trees interspersed with residential homes with sandy loam soils. Due to the presence of oak tree habitat and some areas with moist friable soils in the Study Area, there is moderate potential for this species to occur. Northern California legless lizards were not observed in the Study Area during our April and June 2018 surveys. NOTE: Breeding period: Early Spring – July (some populations observed to breed biennially).

- E. **Pallid Bat** (*Antrozous pallidus*) is a California Species of Special Concern. This is a large, long-eared bat occurring throughout the state from deserts to moist forests. *Antrozous pallidus* is primarily a crevice roosting species and selects roosts where they can retreat from view. The pallid bat prefers rocky outcroppings, but may be found regularly in oak and pine woodlands where they roost in caves, mines, rock crevices, hollow trees, and buildings (Nowak 1994). Bridges are also commonly used, often as night roosts between foraging periods. Maternity colonies form starting in April, averaging 12 to 100 bats, and disband in late August. Young are born in May and June. Communal wintering or maternity colonies are more common in rock crevices and caves. The nearest record is a night roost located almost 15 miles south of the Study Area at the Highway 101 bridge over Santa Margarita Creek (CNDDDB #76), and Althouse and Meade, Inc. biologists have observed night roosts under bridges in Atascadero Creek as well. Pallid bats likely forage seasonally in the Salinas River and riparian habitats adjacent to the Study Area. Pallid bats could potentially roost in small numbers in large oak trees in the Study Area or in some of the structures located onsite, however no sign was observed. Maternity colonies are not expected to be present.
- F. **Townsend's Big-eared Bat** (*Corynorhinus townsendii*) is a California Species of Special Concern. Townsend's big-eared bat is medium sized with large rabbit-like ears. This species has been recorded in a number of different habitats in California. In our area it is found in the vicinity of creek beds where they use the riparian corridor for foraging. Typical roost sites are in caves or buildings with cave-like features. Townsend's big-eared bat is sedentary and is presumed to spend the winter within 25 miles of its summer roosts. This bat has been recorded in at least six localities within San Luis Obispo County (Pierson et al. 2002). Townsend's big-eared bat could potentially roost in structures in the Study Area.

The following five special status animal species have low potential to occur within the Study Area due to marginally suitable habitat. They were not observed during surveys and are not expected to be present:

- G. **Ferruginous Hawk** (*Buteo regalis*) is a CDFW Watch List species that winters in grassland habitats in San Luis Obispo County and elsewhere in California. It does not breed in San Luis Obispo County, but is protected on its wintering grounds. Ferruginous hawks prefer short-grass habitats such as grasslands and fallow farm fields where they often land on the ground and hunt by coursing low over the fields. They are regular but

never abundant winter residents in the interior portion of the County and could be present seasonally from October through February. Ferruginous hawks were not observed during our wildlife surveys in 2018 but could occur as an uncommon winter migrant.

- H. San Joaquin Kit Fox** (*Vulpes macrotis mutica*) is a federally listed endangered species and a state listed threatened species. The CNDDDB reports two occurrences near the Study Area from 1.3 miles and 2 miles north on Chandler Ranch from 1990 and 1991, respectively (CNDDDB #945 and #941). The cropland and vineyard in the Study Area provides poor quality habitat for San Joaquin kit fox due to regular disturbance, low prey availability, and agricultural management. San Joaquin kit fox was not observed in the Study Area during the spring 2018 wildlife surveys. Development on the Study Area will permanently remove low quality potential habitat for San Joaquin kit fox
- I. Swainson's Hawk** (*Buteo swainsoni*) is a state-listed threatened species that breeds in California and winters in Mexico and South America. It nests in large trees in riparian habitats and upland areas in arid grassland and shrub-steppe habitats. In the San Joaquin and Sacramento Valleys of California, agricultural habitats are often used for foraging, with nests built in adjacent riparian corridors. The Swainson's hawk is a very uncommon breeder in San Luis Obispo County. Until 2010, the most recent confirmed nest record was from the San Juan River south of Shandon in 1977. In 2010, two nesting records were reported for Swainson's hawk in San Luis Obispo County (CNDDDB #1722 and #1723). One record was from west of Shandon along Highway 46, approximately 5.5 miles east of the Study Area, and one was from the Cuyama Valley, over 50 miles southeast of the site. Potentially suitable nesting and foraging habitat is present in the Study Area for Swainson's hawk. Swainson's hawks were not observed during the 2018 wildlife surveys.
- J. Vernal Pool Fairy Shrimp** (*Branchinecta lynchi*) is a federally listed threatened species known from the vicinity of the subject property. The Study Area is only 2.2 miles southwest from the USFWS vernal pool fairy shrimp critical habitat. The CNDDDB has recorded several occurrences in the vicinity of the Study Area. One record is from several pools about 2.6 miles northwest of the Study Area in a lot near the Union Pacific Railroad tracks near Spring Street and Niblick Road in Paso Robles (CNDDDB #621). Vernal pool fairy shrimp are also known from a series of vernal pools approximately 3.4 miles north of the Study Area, just south of Highway 46 East (CNDDDB #287). Another record is from Blacks Hatchery and Turkey Farm, also 3.4 miles north of the Study Area, but on the north side of Highway 46 (CNDDDB #380).

Dry season and wet season protocol level surveys for vernal pool special status species were completed in 2015-2016 for the Study Area (Dallas 2015, 2016). Vernal pool fairy shrimp were not found in the Study Area.
- K. Western Spadefoot Toad** (*Spea hammondi*) is a California Species of Special Concern known from ephemeral pools in open grassland habitats across the interior region of San Luis Obispo County. Spadefoot toads remain underground for most of the year, emerging to breed in seasonal wetland pools during the rainy season. Development of the larvae from egg to metamorphosis can be very quick, depending upon water temperature. Spadefoot toads are known to breed in seasonal pools in the vicinity Highway 46, east of Paso Robles. Spadefoot toads were observed in 2005 in a man-made stockpond about 500 feet north of the northeast corner of the Study Area (CNDDDB #333). No spadefoot toads

were observed in the Study Area during our 2018 surveys, or during two wet season vernal pool surveys, 2014-2015 and 2015-2016 (Dallas 2015, 2016), however suitable habitat is present.

The remaining 11 special status animal species that were evaluated were determined to have no potential to occur in the Study Area due to lack of suitable habitat present. However, two of these species are listed or are candidates for listing as threatened or endangered under the Federal Endangered Species Act (FESA) and/or California Endangered Species Act (CESA). Therefore, although they are not expected to occur, these species also warrant further discussion:

L. California red-legged frog (*Rana draytonii*) is a federally listed threatened species and a California Species of Special Concern. It occurs in California in the Coast Range, Sierras, the Transverse Range and south below 1,200 meters elevation (CDFW 2014, Sousa 2008). The main habitat types for the CRLF are deep, still or slow-moving sources of water in lowlands and foothills with shrubby, riparian, or vegetative shorelines for cover (CDFW 2014, CNDDDB 2017, Jennings and Hayes 1994). The most suitable vegetation types for cover are cattails (*Typha sp.*), arroyo willow (*Salix lasiolepis*) and bulrushes (*Scirpus sp.*) (Jennings and Hayes 1994). Along with its aquatic habitat, the CRLF also utilizes upland habitat for seeking food, shelter and as migration corridors between breeding and non-breeding sites. Bulger et al. (2003) found that during dry summer months, CRLF were nearly always within 5 meters of a pond; however, during summer rain events and early winter rains, frogs moved up to 130 meters from their ponds, and some frogs even traveled up to 2800 meters to migrate to a different pond. When out of the water the CRLF will shelter under natural or manmade debris and burrow into moist leaf litter or small animal burrows (USFWS 2010). The breeding season for the CRLF is from January to July with a peak in February (CDFW 2014). One major cause of CRLF population decline is the introduction of the bullfrog (*Rana catesbeiana*) which can consume and exhaust CRLF resources (Sousa 2008). The closest reported occurrence of CRLF to the Study Area is approximately 5 miles southwest of the Study Area (CNDDDB #618) in a Salinas River floodplain near Graves Creek, reported in 2016. Due to the lack of appropriate aquatic habitat, California red-legged frog have no potential to occur in the Study Area and were not observed during our 2018 surveys.

M. Least Bell's Vireo (*Vireo bellii pusillus*) is one of four subspecies of Bell's vireo (*Vireo bellii*) and is both state and federally listed as endangered. The least Bell's vireo winters in Baja California, Mexico and migrates to California during the breeding season (generally March to September), where it is found in scattered populations from Central to Southern California. They are a small, olive colored bird whose habitat consists of low, dense riparian growth near dry and intermittent streams (USFWS 1994). Preferred nesting habitat is on low branches of willows (*Salix spp.*), mule fat (*Baccharis salicifolia*), and mesquite bushes (*Prosopis spp.*) where insects can be found for feeding (Brown 1993). Range wide decline has occurred due to habitat loss, and brood parasitism by brown-headed cowbirds (*Molothrus ater*) throughout range of California (CNDDDB 2017). The Least Bell's Vireo has had occurrences within San Luis Obispo County (CNDDDB 2017). The closest reported occurrence of the Least Bell's vireo was in 1947 and is located approximately 2 miles northwest of the Study Area (CNDDDB #127) where nests were constructed among wild rose bushes in a patch of willow trees approximately 50 feet from running water. A more recent occurrence was reported in 2005, approximately 5 miles from the Study Area in a

similar location along the Salinas River (CNDDDB #323). Suitable riparian habitat is not present in the Study Area and is unlikely to support the Least Bell's vireo. Least Bell's vireo was not observed in the Study Area during our 2018 site surveys but could be present as transients across the site.

5.4 Habitat Types

We describe six habitat types in the Study Area and provide approximate acreages for each of the major habitat types present (Table 6): annual grassland, vineyard, blue oak savanna, anthropogenic, cropland, and wetland. The Habitat Map provided in Section 8.0 indicates the locations of each habitat type in the Study Area as of May 2018.

TABLE 6. HABITAT DATA.

Habitat Type	Approx. Acreage
Annual Grassland	118.3
Vineyard	38.8
Blue Oak Savanna	26.7
Anthropogenic	16.9
Cropland	9.8
Wetland	2.8

5.4.1 Annual grassland

Annual grassland constitutes the majority of habitat within the Study Area, occupying approximately 118 acres of the site. This newly established habitat is a successional response to the cessation of cropland tillage and plowing that had occurred historically within the Study Area. Annual grassland in the northeast portion of the Study Area is dominated by rattail sixweeks grass (*Festuca myuros*), hairy vetch (*Vicia villosa*), wild and slender oats (*Avena fatua*, *Avena barbata*), filaree (*Erodium* sp.), and ripgut brome (*Bromus diandrus*). Toward the northwest, annual grassland transitions to include dominant species Italian rye grass (*Festuca perennis*), while wild and slender oats and rattail sixweeks grass remain as associate dominants. Cattle grazing continues throughout the grassland habitat, promoting the spread of these non-native annual species.

The southwest portion of the Study Area consists of a southern wetland surrounded by annual grassland which consists of dominant non-native species such as red brome (*Bromus madritensis* subsp. *rubens*) and soft chess (*Bromus hordeaceus*). Patches of low-growth filaree occur throughout the southwest portion of the Study Area, where native annual forbs such as purple clarkia (*Clarkia purpurea*) and California poppy (*Eschscholzia californica*) are also present. Evidence of prior cropland tillage remains apparent by the unstable topsoil of the grassland. Blue oaks occur intermittently throughout the southern portion of annual grassland habitat.

5.4.2 Vineyard

Vineyard occupies approximately 39 acres in the southeast portion of the Study Area, adjacent to Creston Road. The vineyard is surrounded with 6 to 8-foot high wildlife exclusion fence, with a

gated entrance accessible from Creston Road. Unpaved roads facilitate vehicle access and a small ranch home is present near the center of the vineyard. Vines are planted in long north-to south rows. Non-native annuals and weedy ruderal forbs are present between alternating vine rows and along the margins of the vineyard, including filaree, introduced annual grasses, annual burclover (*Medicago polymorpha*), and scarlet pimpernel (*Anagallis arvensis*). A few scattered mature blue oaks are also present in the southern portion of the vineyard, surrounded by vine rows.

5.4.3 Blue oak savanna

Blue oak savanna constitutes approximately 27 acres of the Study Area. This habitat was determined by the abundance and proximity of mature blue oaks (*Quercus douglasii*) to one another within the annual grassland habitat. These oaks provide habitat for several bird species, leaf litter habitat for potential reptile and mammal species, and shade for cattle. The northern-most portion of blue oak savanna consists of a moderately dense canopy, but generally tree spacing is open with gaps between canopy edges of individual trees. The understory has a similar composition to the open annual grassland, though more sparse, including non-native grasses and occasional Italian thistle (*Carduus pycnocephalus*). On the north facing aspect of a small hill to the north of the savanna where the canopy is more dense, woodland plant species including miner's lettuce (*Claytonia perfoliata*) and chickweed (*Stellaria media*) were present in the understory.

The mature blue oaks provide habitat for nesting and foraging birds and cavities that could support roosting bats. Oak titmouse and western bluebirds were observed feeding fledglings in two of the trees within the Study Area. Also, Lawrence's goldfinch, lark sparrow, and Nuttall's woodpecker were observed in the blue oaks and surrounding grassland, and could potentially nest onsite. One active red-tailed hawk's nest was observed within the blue oaks.

5.4.4 Anthropogenic

Rural residences, barns and other outbuildings, driveways, yards and landscapes, corrals and animal paddocks are present in the Study Area. These areas are heavily altered by human use and activity, and are collectively mapped and described as anthropogenic habitat, occupying approximately 17 acres of the Study Area. The yards immediately surrounding the existing structures are dominated by annual grasses and weedy ruderal forbs. In addition, many ornamental and introduced tree and shrub species have been planted around each homestead. Anthropogenic areas containing structures can provide roosts and maternal habitat for many species of bats native to the region.

5.4.5 Cropland

Cropland fields in the Study Area are plowed regularly and planted with dry farmed grain crops. Though much of the current annual grassland habitat had been used as cropland as recently as 2014, cropland habitat now comprises approximately 10 acres of the centrally western portion of the Study Area. In previous years, some portion of the Study Area was planted with dry-farmed grain or hay crops. Review of aerial photos dating to 1994 indicates the Study Area was regularly farmed since 2007. Cross fencing and cattle troughs indicate the fields in the Study Area are also utilized for grazing.

In May 2018, vegetation was very sparse in plowed fields with heights less than two inches. Growth of vegetation was low vegetation and bare ground common on cropland fields. The majority of cover consisted of non-native annual grasses such as rye grass (*Festuca perennis*),

foxtail barley (*Hordeum murinum*), and bromes (*Bromus diandrus*, *B. hordeaceus*, *B. madritensis rubens*) as well as some common herbaceous weeds such as black mustard (*Brassica nigra*), yellow star thistle (*Centaurea solstitialis*), and field mustard (*Hirschfeldia incana*). Red maids (*Calandrinia ciliata*), filaree (*Erodium botrys*, *E. cicutarium*), fiddleneck (*Amsinckia brachycarpus*, *A. lycopsoides*), popcorn flower (*Plagiobothrys canescens*), California poppy (*Eschscholzia californica*), and vetch (*Vicia villosa*) were present in low abundance but regular distribution.

A small ephemeral drainage is present to the north of the existent cropland field. This drainage had some wetland vegetation, including common toad rush (*Juncus bufonius*), but lacked wetland hydrology and soil, typically flowing only during and immediately following storms. When water flows here, it is transported west to the Beechwood Drive drainage.

5.4.6 Wetland

Five federal wetlands occur onsite (Section 8.0). A formal wetland delineation was completed by Althouse and Meade, Inc. in November 2017, and was approved by the Army Corps of Engineers (USACE) in January 2018. (Althouse and Meade, 2017). Wetland areas are numbered one through five for ease of reference:

Wetland 1 is in the center of the property and fed by irrigation water from the vineyard. Wetland 1 is dominated by common toad rush (*Juncus bufonius*), a hydrophytic vegetative indicator with the status of facultative wetland (FACW).

Wetland 2 is an anthropogenic pool with wetland shrubs and receives water from Drainage A and vineyard runoff before the water exits the Study Area through a culvert under Creston Road. Hydrology was present during the May 2018 botanical surveys, where dominant plant species include mulefat (*Baccharis salicifolia*) and arroyo willow (*Salix lasiolepis*); facultative (FAC) and facultative wetland (FACW) hydrophytic vegetative indicators, respectively.

At the corner of Creston Road and Beechwood Drive exists Wetland 3, a site where water collects from a swale feature draining water towards the intersection. the dominant species in the area were seaside barley (*Hordeum marinum*) and common toad rush near the corner of the property and extending up the swale source of stormwater sheetflow. There was also a non-dominant presence of obligate species including starwort (*Callitriche* sp. [likely *C. marginata*, not identified to species]), toothed downingia (*Downingia cuspidata*), seep monkey flower (*Mimulus guttatus*), and hyssop lossestrife (*Lythrum hyssopifolia*).

Wetland 4 is near Meadowlark Road at the confluence of two swale features. This is the only wetland that was inundated with water in April 2017, where standing water and dominant species Mexican rush (*Juncus mexicanus*) (FACW) was observed.

Wetland 5, in the northeast corner, continues a water feature from the property to the east as indicated by hydrophytic vegetation, including facultative species seaside barley (*Hordeum marinum*) (FAC) and Italian rye grass (FAC).

Federal non-wetland waters are referred to as “drainages” and are referenced alphabetically: A federal other water (Drainage B) at the northeast corner of the Study Area carries water from the adjacent hills, across the Study Area, to a culvert approximately 990 feet west of the

northeastern corner. This flow-path has a clear bed and bank and therefore is potentially a State Water. A second potential federal water (Drainage A) begins offsite with a clear bed and bank and flows through a highly manipulated vineyard into a wetland along Creston Road.

5.5 Botanical Survey Results

Appropriately timed seasonal botanical surveys conducted in April and May, 2014, and April and May, 2018 identified 129 species, subspecies and varieties of vascular plant taxa in the Study Area (Table 7). The list includes 54 species native to California and 75 introduced (naturalized or planted) species. Special status plant species were not observed in the Study Area. Native plant species account for approximately 42 percent of the taxa within the Study Area; introduced species account for approximately 58 percent. Rainfall amounts in the Paso Robles area for the 2017 to 2018 season were less than average (10.78 inches), which influences what species may be detectable.

TABLE 7. VASCULAR PLANT LIST.

Scientific Name	Status	Origin	Common Name
Trees – 11 Species			
<i>Ailanthus altissima</i>	None	Introduced	Tree of heaven
<i>Eucalyptus globulus</i>	None	Planted	Blue gum
<i>Eucalyptus sideroxylon</i>	None	Planted	Red ironbark
<i>Juniperus</i> sp.	None	Planted	Juniper
<i>Malus</i> sp.	None	Planted	Apple tree
<i>Pinus</i> sp.	None	Planted	Pine
<i>Populus fremontii</i> subsp. <i>fremontii</i>	None	Native	Fremont cottonwood
<i>Quercus douglasii</i>	None	Native	Blue oak
<i>Salix laevigata</i>	None	Native	Red willow
<i>Tamarix</i> sp.	None	Introduced	Tamarisk
<i>Prunus</i> sp.	None	Planted	Fruit tree
Shrubs – 3 Species			
<i>Baccharis pilularis</i>	None	Native	Coyote brush
<i>Baccharis salicifolia</i>	None	Native	Mule fat
<i>Vitis vinifera</i>	None	Planted	Cultivated grape
Herbs –100 Species			
<i>Achyrrachaena mollis</i>	None	Native	Blow wives
<i>Acmispon brachycarpus</i> [= <i>Lotus humistratus</i>]	None	Native	Short podded lotus
<i>Amaranthus albus</i>	None	Introduced	Tumbleweed amaranth
<i>Amsinckia intermedia</i> [= <i>A. menziesii</i> var. <i>intermedia</i>]	None	Native	Common fiddleneck
<i>Amsinckia lycopoides</i>	None	Native	Fiddleneck

Scientific Name	Status	Origin	Common Name
<i>Anagallis arvensis</i>	None	Introduced	Scarlet pimpernel
<i>Anthemis cotula</i>	None	Introduced	Mayweed
<i>Asclepias eriocarpa</i>	None	Native	Indian milkweed
<i>Asclepias fascicularis</i>	None	Native	Narrow-leaved milkweed
<i>Atriplex suberecta</i>	None	Introduced	Peregrine saltbush
<i>Brassica nigra</i>	None	Introduced	Black mustard
<i>Brodiaea terrestris</i> subsp. <i>terrestris</i>	None	Native	Dwarf brodiaea
<i>Calandrinia ciliata</i>	None	Native	Red maids
<i>Capsella bursa-pastoris</i>	None	Introduced	Shepherd's purse
<i>Castilleja attenuata</i>	None	Native	Valley tassels
<i>Carduus pycnocephalus</i>	None	Introduced	Italian thistle
<i>Castilleja exserta</i> subsp. <i>exserta</i>	None	Native	Purple owl's clover
<i>Caulanthus [=Guillenia] lasiophyllus</i>	None	Native	California mustard
<i>Centaurea melitensis</i>	None	Introduced	Tocalote
<i>Centaurea solstitialis</i>	None	Introduced	Yellow star thistle
<i>Centromadia [=Hemizonia] fitchii</i>	None	Native	Fitch's tarweed
<i>Centromadia [=Hemizonia] pungens</i> subsp. <i>pungens</i>	None	Native	Common tarweed
<i>Chenopodium album</i>	None	Introduced	Lamb's-quarters
<i>Chlorogalum pomeridianum</i> var. <i>pomeridianum</i>	None	Native	Amole lily
<i>Chondrilla juncea</i>	None	Introduced	Skeleton weed
<i>Cirsium vulgare</i>	None	Introduced	Bull thistle
<i>Clarkia purpurea</i> subsp. <i>quadrivulnera</i>	None	Native	Four spot
<i>Claytonia perfoliata</i>	None	Native	Miner's lettuce
<i>Convolvulus arvensis</i>	None	Introduced	Bindweed
<i>Crassula connata</i>	None	Native	Pygmy weed
<i>Croton [=Eremocarpus] setigerus</i>	None	Native	Dove weed
<i>Cyperus eragrostis</i>	None	Native	Umbrella sedge
<i>Datura wrightii</i>	None	Native	Jimsonweed
<i>Deinandra [=Hemizonia] pentactis</i>	None	Native	Salinas tarplant
<i>Dichelostemma capitatum</i>	None	Native	Blue dicks
<i>Downingia cuspidata</i>	None	Native	Toothed downingia
<i>Eleocharis macrostachya</i>	None	Native	Common spikerush
<i>Epilobium brachycarpum</i>	None	Native	Annual willow-herb
<i>Erigeron canadensis</i>	None	Native	Horseweed
<i>Erodium botrys</i>	None	Introduced	Filaree

Scientific Name	Status	Origin	Common Name
<i>Erodium cicutarium</i>	None	Introduced	Redstem filaree
<i>Erodium moschatum</i>	None	Introduced	Greenstem filaree
<i>Eryngium vaseyi</i>	None	Native	Coyote thistle
<i>Eschscholzia caespitosa</i>	None	Native	Tufted poppy
<i>Eschscholzia californica</i>	None	Native	California poppy
<i>Euphorbia</i> sp.	None	Introduced	Spurge
<i>Heterotheca grandiflora</i>	None	Native	Telegraph weed
<i>Hirschfeldia incana</i>	None	Introduced	Mustard
<i>Hypochaeris glabra</i>	None	Introduced	Smooth cats ear
<i>Lamium amplexicaule</i>	None	Introduced	Henbit
<i>Lactuca serriola</i>	None	Introduced	Prickly lettuce
<i>Layia platyglossa</i>	None	Native	Tidy tips
<i>Lepidium densiflorum</i>	None	Native	Common pepper grass
<i>Lepidium nitidum</i>	None	Native	Shining pepper grass
<i>Logfia [=Filago] gallica</i>	None	Introduced	Narrowleaf cottonrose
<i>Lupinus bicolor</i>	None	Native	Miniature lupine
<i>Lupinus microcarpus</i>	None	Native	Chick lupine
<i>Lupinus succulentus</i>	None	Native	Arroyo lupine
<i>Malacothrix californica</i>	None	Native	California dandelion
<i>Malva nicaeensis</i>	None	Introduced	Bull mallow
<i>Malva parviflora</i>	None	Native	Cheeseweed
<i>Marrubium vulgare</i>	None	Introduced	Horehound
<i>Matricaria [=Chamomilla] discoidea</i>	None	Introduced	Pineapple weed
<i>Medicago polymorpha</i>	None	Introduced	California burclover
<i>Melilotus indicus [=M. indica]</i>	None	Introduced	Annual sweetclover
<i>Mimulus guttatus</i>	None	Native	Seep monkey flower
<i>Navarretia mitracarpa [=N. jaredii]</i>	None	Native	Navarretia
<i>Phacelia ciliata</i>	None	Native	Great valley phacelia
<i>Plagiobothrys acanthocarpus</i>	None	Native	Popcorn flower
<i>Plagiobothrys canescens</i>	None	Native	Popcorn flower
<i>Plantago coronopus</i>	None	Introduced	Cut leaf plantain
<i>Plantago erecta</i>	None	Native	California plantain
<i>Plantago lanceolata</i>	None	Introduced	English plantain
<i>Polygonum aviculare</i> subsp. <i>depressum [=P. arenastrum]</i>	None	Introduced	Common knotweed
<i>Rumex crispus</i>	None	Introduced	Curly dock
<i>Sanicula bipinnata</i>	None	Native	Poison sanicle

Scientific Name	Status	Origin	Common Name
<i>Salsola tragus</i>	None	Introduced	Russian thistle
<i>Senecio vulgaris</i>	None	Introduced	Common groundsel
<i>Silene gallica</i>	None	Introduced	Catchfly
<i>Silybum marianum</i>	None	Introduced	Milk thistle
<i>Sinapis arvensis</i>	None	Introduced	Charlock
<i>Sisymbrium irio</i>	None	Introduced	London rocket
<i>Sonchus asper</i> subsp. <i>asper</i>	None	Introduced	Prickly sow-thistle
<i>Sonchus oleraceus</i>	None	Introduced	Common sow thistle
<i>Spergula arvensis</i>	None	Introduced	Stickwort
<i>Spergularia rubra</i>	None	Introduced	Red sand spurrey
<i>Pseudognaphalium microcephalum</i>	None	Native	Wright's cudweed
<i>Stephanomeria pauciflora</i>	None	Native	Desert wire-lettuce
<i>Trichostema lanceolatum</i>	None	Native	Vinegar weed
<i>Stellaria media</i>	None	Introduced	Chickweed
<i>Trifolium depauperatum</i> var. <i>depauperatum</i>	None	Native	Depauperate clover
<i>Trifolium hirtum</i>	None	Introduced	Rose clover
<i>Typha</i> sp.	None	Native	Cattail
<i>Uropappus lindleyi</i>	None	Native	Silver puffs
<i>Urtica urens</i>	None	Introduced	Dwarf nettle
<i>Verbena lasiostachys</i>	None	Native	Verbena
<i>Vicia sativa</i>	None	Introduced	Common vetch
<i>Veronica americana</i>	None	Native	American speedwell
<i>Vicia villosa</i>	None	Introduced	Winter vetch
<i>Xanthium strumarium</i>	None	Native	Cocklebur
Grasses –15 Species			
<i>Avena barbata</i>	None	Introduced	Slender wild oat
<i>Avena fatua</i>	None	Introduced	Wild oat
<i>Bromus diandrus</i>	None	Introduced	Ripgut brome
<i>Bromus hordeaceus</i>	None	Introduced	Soft chess brome
<i>Bromus madritensis</i> subsp. <i>rubens</i> [= <i>B. rubens</i>]	None	Introduced	Red top brome
<i>Elymus</i> sp.	None	Native	Wild rye
<i>Festuca</i> [= <i>Vulpia</i>] <i>myuros</i>	None	Introduced	Rattail sixweeks grass
<i>Festuca perennis</i> [= <i>Lolium multiflorum</i>]	None	Introduced	Italian rye grass
<i>Hordeum marinum</i> subsp. <i>gussoneanum</i>	None	Introduced	Mediterranean barley

Scientific Name	Status	Origin	Common Name
<i>Hordeum vulgare</i>	None	Introduced	Common barley
<i>Hordeum murinum</i>	None	Introduced	Foxtail barley
<i>Juncus bufonius</i>	None	Native	Toad rush
<i>Poa annua</i>	None	Native	Annual blue grass
<i>Polypogon monspeliensis</i>	None	Introduced	Annual beardgrass
<i>Stipa [=Nassella] cernua</i>	None	Native	Slender needlegrass

5.6 Wildlife Survey Results

At least 92 animal species could occur in the Study Area (Table 8). These include 2 crustaceans, 3 amphibians, 7 reptiles, 60 birds, and 20 mammals. We provide this list as a guide to the wildlife observed in the Study Area and to the species that could be present. Other species could occur as transients, particularly avian fauna.

Wildlife species detected in the Study Area include 2 reptile, 48 birds, and 5 mammals. Oak trees provide nesting habitat for songbirds and potential roosting habitat for bats. One special status bird species observed foraging in the Study Area was loggerhead shrike. Other species observed foraging include Lawrence's goldfinch, lark sparrow, California horned lark, and Nuttall's woodpecker. Lark sparrows were also observed carrying food within the Study Area. Oak titmouse and western bluebird were observed feeding fledglings in oak trees within the Study Area. Common species such as house finches, mourning doves, and Anna's hummingbird were observed carrying food and/or nesting material within the Study Area. The vineyard also provides foraging habitat for many bird and small mammal species. Small mammal burrows throughout the grassland habitat have the potential to provide dens for reptiles within the Study Area. Western fence lizards (*Sceloporus occidentalis*) were observed in many locations within the Study Area, and one juvenile gopher snake (*Pituophis catenifer catenifer*) was observed near a residential dirt road on the property. Historical tillage and harvesting grain and hay crops likely reduced reptile and mammal abundance; however, much of the former cropland has naturally restored to form annual grassland and oak savanna habitat, more suitable for reptiles and mammals.

A focused survey for Lewis' woodpecker did not detect this species. No Lewis' woodpeckers were detected within the Study Area or within the vicinity of the Study Area. No active nests were observed. No potential nest cavities were observed for this species.

TABLE 8. WILDLIFE LIST.

Common Name	Scientific Name	Special Status	Found On-site	Habitat Type
Crustaceans - 2 Species				
Vernal Pool Fairy Shrimp	<i>Branchinecta lynchi</i>	FT		Vernal pools, ephemeral pools with no flow
Versatile Fairy Shrimp	<i>Branchinecta lihdahli</i>	None		Vernal pools, ephemeral pools with no flow

Common Name	Scientific Name	Special Status	Found On-site	Habitat Type
Amphibians – 3 Species				
California (Western) Toad	<i>Anaxyrus [=Bufo] boreas halophilus</i>	None		Grassland, woodland
Monterey Ensatina	<i>Ensatina eschscholzii eschscholzii</i>	None		Riparian, oak woodlands, grasslands
Western Spadefoot Toad	<i>Spea hammondi</i>	SSC		Grassland habitat with seasonal pools
Reptiles – 7 Species				
Northern California [=Silvery] Legless Lizard	<i>Anniella pulchra</i>	SSC		Sandy soils in dunes, woodlands, coastal scrub
Northern Pacific Rattlesnake	<i>Crotalus oreganus oreganus</i>	None		Dry, rocky habitats
California Alligator Lizard	<i>Elgaria multicarinata multicarinata</i>	None		Open grassland, woodland, chaparral
Pacific Gopher Snake	<i>Pituophis catenifer catenifer</i>	None	✓	Woodland, grassland, rural
Western Red-tailed [=Gilbert's] Skink	<i>Plestiodon [=Eumeces] gilberti rubricaudatus</i>	None		Woodland, grassland, chaparral; inland areas
Skilton's [=Western] Skink	<i>Plestiodon [=Eumeces] skiltonianus skiltonianus</i>	None		Woodland, grassland, chaparral, inland and coastal
Coast Range [=Western] Fence Lizard	<i>Sceloporus occidentalis bocourtii</i>	None	✓	Wide range; variety of habitats
Birds – 60 Species				
White-throated Swift	<i>Aeronautes saxatalis</i>	None	✓	Scrub
Red-winged Blackbird	<i>Agelaius phoeniceus</i>	None		Marshes, fields
Western Scrub Jay	<i>Aphelocoma californica</i>	None	✓	Oak, riparian woodlands
Oak Titmouse	<i>Baeolophus inornatus</i>	SA (Nesting)	✓	Oak woodland
Great Horned Owl	<i>Bubo virginianus</i>	None	✓	Woodland, grassland
Red-tailed Hawk	<i>Buteo jamaicensis</i>	None	✓	Open, semi-open country
Ferruginous Hawk	<i>Buteo regalis</i>	WL		Grasslands, open fields
Swainson's Hawk	<i>Buteo swainsoni</i>	ST		Grasslands or agricultural with trees, riparian
California Quail	<i>Callipepla californica</i>	None	✓	Coastal sagebrush, chaparral, foothills, high desert
Anna's Hummingbird	<i>Calypte anna</i>	None	✓	Many habitats
Wilson's Warbler	<i>Cardellina pusilla</i>	None	✓	Scrub, forest edges, forest openings
Lawrence's Goldfinch	<i>Carduelis lawrencei</i>	SA (Nesting)	✓	Oak woodlands, savanna
Lesser Goldfinch	<i>Carduelis psaltria</i>	None	✓	Riparian, oak woodlands
American Goldfinch	<i>Carduelis tristis</i>	None		Weedy fields, woodlands
House Finch	<i>Carpodacus mexicanus</i>	None	✓	Riparian, grasslands, chaparral, and woodlands

Common Name	Scientific Name	Special Status	Found On-site	Habitat Type
Turkey Vulture	<i>Cathartes aura</i>	None	✓	Open country
Hermit Thrush	<i>Catharus guttatus</i>	None		Woodland and brush
Lark Sparrow	<i>Chondestes grammacus</i>	SA (Nesting)	✓	Woodland edges
Northern Flicker	<i>Colaptes auratus</i>	None		Woodlands
Rock Pigeon	<i>Columba livia</i>	None	✓	Urban areas
American Crow	<i>Corvus brachyrhynchos</i>	None	✓	Many habitats, esp. urban
Yellow-rumped Warbler	<i>Dendroica coronata</i>	None	✓	Woodlands, brush, open country
California Horned Lark	<i>Eremophila alpestris actia</i>	SSC	✓	Grassland, oak savanna
Brewer's Blackbird	<i>Euphagus cyanocephalus</i>	None	✓	Open habitats
American Kestrel	<i>Falco sparverius</i>	None		Open, semi-open country
Bullock's Oriole	<i>Icterus bullockii</i>	None	✓	Oak, riparian woodlands
Hooded Oriole	<i>Icterus cucullatus</i>	None	✓	Urban, mixed woodland
Dark-eyed Junco	<i>Junco hyemalis</i>	None		Oak woodland
Loggerhead Shrike	<i>Lanius ludovicianus</i>	SSC	✓	Nests in shrubs, trees near open areas
Acorn Woodpecker	<i>Melanerpes formicivorus</i>	None	✓	Oak woodland
Song Sparrow	<i>Melospiza melodia</i>	None	✓	Oak, riparian woodland
California Towhee	<i>Melospiza crissalis</i>	None	✓	Chaparral scrub
Northern Mockingbird	<i>Mimus polyglottos</i>	None	✓	Riparian, chaparral and woodlands. Also urban
House Sparrow	<i>Passer domesticus</i>	None	✓	Rural and developed areas, agricultural, urban areas
Savannah Sparrow	<i>Passerculus sandwichensis</i>	None	✓	Open habitats, marshes, grasslands
Phainopepla	<i>Phainopepla nitens</i>	None	✓	Desert scrub, mesquites, oak foothills, mistletoe clumps
Yellow-billed Magpie	<i>Pica nuttalli</i>	SA (Nesting)		Oak savanna
Nuttall's Woodpecker	<i>Picoides nuttallii</i>	SA (Nesting)	✓	Oak, riparian woodlands
Downy Woodpecker	<i>Picoides pubescens</i>	None		Oak, riparian woodlands
Hairy Woodpecker	<i>Picoides villosus</i>	None		Oak, riparian woodlands
Western Tanager	<i>Piranga ludoviciana</i>	None	✓	Open coniferous and mixed coniferous-deciduous woodlands
Bushtit	<i>Psaltirparus minimus</i>	None	✓	Woodlands, chaparral
Great-tailed Grackle	<i>Quiscalus mexicanus</i>	None	✓	Rural and developed areas, agricultural, urban areas
Say's Phoebe	<i>Sayornis saya</i>	None	✓	Open country, grassland
Yellow Warbler	<i>Setophaga petechia</i>	None	✓	Open woodlands
Western Bluebird	<i>Sialia mexicana</i>	None	✓	Woodland near open areas
White-breasted Nuthatch	<i>Sitta carolinensis</i>	None	✓	Oak savannah, woodland

Common Name	Scientific Name	Special Status	Found On-site	Habitat Type
Northern Rough-winged Swallow	<i>Stelgidopteryx serripennis</i>	None	✓	Open areas, often near water
Eurasian Collared-Dove	<i>Streptopelia decaocto</i>	None	✓	Urban, agricultural areas
Western Meadowlark	<i>Sturnella neglecta</i>	None	✓	Open habitats, grasslands
European Starling	<i>Sturnus vulgaris</i>	None	✓	Agricultural, livestock areas
Violet-green Swallow	<i>Tachycineta thalassina</i>	None	✓	Oak, riparian woodlands, open areas near water
Bewick's Wren	<i>Thryomanes bewickii</i>	None		Riparian woodland, scrub
American Robin	<i>Turdus migratorius</i>	None	✓	Open woodlands
Western Kingbird	<i>Tyrannus verticalis</i>	None	✓	Grasslands, savanna
Cassin's Kingbird	<i>Tyrannus vociferans</i>	None	✓	Open and semi-open areas
Warbling Vireo	<i>Vireo gilvus</i>	None	✓	Mature deciduous woodlands, especially near water
Mourning Dove	<i>Zenaida macroura</i>	None	✓	Open and semi-open habitats
White-crowned Sparrow	<i>Zonotrichia leucophrys</i>	None	✓	Oak, riparian woodlands
California Thrasher	<i>Toxostoma redivivum</i>	None	✓	Lowland and coastal chaparral, riparian woodland thickets, urban parks
Mammals – 20 Species				
Pallid Bat	<i>Antrozous pallidus</i>	SSC		Riparian, woodland, urban
Coyote	<i>Canis latrans</i>	None	✓	Open woodlands, brushy areas, wide ranging.
California Pocket Mouse	<i>Chaetodipus californicus</i>	None		Chaparral, brush habitats
Townsend's Big-eared Bat	<i>Corynorhinus townsendii</i>	SSC		Arid western desert scrub and pine forest regions
Big brown bat	<i>Eptesicus fuscus</i>	None		Deciduous forest areas, also in habitats ranging from timberline meadows to lowland deserts
Domestic Cat	<i>Felis catus</i>	None	✓	Urban areas
Hoary Bat	<i>Lasiurus cinereus</i>	None		Variety of habitats, roosts in foliage
Black-tailed Jackrabbit	<i>Lepus californicus</i>	None	✓	Grasslands
Long-tailed Weasel	<i>Mustela frenata</i>	None		Grasslands
California Myotis	<i>Myotis californicus</i>	None		Tunnels, hollow trees, buildings, bridges.
Mule Deer	<i>Odocoileus hemionus</i>	None		Many habitats
California Ground Squirrel	<i>Spermophilus beecheyi</i>	None	✓	Grasslands
Wild Boar	<i>Sus scrofa</i>	None		Woodlands
Desert Cottontail	<i>Sylvilagus audubonii</i>	None		Brushy habitats
Brush Rabbit	<i>Sylvilagus bachmani</i>	None		Brushy habitats
Brazilian Free-tailed Bat	<i>Tadarida brasiliensis</i>	None		Variety of habitats; roosts in bridges, buildings, caves
Valley Pocket Gopher	<i>Thomomys bottae</i>	None	✓	Variety of habitats

Common Name	Scientific Name	Special Status	Found On-site	Habitat Type
Gray Fox	<i>Urocyon cinereoargenteus</i>	None		Chaparral, dry woodlands
San Joaquin Kit Fox	<i>Vulpes macrotis mutica</i>	FE		Open grasslands, scrub
Red Fox	<i>Vulpes vulpes</i>	None	✓	Forest and open country

6.0 Potential Impacts to Biological Resources

Construction of the proposed development would affect common and special status species, nesting birds, and native oak trees. Project disturbance is expected to occur throughout all habitat types observed in the Study Area based on the current site plan (refer to Appendix D).

6.1 Habitat Impacts

The proposed project would affect annual grassland, vineyard, blue oak savanna, anthropogenic, cropland, and wetland habitat. To determine areas of habitat types impacted we overlaid habitats mapped by this study and the Dallas habitat assessment (Attachment A) on a high-resolution aerial photograph (Habitat Map, Section 8.0). Preliminary site plans are provided in Appendix D.

6.1.1 Annual Grassland

Based on preliminary site plans, nearly all 118 acres of annual grassland mapped within the Study Area would be affected by the proposed project. Annual grassland is not a sensitive habitat type, although it may support special status species. Impacts to annual grassland habitat are not significant and do not require mitigation.

Annual grassland is potential habitat for San Joaquin kit fox in the Paso Robles area. Once project plans are finalized a San Joaquin kit fox habitat evaluation form should be prepared to determine appropriate compensatory mitigation (refer to Section 7.4.7).

6.1.2 Vineyard

Vineyard occurs over approximately 38 acres of the Study Area. Site plans show that all of this habitat type will be affected by the proposed project. Vineyard is not considered a sensitive habitat type and does not typically require mitigation. One wetland (Wetland 2) is located in the vineyard habitat and will be impacted based on preliminary site plans. This wetland will be subject to mitigation or avoidance (refer to Section 7.1.1). Impacts to individual oak trees present in the vineyard would be mitigated per the City of Paso Robles oak tree ordinance (refer to Section 7.2).

6.1.3 Blue oak savanna

The proposed project would affect blue oak savanna habitat, resulting in the potential removal of mature oak trees from the Study Area. State and local ordinances provide protection of oak trees that meet specific size and age requirements (see to Section 7.2).

6.1.4 Anthropogenic

The proposed project would affect anthropogenic and ruderal habitat, including existing disturbed areas. Conversion of existing anthropogenic habitats to other anthropogenic uses does not typically require mitigation.

6.1.5 Cropland

Based on preliminary site plans, 10 acres of cropland mapped within the Study Area would be affected by the proposed project. Cropland in the Study Area is poor quality habitat for rare plants due to regular plowing, but provides foraging habitat for small mammals, songbirds, and raptors. In the Paso Robles area, fallow cropland is potential habitat for San Joaquin kit fox. Once project

plans are finalized a San Joaquin kit fox habitat evaluation form will be required to determine appropriate compensatory mitigation (refer to Sections 7.4.7).

6.1.6 *Wetland*

Wetlands will be impacted by the proposed project. Permits will be required by the USACE, RWQCB and possibly the CDFW that will define appropriate avoidance measures or compensatory mitigation based on final project plans.

6.2 **Potential Impacts to Oak Trees**

The City of Paso Robles requires mitigation for removal of oak trees with a diameter at breast height (DBH) of 6 inches or greater. Diameter at breast is measured at 4.5 feet from the ground or, if the trunk is split below 4 feet, at the narrowest point below the split. Impacts include any ground disturbance within the critical root zone (CRZ), or any trimming of branches 4 inches in diameter or greater. The critical root zone (CRZ), as defined by the City of Paso Robles, is an area of root space that is within a circle circumscribed around the trunk of a tree using a radius of 1 foot per inch DBH, e.g., a 20-inch diameter tree has a CRZ with a radius of 20 feet as measured from the center of the tree (City of El Paso de Robles - Ordinance No. 835 N.S). This measurement often extends beyond the actual drip-line of the tree (refer to Section 7.2).

6.3 **Potential Impacts to Nesting Birds**

Vegetation removal and construction activities associated with the proposed structures could result in adverse impacts to nesting birds if conducted during nesting season (March 1 through August 31). The potential for the Project to adversely affect nesting birds can be reduced (refer to Section 7.3).

6.4 **Potential Impacts to Special Status Species**

One special status bird was observed during our spring 2018 surveys, and habitat for 10 more special status animal species is present in the Study Area. No special status plants were observed in the Study Area. Without mitigation or minimization, construction of the proposed project potentially could result in adverse effects on special status animal species (refer to Section 7.4).

6.4.1 *Special status plants*

Habitat and soil types are moderately suitable for four special status plants known from the area. Appropriately timed floristic surveys were conducted to determine if any of these species occur in the Study Area. No special status plants were observed in the Study Area.

6.4.2 *Special status birds*

Construction activities could result in nest abandonment or loss of special status bird species if appropriate preconstruction surveys, setback requirements, and management practices are not implemented (refer to Section 7.4.1).

Several bird species were observed utilizing habitat and nesting in the Study Area. An active red-tailed hawk's nest was also observed in the Study Area. Preconstruction surveys are recommended prior to activities that affect trees, shrubs and potential ground nests during the nesting season (refer to Section 7.3).

6.4.3 *Invertebrates*

Vernal pool fairy shrimp

Potential vernal pool fairy shrimp habitat was identified in the Study Area (Dallas 2014). Vernal pool brachiopod protocol level surveys conducted in 2014-2015 and 2015-2016 did not detect vernal pool fairy shrimp in the Study Area (Dallas 2015, 2016).

6.4.4 *Amphibians and reptiles*

Western spadefoot toad

The grassland and fallow cropland habitat in the Study Area contains potential breeding habitat for the Western spadefoot toad. Although appropriate habitat appears to be present spadefoot toad was not detected during vernal pool surveys in 2014-2015 and 2015-2016 (Dallas 2016), and was not detected on site during any other surveys from 2006 (Morro Group) through 2014 (Althouse and Meade 2014) to the current 2018 study. Therefore, it is likely that western spadefoot toad does not occur in the Study Area.

Northern California legless lizard

The blue oak savanna provides suitable habitat in leaf litter under trees. Though the Study Area has a mixture of soil complexes, some portions are sandy loam, making for a more friable substrate for legless lizards to inhabit. Although legless lizards were not detected their burrowing habit makes detection very difficult. The proposed project could potentially impact northern California legless lizards during tree removals. Mitigation and minimization measures are provided in Section 7.4.4.

6.4.5 *Mammals*

Bats

Townsend's big-eared bat is a candidate species under the California Endangered Species Act to be listed as Threatened and, along with the pallid bat, is a Special Concern bat species. Both species are known to roost in buildings, and/or bridges and the pallid bat may also roost in trees. The Study Area contains many structures, trees and snags that may provide suitable habitat for roosting bats. Maternal bat colonies are protected by the California Department of Fish and Wildlife; maternal bat colonies are not expected to occur in the Study Area. Adverse impacts to Special status bats and maternal bat colonies can be avoided (see Section 7.4.5).

American badger

American badger has potential to occur in the Study Area and the proposed project could potentially impact American badger. Mitigation and minimization measures are provided in Section 7.4.6.

San Joaquin kit fox

San Joaquin kit fox may be impacted by the proposed project. Although San Joaquin kit fox have not been observed within ten miles of the Study Area within the last ten years, cropland habitat in the Study Area is potential habitat for kit fox. The Recovery Plan for San Joaquin kit fox (USFWS 1998) calls for the protection and enhancement of movement corridors for San Joaquin kit fox between the Carrizo Plain and the Salinas Valley. Once project plans are finalized a San Joaquin

kit fox habitat evaluation form should be prepared to determine appropriate compensatory mitigation. Standard County mitigation measures are provided in Section 7.4.7.

7.0 Recommendations and Mitigations

The following sections include biological resource (BR) mitigation measures designed to reduce the potential for impacts to biological resources at the proposed Beechwood Estates project.

BR-1. Worker Environmental Awareness Program. The applicant shall prepare a Worker Environmental Awareness Program that shall be presented to all construction personnel and employees before any ground-disturbing activities commence at the site. This presentation shall include information on special status species with potential to occur at the site, including habitat needs, protection status, and required mitigation measures. Each worker shall be provided with a hand-out of pertinent information. Sign-in sheets documenting the trainings shall be maintained by the applicant and submitted to the City monthly.

7.1 Habitats

7.1.1 Wetland

Authorizations for removal of jurisdictional waters and wetlands are required by the US Army Corps of Engineers (CWA 404), the Regional Water Quality Control Board (CWA 401), and the California Department of Fish and Wildlife (CDFW code 1600). Mitigation for these impacts will be prescribed by a Wetland Mitigation Plan (Program) as approved by these permitting agencies.

7.2 Individual Oak Tree Impacts

Oak tree impacts and mitigations shall be assessed by the project arborist or qualified biologist. The following mitigation recommendations follow guidelines set forth in the Paso Robles Tree Ordinance (City of El Paso de Robles - Ordinance No. 835 N.S).

- BR-2.** Tree canopies and trunks within 50 feet of proposed disturbance zones should be mapped and numbered by a certified arborist or qualified biologist and a licensed land surveyor. Data for each tree should include date, species, number of stems, and diameter at breast height (DBH) of each stem, critical root zone (CRZ) diameter, canopy diameter, tree height, health, habitat notes, and nests observed.
- BR-3.** An oak tree protection plan shall be prepared and approved by the City of Paso Robles.
- BR-4.** Impacts to the oak canopy or critical root zone (CRZ) should be avoided where practicable. Impacts include pruning, any ground disturbance within the drip-line or CRZ of the tree (whichever distance is greater), and trunk damage.
- BR-5.** Impacts to oak trees shall be assessed by a licensed arborist. Mitigations for impacted trees shall comply with the City of Paso Robles tree ordinance.
- BR-6.** Replacement oaks for removed trees must be equivalent to 25% of the diameter of the removed tree(s). For example, the replacement requirement for removal of two trees of 15 inches DBH (30 total diameter inches), would be 7.5 inches (30" removed x 0.25 replacement factor). This requirement could be satisfied by planting five 1.5 inch trees,

or three 2.5 inch trees, or any other combination totaling 7.5 inches. A minimum of two 24 inch box, 1.5 inch trees shall be required for each oak tree removed.

- BR-7.** Replacement trees should be seasonally maintained (browse protection, weed reduction and irrigation, as needed) and monitored annually for at least 7 years. Replacement trees shall be of local origin and of the same species as was impacted or removed.

7.3 Nesting Birds

Migratory non-game native bird species are protected by international treaty under the Federal Migratory Bird Treaty Act (MBTA) of 1918 (50 C.F.R. Section 10.13). Sections 3503, 3503.5 and 3513 of the California Fish and Game Code prohibit take (as defined therein) of all native birds and their active nests, including raptors and other migratory non-game birds (as listed under the Federal MBTA).

- BR-8.** Within one week of ground disturbance or tree removal/trimming activities, if work occurs between March 15 and August 15, nesting bird surveys shall be conducted. To avoid impacts to nesting birds, grading and construction activities that affect trees and grasslands shall not be conducted during the breeding season from March 1 to August 15. If construction activities must be conducted during this period, nesting bird surveys shall take place within one week of habitat disturbance. If surveys do not locate nesting birds, construction activities may be conducted. If nesting birds are located, no construction activities shall occur within a distance specified by a qualified biologist, until chicks are fledged or nest fails. This includes nests of all common bird species (under the MBTA), as well as special status birds and raptor nests. Construction activities shall observe the delineated buffer, determined by a qualified biologist, where buffer radius will be specified according to special status rank, intensity of construction activity or impact (i.e. high decibel levels or heavy ground disturbance) and where local, state, and federal regulations apply. A preconstruction survey report shall be submitted to the lead agency immediately upon completion of the survey. The report shall detail appropriate fencing or flagging of the buffer zone and make recommendations on additional monitoring requirements. A map of the Project site and nest locations shall be included with the report. The qualified biologist conducting the nesting survey shall have the authority to reduce or increase the recommended buffer depending upon site conditions.

7.4 Avoidance, Minimization, and Mitigation for Special Status Species

7.4.1 *Special status birds*

In order to reduce the potential for disturbance of special status birds during nesting season, the applicant shall implement BR-8 one week prior to ground disturbance or tree pruning activities. If nests of sensitive birds are identified in the work area, the following additional mitigation measures shall be implemented:

- BR-9.** Occupied nests of special status bird species shall be mapped by a qualified biologist working with a licensed land surveyor or accurate Global Positioning System (GPS). A buffer determined by a qualified biologist will be established at the appropriate distance to avoid disturbance to nesting birds. Work shall not be allowed within this buffer while

the nest is in use. The buffer zone shall be delineated on the ground with orange construction fencing or green buffer tape where it overlaps work areas.

- BR-10.** Occupied nests of special status bird species that are within the project work areas shall be monitored daily through the nesting season to document nest success and check for project compliance with buffer zones. Once nests are deemed inactive and/or chicks have fledged and are no longer dependent on the nest, work may commence within the buffer zone.

7.4.2 *Vernal pool fairy shrimp*

Potential vernal pool fairy shrimp habitat was identified in the Study Area (Dallas 2014). Vernal pool brachiopod protocol level surveys conducted in 2015-2016 did not detect vernal pool fairy shrimp in the Study Area (Dallas 2015, 2016).

7.4.3 *Western spadefoot toad*

Western spadefoot toad has not been detected within the Study Area during extensive vernal pool surveys in two rain seasons, 2014-2015 and 2015-2016, and during other surveys (Section 6.4.4). It is unlikely that spadefoot toad occurs in the Study Area.

- BR-11.** If spadefoot toad is found in the project ground disturbance area, a protection plan, which may include avoidance, capture, and relocation, will be developed by a qualified biologist and implemented with concurrence of the CDFW.

7.4.4 *Northern California legless lizard*

Northern California legless lizard have moderate potential to occur on the Property in areas of sandy soil and leaf litter. To minimize potential impacts to this species, the following mitigation measure is recommended:

- BR-12.** A preconstruction survey for legless lizards shall be conducted around the base of oak trees in proposed work areas immediately prior to ground-breaking or tree removal.. The preconstruction survey shall be conducted by a qualified biologist familiar with legless lizard ecology and survey methods, and with approval from California Department of Fish and Wildlife to relocate legless lizards out of harm's way. The scope of the survey shall be determined by a qualified biologist and shall be sufficient to determine presence or absence in the project areas. If the focused survey results are negative, a letter report shall be submitted to the City, and no further action shall be required. If legless lizards are found to be present in the proposed work areas the following steps shall be taken:
- Legless lizards shall be captured by hand by the project biologist and relocated to an appropriate location well outside the project areas.
 - Construction monitoring shall be required for all new ground-breaking activities located within legless lizard habitat (under tree canopies with leaf litter or thatch). Biologists shall capture and relocate legless lizards as specified above.
 - A letter report shall be submitted to the City and CDFW within 30 days of legless lizard relocation, or as directed by CDFW.

7.4.5 Bats

Roosting bats and/or maternal bat colonies may be present in trees with appropriate cavities or loose bark as well as the anthropogenic structures found in the Study Area.

- BR-13.** Prior to removal of any trees over 20 inches DBH, a survey shall be conducted by a qualified biologist to determine if any of the trees proposed for removal or trimming harbor sensitive bat species or maternal bat colonies. If a non-maternal roost is found, the qualified biologist, with prior approval from California Department of Fish and Wildlife, will install one-way valves or other appropriate passive relocation method. For each occupied roost removed, one bat box shall be installed in similar habitat and should have similar cavity or crevice properties to those which are removed, including access, ventilation, dimensions, height above ground, and thermal conditions. Maternal bat colonies may not be disturbed.
- BR-14.** Prior to structure demolition, a qualified biologist shall conduct a survey of existing structures in the Study Area to determine if roosting bats are present. If possible, the survey shall be conducted during the non-breeding season (November through March). The biologist shall have access to all interior attics, as needed. If a colony of bats is found roosting in any structure, further surveys shall be conducted sufficient to determine the species present and the type of roost (day, night, maternity, etc.) If the bats are not part of an active maternity colony, passive exclusion measures may be implemented with approval from CDFW. November is the best time of the year to exclude bats from a roost because it is after the breeding season and before winter hibernation (not all species hibernate).
- BR-15.** If bats are roosting in a structure in the Study Area during the daytime but are not part of an active maternity colony, then exclusion measures must include one-way valves that allow bats to get out but not re-enter the structure.
- BR-16.** If a bat colony is excluded from the Study Area, appropriate alternate bat habitat shall be installed in the Study Area. An ideal location for alternate bat house installation would be near a creek channel or riparian corridor.

7.4.6 American badger

American badger has moderate potential to occur in the Study Area. Project activities including grading and other excavation work could result in take of American badger adults or young, or disturbance of natal dens and abandonment by adult badgers. To reduce this potential impact to a less than significant level the following measure is recommended.

- BR-17.** A pre-construction survey shall be conducted within thirty days of beginning work on the site to identify if badgers are using the site. The results of the survey shall be sent to the project manager and the County of San Luis Obispo. If the pre-construction survey finds potential badger dens, they shall be inspected to determine whether they are occupied. The survey shall cover the entire property, and shall examine both old and new dens. If potential badger dens are too long to completely inspect from the entrance, a fiber optic scope shall be used to examine the den to the end. Inactive dens may be excavated by hand with a shovel to prevent re-use of dens during construction. If badgers are found in

dens on the property between February and July, nursing young may be present. To avoid disturbance and the possibility of direct take of adults and nursing young, and to prevent badgers from becoming trapped in burrows during construction activity, no grading shall occur within 100 feet of active badger dens between February and July. Between July 1st and February 1st all potential badger dens shall be inspected to determine if badgers are present. During the winter badgers do not truly hibernate, but are inactive and asleep in their dens for several days at a time. Because they can be torpid during the winter, they are vulnerable to disturbances that may collapse their dens before they rouse and emerge. Therefore, surveys shall be conducted for badger dens throughout the year. If badger dens are found on the property during the pre-construction survey, the CDFG wildlife biologist for the area shall be contacted to review current allowable management practices

7.4.7 *San Joaquin kit fox*

The grassland and cropland found throughout most of the Study Area is considered potential habitat for San Joaquin kit fox. Below are the standard mitigation measures.

BR-18. Prior to issuance of grading and/or construction permits, the applicant shall submit evidence to the County of San Luis Obispo, Department of Planning and Building, Environmental and Resource Management Division (County) (see contact information below) that states that one or a combination of the following three San Joaquin kit fox mitigation measures has been implemented:

- a. Provide for the protection in perpetuity, through acquisition of fee or a conservation easement of **[Total number of mitigation acres required]** acres of suitable habitat in the kit fox corridor area (e.g. within the San Luis Obispo County kit fox habitat area, northwest of Highway 58), either on-site or off-site, and provide for a non-wasting endowment to provide for management and monitoring of the property in perpetuity. Lands to be conserved shall be subject to the review and approval of the California Department of Fish and Wildlife (Department) and the County.

This mitigation alternative (a.) requires that all aspects of this program must be in place before County permit issuance or initiation of any ground disturbing activities.

- b. Deposit funds into an approved in-lieu fee program, which would provide for the protection in perpetuity of suitable habitat in the kit fox corridor area within San Luis Obispo County, and provide for a non-wasting endowment for management and monitoring of the property in perpetuity.

Mitigation alternative (b) above, can be completed by providing funds to The Nature Conservancy (TNC) pursuant to the Voluntary Fee-Based Compensatory Mitigation Program (Program). The Program was established in agreement between the Department and TNC to preserve San Joaquin kit fox habitat, and to provide a voluntary mitigation alternative to project proponents who must mitigate the impacts of projects in accordance with the California Environmental Quality Act (CEQA). The fee, payable to “The Nature Conservancy”, would total **[\$Amount of fee based on \$2500 per acre]**. This fee is calculated based on the current cost-per-unit of \$2500 per acre of mitigation, which is scheduled to be adjusted to address the increasing cost of property in San Luis Obispo County; your actual cost may increase depending on the timing of payment. This fee must be paid after the Department provides written

notification about your mitigation options but prior to County permit issuance and initiation of any ground disturbing activities.

- c. Purchase **[Total number of mitigation acres required]** credits in a Department-approved conservation bank, which would provide for the protection in perpetuity of suitable habitat within the kit fox corridor area and provide for a non-wasting endowment for management and monitoring of the property in perpetuity.

Mitigation alternative (c) above, can be completed by purchasing credits from the Palo Prieto Conservation Bank (see contact information below). The Palo Prieto Conservation Bank was established to preserve San Joaquin kit fox habitat, and to provide a voluntary mitigation alternative to project proponents who must mitigate the impacts of projects in accordance with the California Environmental Quality Act (CEQA). The cost for purchasing credits is payable to the owners of The Palo Prieto Conservation Bank, and would total **\$[Amount of mitigation acres required (i.e. credits), currently priced at \$2500 per credit]**. This fee is calculated based on the current cost-per-credit of \$2500 per acre of mitigation. The fee is established by the conservation bank owner and may change at any time. Your actual cost may increase depending on the timing of payment. Purchase of credits must be completed prior to County permit issuance and initiation of any ground disturbing activities.

BR-19. Prior to issuance of grading and/or construction permits, the applicant shall provide evidence that they have retained a qualified biologist acceptable to the City. The retained biologist shall perform the following monitoring activities:

- i. **Prior to issuance of grading and/or construction permits and within 30 days prior to initiation of site disturbance and/or construction**, the biologist shall conduct a pre-activity (i.e. preconstruction) survey for known or potential kit fox dens and submit a letter to the City reporting the date the survey was conducted, the survey protocol, survey results, and what measures were necessary (and completed), as applicable, to address any kit fox activity within the project limits.
- ii. **The qualified biologist shall conduct weekly site visits during site-disturbance activities** (i.e. grading, disking, excavation, stock piling of dirt or gravel, etc.) that proceed longer than 14 days, for the purpose of monitoring compliance with required Mitigation Measures BR-18 through BR-28. Site disturbance activities lasting up to 14 days do not require weekly monitoring by the biologist unless observations of kit fox or their dens are made on-site or the qualified biologist recommends monitoring for some other reason (see BR-19iii). When weekly monitoring is required, the biologist shall submit weekly monitoring reports to the City.
- iii. Prior to or during project activities, if any observations are made of San Joaquin Kit fox, or any known or potential San Joaquin kit fox dens are discovered within the project limits, the qualified biologist shall re-assess the probability of incidental take (e.g. harm or death) to kit fox. At the time a den is discovered, the qualified biologist shall contact USFWS and the CDFW for guidance on possible additional kit fox protection measures to implement and whether or not a Federal and/or State incidental take permit is needed. If a potential den is encountered during construction,

work shall stop until such time the USFWS determines it is appropriate to resume work.

If incidental take of kit fox during project activities is possible, **before project activities commence**, the applicant must consult with the USFWS. The results of this consultation may require the applicant to obtain a Federal and/or State permit for incidental take during project activities. The applicant should be aware that the presence of kit foxes or known or potential kit fox dens at the project site could result in further delays of project activities.

iv. In addition, the qualified biologist shall implement the following measures:

1. Within 30 days prior to initiation of site disturbance and/or construction, fenced exclusion zones shall be established around all known and potential kit fox dens. Exclusion zone fencing shall consist of either large flagged stakes connected by rope or cord, or survey laths or wooden stakes prominently flagged with survey ribbon. Each exclusion zone shall be roughly circular in configuration with a radius of distance measured outward from the den or burrow entrances, dependent on the use and activity of the den (i.e. potential, known, active, or natal den), to be determined by the kit fox biologist.
2. All foot and vehicle traffic, as well as all construction activities, including storage of supplies and equipment, shall remain outside of exclusion zones. Exclusion zones shall be maintained until all project-related disturbances have been terminated, and then shall be removed.
3. If kit foxes or known or potential kit fox dens are found on site, daily monitoring by a qualified biologist shall be required during ground disturbing activities.

Monitoring: Required prior to issuance of a grading and/or construction permit. Compliance will be verified by the City Planning Division.

BR-20. Prior to issuance of grading and/or construction permits, the applicant shall clearly delineate the following as a note on the project plans: *“Speed signs of 25 mph (or lower) shall be posted for all construction traffic to minimize the probability of road mortality of the San Joaquin kit fox”*. Speed limit signs shall be installed on the project site within 30 days prior to initiation of site disturbance and/or construction.

BR-21. During the site disturbance and/or construction phase, grading and construction activities after dusk shall be prohibited unless coordinated through the City, during which additional kit fox mitigation measures may be required.

BR-22. Prior to issuance of grading and/or construction permit and within 30 days prior to initiation of site disturbance and/or construction, all personnel associated with the project shall attend a worker education training program, conducted by a qualified biologist, to avoid or reduce impacts on sensitive biological resources (i.e. San Joaquin kit fox). At a minimum, as the program relates to the kit fox, the training shall include the kit fox’s life history, all mitigation measures specified by the City, as well as any related biological

report(s) prepared for the project. The applicant shall notify the City shortly prior to this meeting. A kit fox fact sheet shall also be developed prior to the training program, and distributed at the training program to all contractors, employers and other personnel involved with the construction of the project.

- BR-23.** During the site-disturbance and/or construction phase, to prevent entrapment of the San Joaquin kit fox, all excavations, steep-walled holes and trenches in excess of two feet in depth shall be covered at the close of each working day by plywood or similar materials, or provided with one or more escape ramps constructed of earth fill or wooden planks. Trenches shall also be inspected for entrapped kit fox each morning prior to onset of field activities and immediately prior to covering with plywood at the end of each working day. Before such holes or trenches are filled, they shall be thoroughly inspected for entrapped kit fox. Any kit fox so discovered shall be allowed to escape before field activities resume, or removed from the trench or hole by a qualified biologist and allowed to escape unimpeded.
- BR-24.** During the site-disturbance and/or construction phase, any pipes, culverts, or similar structures with a diameter of four inches or greater, stored overnight at the project site shall be thoroughly inspected for trapped San Joaquin kit foxes before the subject pipe is subsequently buried, capped, or otherwise used or moved in any way. If during the construction phase a kit fox is discovered inside a pipe, that section of pipe will not be moved. If necessary, the pipe may be moved only once to remove it from the path of activity, until the kit fox has escaped.
- BR-25.** During the site-disturbance and/or construction phase, all food-related trash items such as wrappers, cans, bottles, and food scraps shall be disposed of only in closed containers. These containers shall be regularly removed from the site. Food items may attract San Joaquin kit foxes onto the project site, consequently exposing such animals to increased risk of injury or mortality. No deliberate feeding of wildlife shall be allowed.
- BR-26.** Prior to, during and after the site-disturbance and/or construction phase, use of pesticides or herbicides shall be in compliance with all local, State and Federal regulations. This is necessary to minimize the probability of primary or secondary poisoning of endangered species utilizing adjacent habitats, and the depletion of prey upon which San Joaquin kit foxes depend.
- BR-27.** During the site-disturbance and/or construction phase, any contractor or employee that inadvertently kills or injures a San Joaquin kit fox or who finds any such animal either dead, injured, or entrapped shall be required to report the incident immediately to the applicant and City. In the event that any observations are made of injured or dead kit fox, the applicant shall immediately notify the USFWS and CDFW by telephone. In addition, formal notification shall be provided in writing within three working days of the finding of any such animal(s). Notification shall include the date, time, location and circumstances of the incident. Any threatened or endangered species found dead or injured shall be turned over immediately to CDFW for care, analysis, or disposition.
- BR-28.** Prior to final inspection, or occupancy, whichever comes first, should any long internal or perimeter fencing be proposed or installed, the applicant shall do the following to provide for kit fox passage:

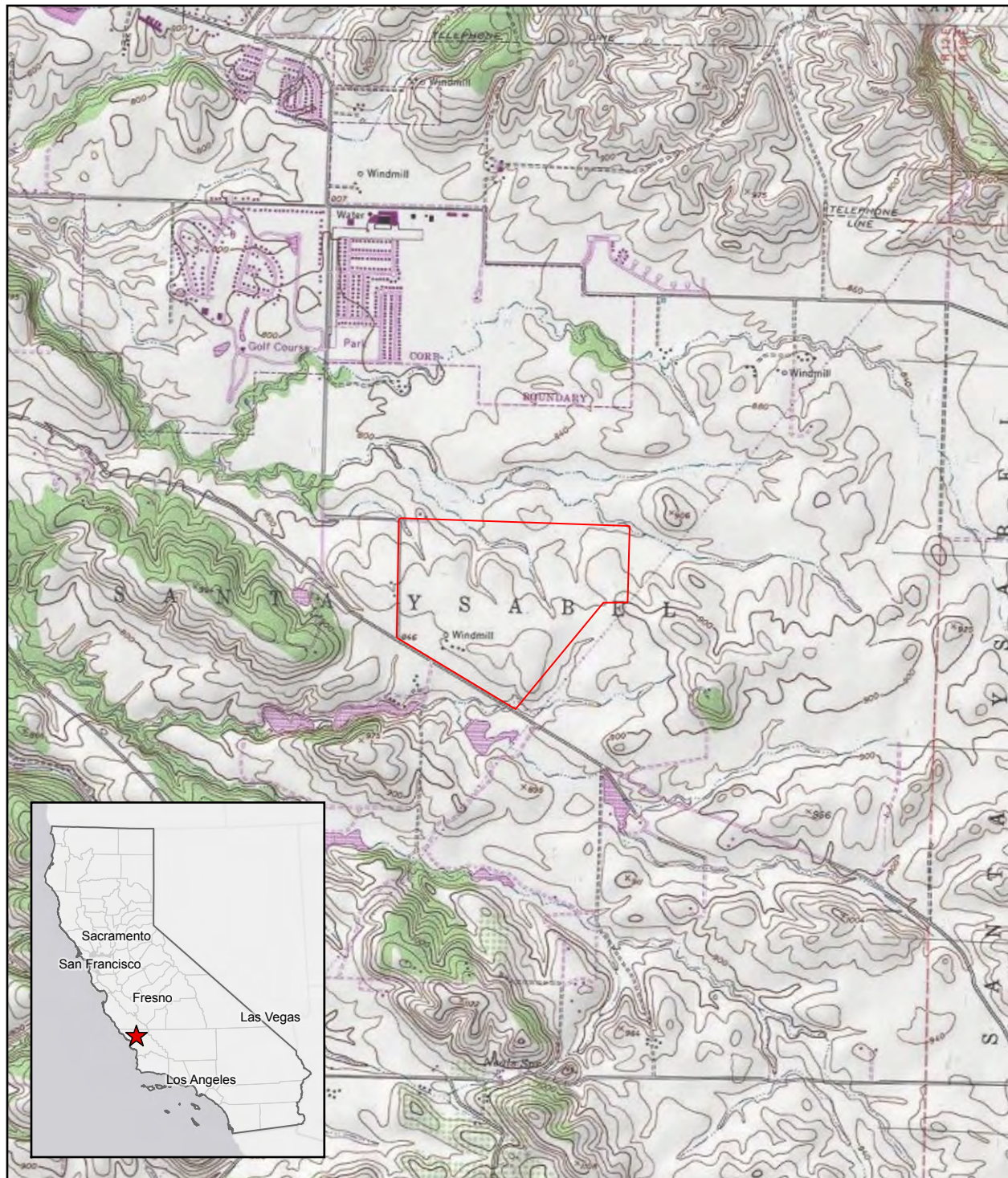
- i. If a wire strand/pole design is used, the lowest strand shall be no closer to the ground than 12 inches.
- ii. If a more solid wire mesh fence is used, 8" x 12" openings near the ground shall be provided every 100 yards
- iii. Upon fence installation, the applicant shall notify the City to verify proper installation. Any fencing constructed after issuance of a final permit shall follow the above guidelines

Monitoring (San Joaquin Kit Fox Measures BR-18 to BR-28): Compliance will be verified by the City of Paso Robles, Planning Division. As applicable, each of these measures shall be included on construction plans.

8.0 Figures

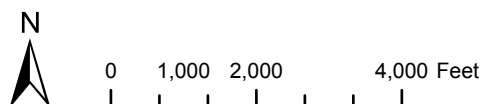
- **Figure 1. General Location Map**
- **Figure 2. USGS Topographic Map**
- **Figure 3. Aerial Photograph**
- **Figure 4. USDA Soil Map Units**
- **Figure 5. CNDDDB & FWS Critical Habitat Map**
- **Figure 6. Habitat Map**

Figure 1. United States Geological Survey Topographic Map



Legend

Study Area




Beechwood Subdivision
 Map Center: 120.64801°W 35.59765°N
 Paso Robles, San Luis Obispo County

USGS Quadrangle: Paso Robles

Figure 2. Aerial Photograph



Legend

 Study Area (213 acres)



0 200 400 600 800 1,000 Feet

Beechwood Subdivision

Map Center: 120.6477°W 35.59671°N
Paso Robles, San Luis Obispo County

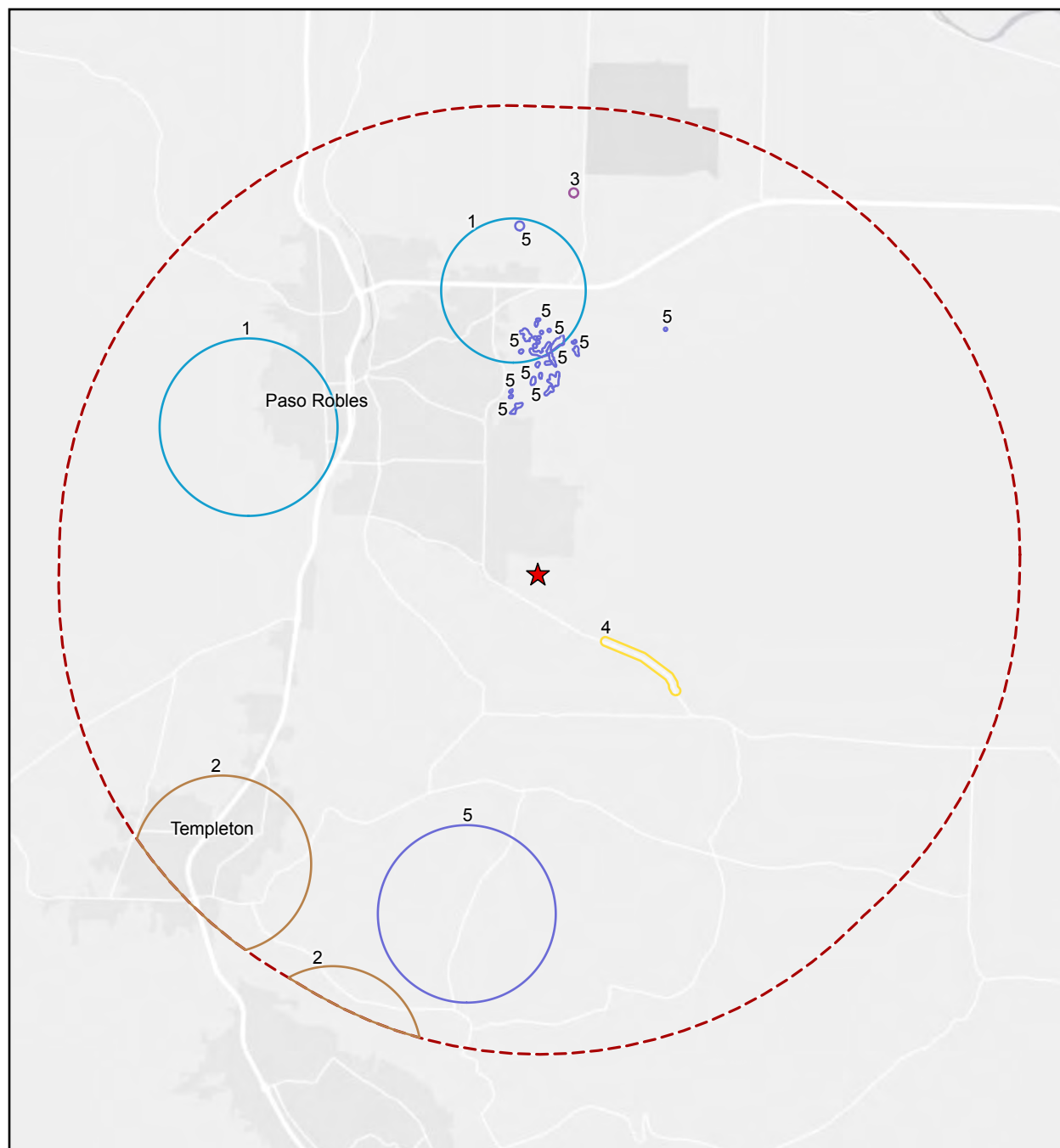
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BIOLOGICAL AND ENVIRONMENTAL SERVICES

Map Updated:
May 29, 2018 10:30 AM by JBB

Figure 3. California Natural Diversity Database Plant Records



Label	Common Name
1	Lemmon's jewelflower
2	Mesa horkelia
3	San Luis Obispo owl's-clover
4	Snat Lucia dwarf rush
5	Shining navarretia

Legend

★ Study Area Location

--- 5-Mile Radius

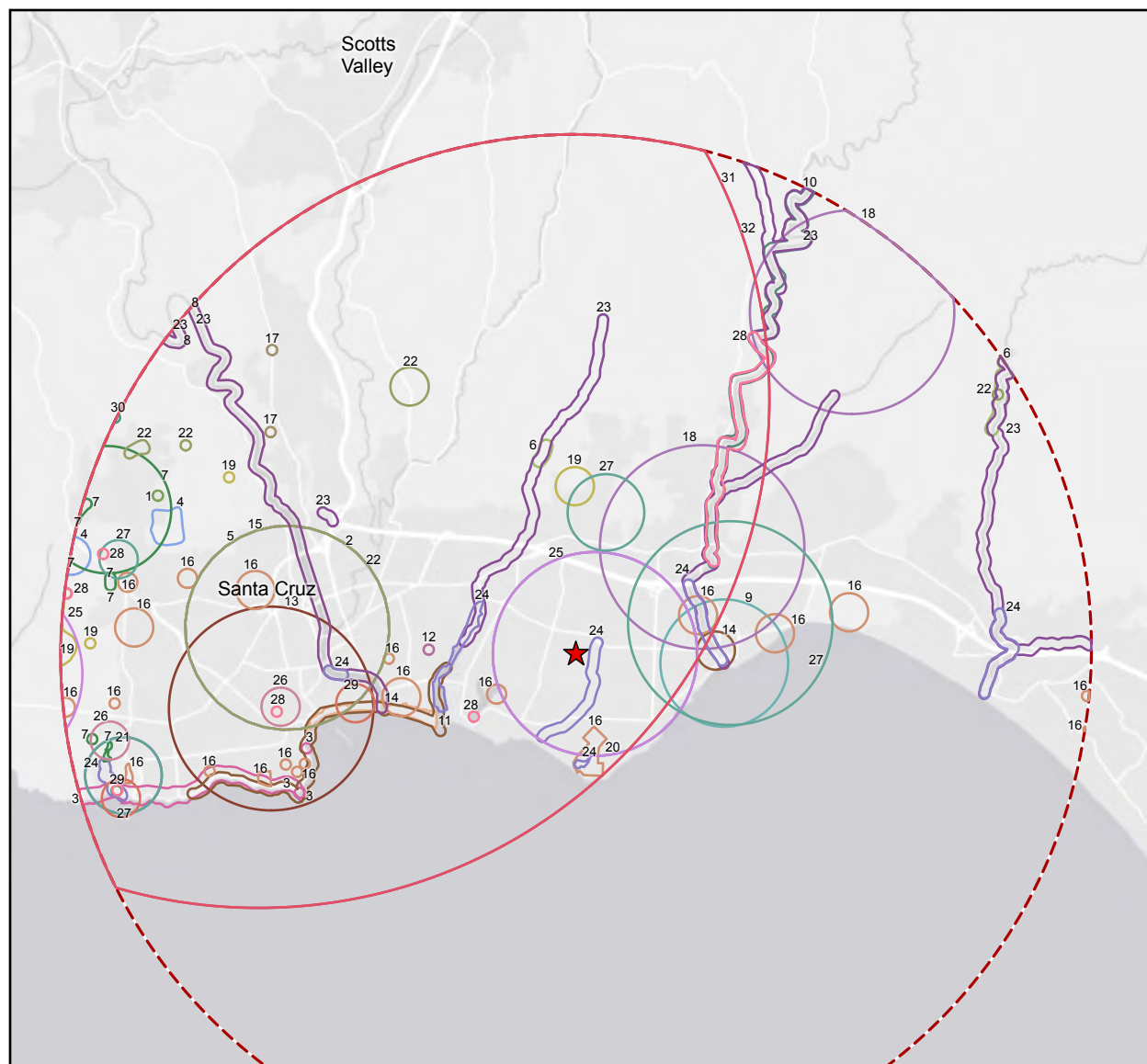


0 0.5 1 2 Miles

Beechwood Subdivision
 Map Center: 120.6477°W 35.59671°N
 Paso Robles, San Luis Obispo County

CNDDDB GIS Data Last Updated: May 2018

Figure 4. California Natural Diversity Database Animal Records



Label	Common Name	Label	Common Name
-------	-------------	-------	-------------

- | | |
|-------------------------------------|------------------------------------|
| 1 American badger | 17 Mount Hermon |
| 2 Bank swallow | (=barbate) June beetle |
| 3 Black swift | 18 Obscure bumble bee |
| 4 Burrowing owl | 19 Ohlone tiger beetle |
| 5 California black rail | 20 Pallid bat |
| 6 California giant salamander | 21 Sandy beach tiger beetle |
| 7 California red-legged frog | 22 Santa Cruz black salamander |
| 8 Coho salmon - | 23 Steelhead - |
| central California coast ESU | central California coast DPS |
| 9 Eulachon | 24 Tidewater goby |
| 10 Foothill yellow-legged frog | 25 Townsend's big-eared bat |
| 11 Globose dune beetle | 26 Tricolored blackbird |
| 12 Great blue heron | 27 Western bumble bee |
| 13 Hoary bat | 28 Western pond turtle |
| 14 Mimic tryonia | 29 Western snowy plover |
| (=California brackishwater snail) | 30 White-tailed kite |
| 15 Moestan blister beetle | 31 Yellow rail |
| 16 Monarch - | 32 Zayante band-winged grasshopper |
| California overwintering population | |

Legend

★ Project Location

5-Mile Radius



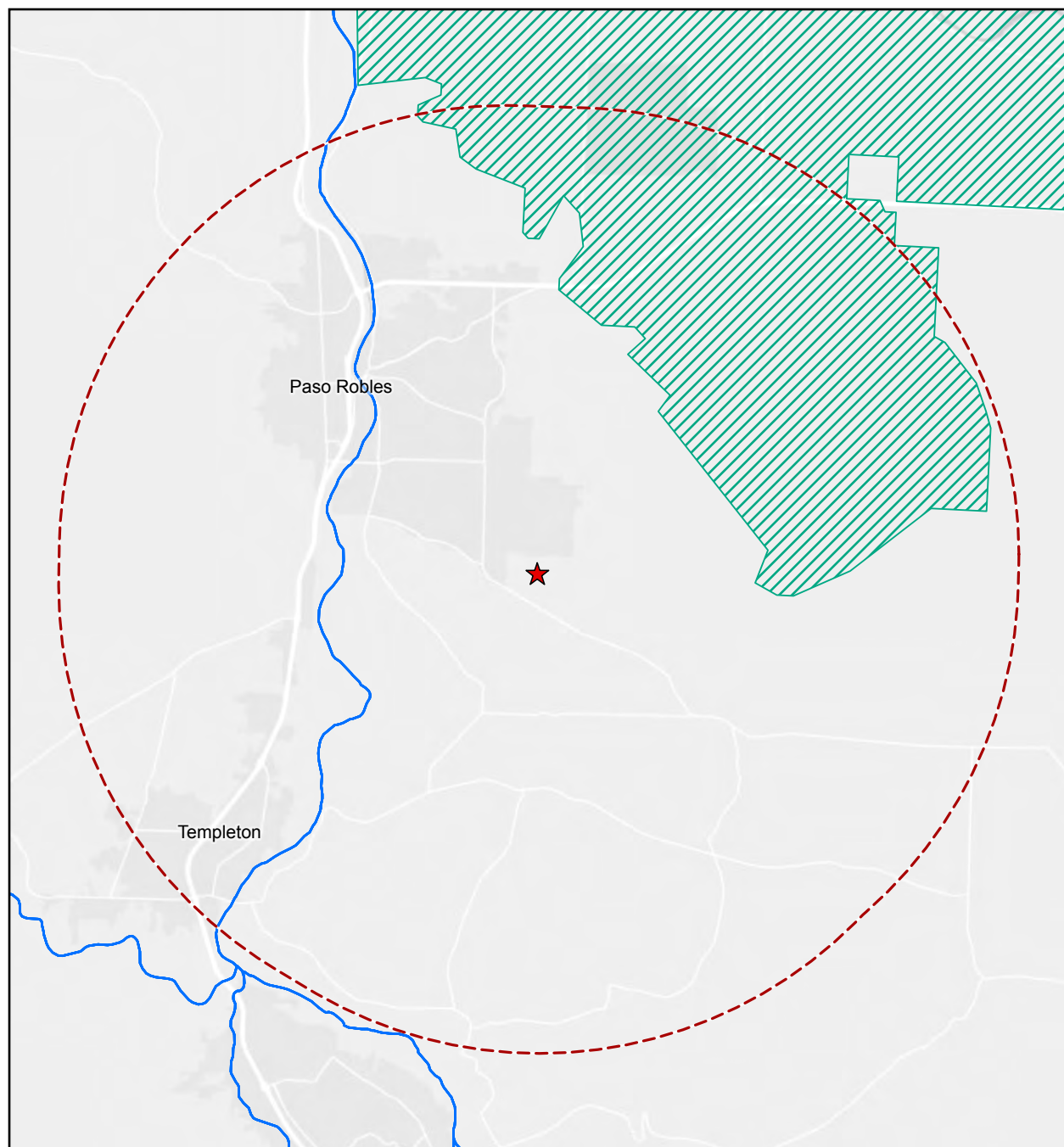
0 0.5 1 2 Miles

Habitat for Humanity





Map Center: 121.97817°W 36.98854°N
Santa Cruz, California

CNDDDB GIS Data Last Updated: May 2018

Figure 5. United States Fish and Wildlife Service Critical Habitat



Legend

-  Study Area Location
-  5-Mile Radius
- Critical Habitat**
-  Vernal pool fairy shrimp
-  Steelhead

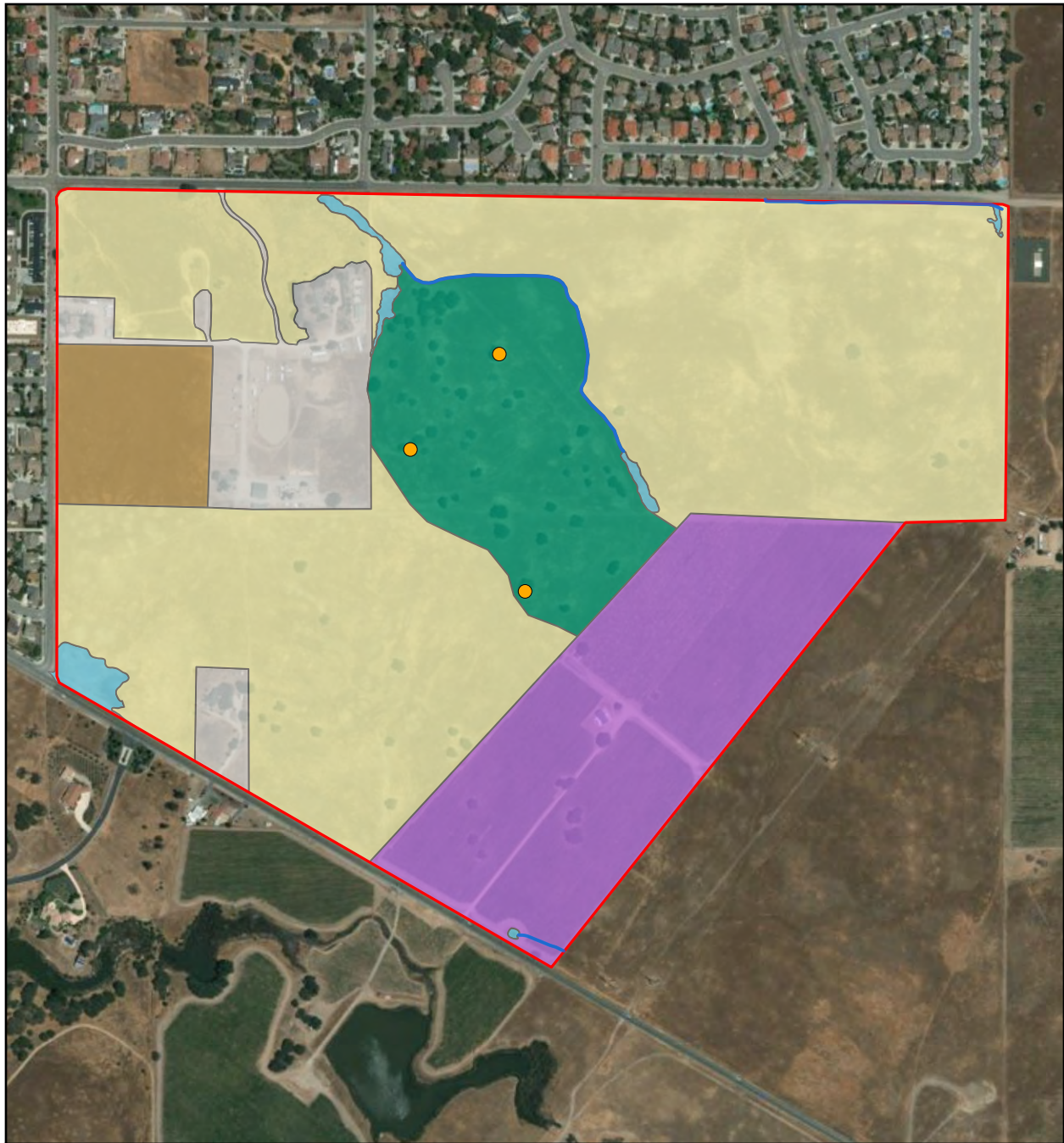


0 0.5 1 2 Miles










Beechwood Subdivision
Map Center: 120.6477°W 35.59671°N
Paso Robles, San Luis Obispo County

Critical Habitat GIS Data Last Updated: May 2018

Figure 6. Biological Resources



Legend

- | | |
|------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------|
|  Study Area |  Cropland (10 acres) |
| Habitats |  Vineyard (39 acres) |
|  Annual Grassland (118 acres) |  Wetlands (3 acres) |
|  Anthropogenic (17 acres) |  Nests |
|  Blue Oak Savanna (27 acres) |  Waters |



0 250 500 1,000 Feet

Beechwood Subdivision

Map Center: 120.6477°W 35.59671°N
Paso Robles, San Luis Obispo County

Biological Survey Dates: 4/26/2018 and 5/3/2018



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BIOLOGICAL AND ENVIRONMENTAL SERVICES

Map Updated:
June 01, 2018 08:43 AM by JBB

9.0 Photographs



Photo 1. Grassland habitat in northwest portion of the Study Area, view facing south. Photo taken May 3, 2018.



Photo 2. Grassland habitat with cattle grazing in north portion of the Study Area, view facing south. Photo taken May 3, 2018.



Photo 3. Grassland and blue oak savanna in centrally northern portion of the property, view southwest. Photo taken April 26, 2017.



Photo 4. Blue oak savanna habitat in centrally northern portion of the Study Area, view south. Photo taken April 26 2018.



Photo 5. Vineyard in southeast portion of the Study Area, view facing northwest. Photo taken May 3, 2018.



Photo 6. View northeast of a typical vegetated vineyard row. Photo taken May 3, 2018.



Photo 7. Cropland with recently plowed soil in western portion of the Study Area, view facing west. Photo taken May 3, 2018.



Photo 8. View of residential property in southern portion of property, from Wetland 3. View facing northeast. Photo taken April 17, 2018.



Photo 9. View of grassland and wetland vegetation from northwest portion of the Study Area. View facing southeast. Photo taken May 3, 2018.



Photo 8. Wetland 5 situated at the south end of the vineyard. View facing north. Photo taken May 3, 2018.



Photo 9. Recovering grassland habitat with patches of filaree, view facing northeast. Photo taken April 26, 2018.

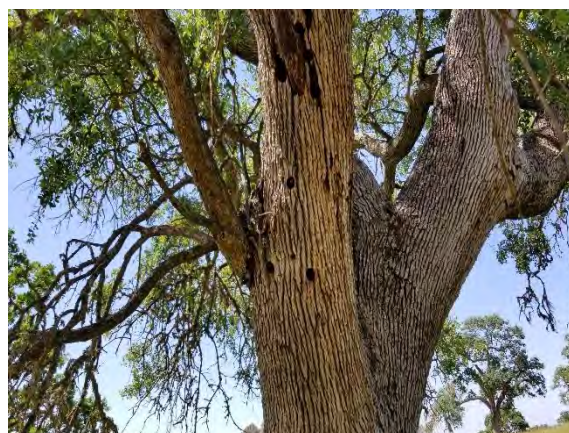


Photo 10. Cavity nesters in blue oaks within blueoak savanna habitat. Photo taken April 26, 2018.

10.0 References

- Althouse and Meade, Inc. 2004. Preliminary Biological Assessment of the Olson Ranch Specific Plan Area, Paso Robles, San Luis Obispo County. November.
- Althouse and Meade, Inc. 2006. San Joaquin Kit Fox Survey Using the Protocol for the Northern Range. Survey Results Report for the Chandler Ranch Area Specific Plan Properties, Paso Robles, San Luis Obispo County, California. December.
- Althouse and Meade, Inc. 2007. Arroyo Toad (*Bufo californicus*) Protocol Survey Site Assessment for the Fox Hollow Sports Facility, APN 025-371-019, Paso Robles, San Luis Obispo County, California. June
- Althouse and Meade, Inc. 2007. Biological Report for River Oaks II and College Station, City of El Paso de Robles, San Luis Obispo County, California. June.
- Althouse and Meade, Inc. 2008. San Joaquin Kit Fox Survey Using the Protocol for the Northern Range. Survey Results Report for the Shandon Community Plan Update Area, Shandon, San Luis Obispo County, California. January.
- Althouse and Meade, Inc. 2008. San Joaquin Kit Fox Survey Using the Protocol for the Northern Range, Report for Early Evaluation of the Paso Robles Motorcoach Resort, Golden Hill Road, City of El Paso de Robles, California. October.
- Althouse and Meade, Inc. 2009. Biological Report for Epoch Winery, approximately 48 acre portion of APN 026-293-029 & -030, 2555 Peachy Canyon Road, San Luis Obispo County, California. October.
- Althouse and Meade, Inc. 2012. Supplemental Biological Report for the Chandler Ranch Area Specific Plan, Paso Robles, San Luis Obispo County, California, July 2012 revision.
- Althouse and Meade, Inc. 2014. Biological Report for Beechwood Estates, City of Paso Robles, San Luis Obispo County, July.
- Althouse and Meade, Inc. 2017. Delineation of Potentially Jurisdictional Wetlands and Waters for Beechwood Estates Amendment 1, City of Paso Robles, San Luis Obispo County.
- Baldwin, B. G., D. H. Goldman, D. J. Keil, R. Patterson, T. J. Rosatti, and D. H. Wilken, editors. 2012. The Jepson Manual: Vascular Plants of California, Second Edition. University of California Press, Berkeley.
- Biosystems. 1991. San Joaquin Kit Fox Survey of Chandler Ranch. Paso Robles, San Luis Obispo County, California. August.
- California Department of Fish and Wildlife (CDFW). 2000. Guidelines for Assessing the Effects of Proposed Projects on Rare, Threatened, and Endangered Plants and Natural Communities. Revised May 8, 2000.
- California Department of Fish and Wildlife (CDFW). California Interagency Wildlife Task Group. 2014. CWHR version 9.0 personal computer program. Sacramento, CA.

- California Department of Fish and Wildlife (CDFW). 2018. Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities. April 24.
- California Department of Fish and Wildlife (CDFW), Natural Diversity Database. 2011. Special Animals List (898 taxa). State of California, The Resources Agency. January.
- California Department of Fish and Wildlife (CDFW), Natural Diversity Database. 2012. Special Vascular Plants, Bryophytes, and Lichens List. Quarterly Publication. 86 pp. May.
- California Department of Fish and Wildlife (CDFW). November 24, 2009. Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Natural Communities.
- California Natural Diversity Database (CNDDDB) Rarefind. 2012. The California Department of Fish and Wildlife Natural Diversity Data Base, version 3.1.1 November 2, 2012 data.
- California Native Plant Society (CNPS). December 9, 1983, revised June 2, 2001. CNPS Botanical Survey Guidelines. California Native Plant Society.
- California Native Plant Society (CNPS). 2012. Inventory of Rare and Endangered Plants (online edition, v8-01a). California Native Plant Society. Sacramento, CA. Accessed on Monday, December 03, 2012.
- Consortium of California Herbaria website. 2011. Regents of the University of California. <http://ucjeps.berkeley.edu/consortium/>
- County of San Luis Obispo, Department of Planning and Building, Environmental Division. 2007. Guidelines for Preparation of Biological Reports. Revised December 11.
- Dallas, Mitchell C. 2014. Vernal Pool Brachiopod Habitat Assessment-Beechwood Ranch Area Specific Plan, Paso Robles, San Luis Obispo County. May.
- Dallas, Mitchell C. 2015. Special Status Invertebrate DRY Season Survey. Survey for the Beechwood Ranch Area Specific Plan in Paso Robles, San Luis Obispo County, California. Ninety-Day Report to the USFWS. Permit #TE-102310-3.
- Dallas, Mitchell C. 2015. Special Status Invertebrate Wet Season Survey. Survey for the Beechwood Ranch Area Specific Plan in Paso Robles, San Luis Obispo County, California. Ninety-Day Report to the USFWS. Permit #TE-102310-3. June 8, 2015.
- Dallas, Mitchell C. 2016. Special Status Invertebrate Wet Season Survey. Survey for the Beechwood Ranch Area Specific Plan in Paso Robles, San Luis Obispo County, California. Ninety-Day Report to the USFWS. Permit #TE-102310-3. June 5, 2016
- Harvey, Michael J., J. Scott Altenbach, and Troy L. Best. 2011. Bats of the United States and Canada. Johns Hopkins University Press, Baltimore, Maryland.
- Hickman, James C. 1993. The Jepson Manual. University of California Press, Berkeley and Los Angeles, California.
- Holland, V.L. and David J. Keil. 1995. California Vegetation. Kendall/Hunt Publishing Company, Dubuque, Iowa.
- Hoover, Robert F. 1970. The Vascular Plants of San Luis Obispo County, California. University of California Press. Berkeley, Los Angeles, and London.

- Ingles, Lloyd G. 1965. Mammals of the Pacific States; California, Oregon, Washington. Stanford University Press, Stanford, California.
- Jennings, M., M. Hayes. 1994. Amphibian and Reptile Species of Special Concern in California. California Department of Fish and Game, Special Publication: 1-20.
- Kays, Roland W. and Don E. Wilson. 2002. Princeton Field Guides, Mammals of North America. Princeton University Press, Princeton and Oxford.
- Kuhnz, L.A., Burton, R.K., Slattery, P.N. and Oakden, J.M. 2005. Microhabitats and population densities of California legless lizards, with comments on effectiveness of various techniques for estimating numbers of fossorial reptiles. *Journal of Herpetology*, 39, 395-402.
- Murie, Olaus J. 1974. Peterson Field Guides, Animal Tracks. Houghton Mifflin Company, Boston, New York.
- Nowak, Ronald M. 1994. Walker's Bats of The World. The Johns Hopkins University Press.
- Papenfuss, T.J. and Parham, J.F., 2013. Four new species of California legless lizards (*Anniella*). *Breviora*, pp.1-17.
- Paso Robles City. 2018. Paso Robles Public Works. Available online at <http://www.prcity.com/government/departments/publicworks/water/rainfall.asp>. Accessed on May 29, 2018.
- Pearse, D.E. and Pogson, G.H., 2000. Parallel evolution of the melanic form of the California legless lizard, *Anniella pulchra*, inferred from mitochondrial DNA sequence variation. *Evolution*, 54(3), pp.1041-1046.
- Pierson, E. D., P. W. Collins, W. E. Rainey, P. A. Heady, and C. J. Corben. 2002. Distribution, Status and Habitat Associations of Bat Species on Vandenberg Air Force Base, Santa Barbara County, California. Santa Barbara Museum of Natural History Technical Reports – No. 1.
- Sawyer, John O., Todd Keeler-Wolf, and Julie M. Evens. 2009. A Manual of California Vegetation, Second Edition. California Native Plant Society, Sacramento, California.
- Schuford, David W. and Thomas Gardali, Editors. 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 No. 1. Western Field Ornithologists, Camarillo, California, and California Department of Fish and Wildlife, Sacramento.
- Sibley, David Allen. 2001. The Sibley Guide to Bird Life & Behavior. National Audubon Society. Alfred A. Knopf, New York.
- Slobodchikoff, C. N. and J. T. Doyen . 1977. Effects of *Ammophila arenaria* on sand dune arthropod communities. *Ecology* 58:1171–1175.
- Stebbins, Robert C. 2003. Peterson Field Guides Western Reptiles and Amphibians, 3rd edition. Houghton Mifflin Company, Boston, New York.
- Soil Survey Staff, Natural Resources Conservation Service (NRCS), United States Department of Agriculture (USDA). 2008. Soil Survey Geographic (SSURGO) Database for San Luis

Obispo County, Coastal Part, CA. Available online at <http://soildatamart.nrcs.usda.gov>.
Tabular data version 4, Spatial data version 1, January 2008.

United States Department of Agriculture (USDA), Natural Resource Conservation Service (NRCS). 1984. Soil Survey of San Luis Obispo County, California, Coastal Part.

United States Department of Agriculture (USDA). 2012. Aerial photomosaic of San Luis Obispo County. National Agriculture Imagery Program (NAIP).

Appendix A

Soil Report



United States
Department of
Agriculture

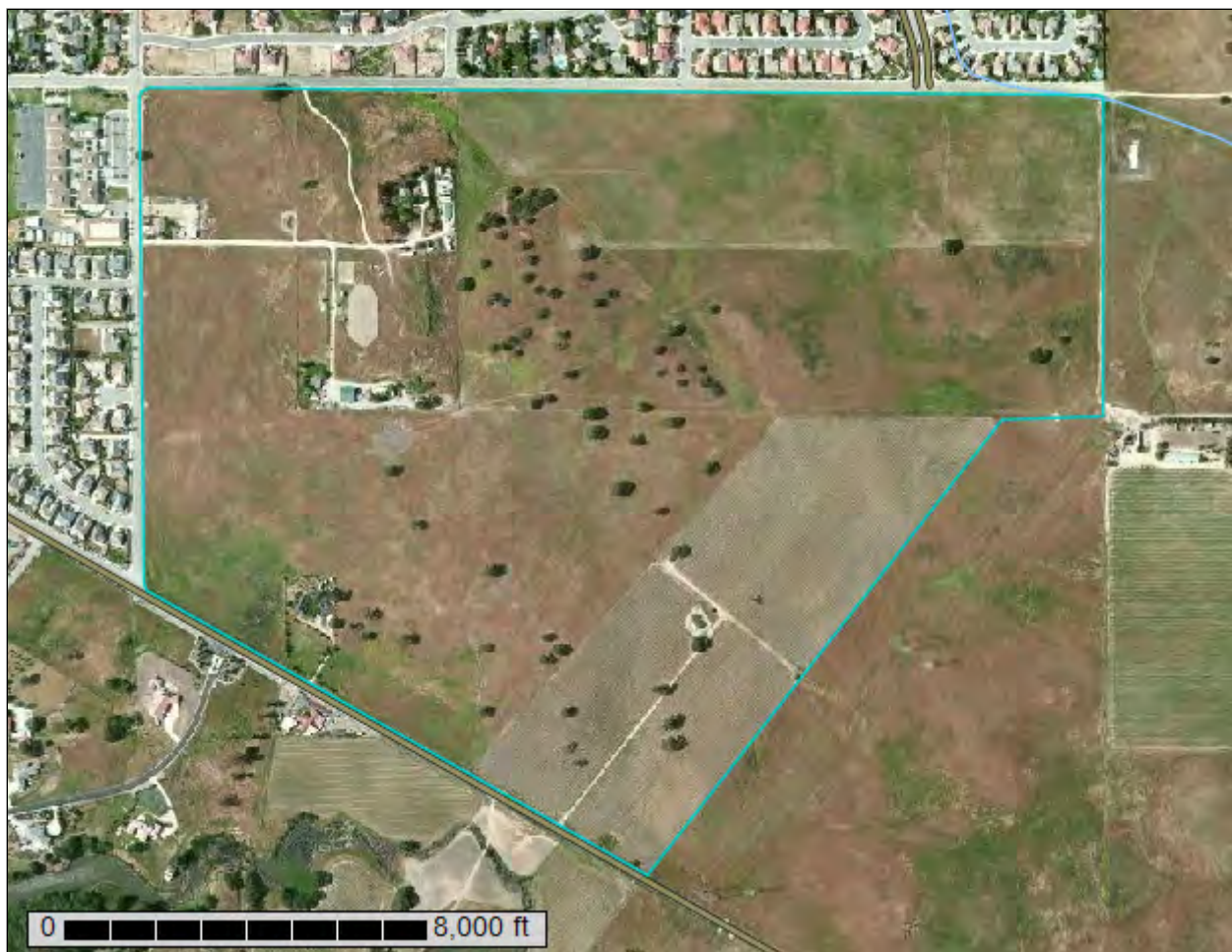
NRCS

Natural
Resources
Conservation
Service

A product of the National
Cooperative Soil Survey,
a joint effort of the United
States Department of
Agriculture and other
Federal agencies, State
agencies including the
Agricultural Experiment
Stations, and local
participants

Custom Soil Resource Report for San Luis Obispo County, California, Paso Robles Area

Beechwood StudyArea



January 14, 2016

Preface

Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<http://offices.sc.egov.usda.gov/locator/app?agency=nrcs>) or your NRCS State Soil Scientist (http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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How Soil Surveys Are Made

Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil scientists classified and named the soils in the survey area, they compared the

individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

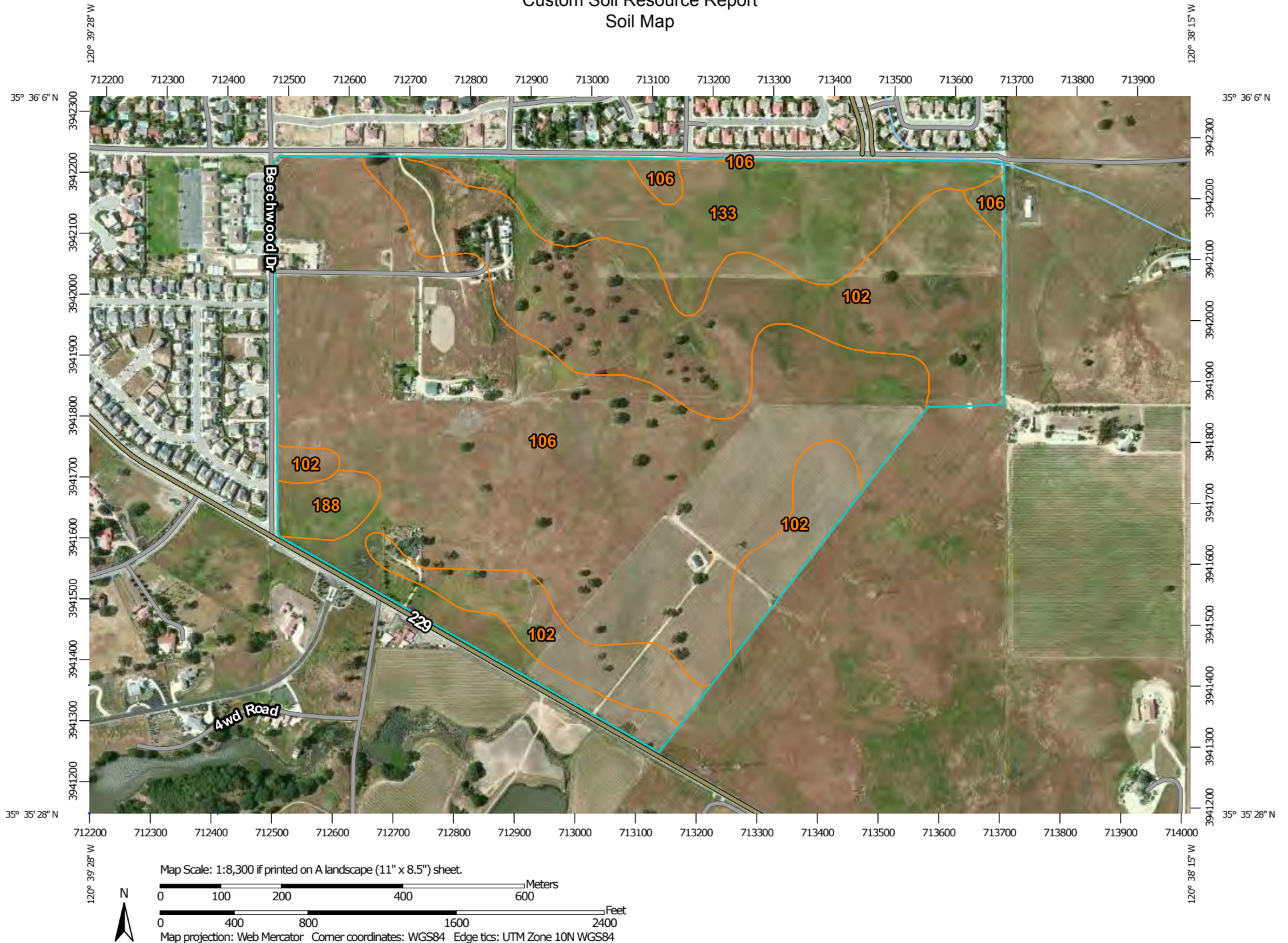
Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

Soil Map

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.


Custom Soil Resource Report Soil Map




Custom Soil Resource Report


MAP LEGEND

Area of Interest (AOI)

 Area of Interest (AOI)


Soils


 Soil Map Unit Polygons


 Soil Map Unit Lines


 Soil Map Unit Points

Special Point Features

 Blowout

 Borrow Pit

 Clay Spot


 Closed Depression

 Gravel Pit

 Gravelly Spot

 Landfill

 Lava Flow

 Marsh or swamp

 Mine or Quarry


 Miscellaneous Water


 Perennial Water

 Rock Outcrop


 Saline Spot

 Sandy Spot

 Severely Eroded Spot


 Sinkhole


 Slide or Slip

 Sodic Spot

 Spoil Area

 Stony Spot


 Very Stony Spot

 Wet Spot

 Other


 Special Line Features

Water Features

 Streams and Canals


Transportation

 Rails


 Interstate Highways

 US Routes

 Major Roads

 Local Roads

Background

 Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:24,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: <http://websoilsurvey.nrcs.usda.gov>
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: San Luis Obispo County, California, Paso Robles Area
Survey Area Data: Version 8, Sep 3, 2015

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: May 8, 2010—May 21, 2010

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

San Luis Obispo County, California, Paso Robles Area (CA665)			
Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
102	Arbuckle-Positas complex, 9 to 15 percent slopes	66.9	31.4%
106	Arbuckle-San Ysidro complex, 2 to 9 percent slopes	113.8	53.4%
133	Cropley clay, 2 to 9 percent slopes, MLRA 14	28.7	13.5%
188	Rincon clay loam, 2 to 9 percent slopes, MLRA 14	3.7	1.8%
Totals for Area of Interest		213.2	100.0%

Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic

classes but rather to separate the landscape into landforms or landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

San Luis Obispo County, California, Paso Robles Area

102—Arbuckle-Positas complex, 9 to 15 percent slopes

Map Unit Setting

National map unit symbol: hbrk
Elevation: 600 to 1,500 feet
Mean annual precipitation: 12 to 20 inches
Mean annual air temperature: 60 to 61 degrees F
Frost-free period: 200 days
Farmland classification: Not prime farmland

Map Unit Composition

Arbuckle and similar soils: 40 percent
Positas and similar soils: 30 percent
Minor components: 30 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Arbuckle

Setting

Landform: Terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium from mixed rock sources

Typical profile

H1 - 0 to 29 inches: fine sandy loam
H2 - 29 to 53 inches: sandy clay loam
H3 - 53 to 62 inches: stratified sandy loam to very gravelly sandy clay loam

Properties and qualities

Slope: 9 to 15 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Moderate (about 8.4 inches)

Interpretive groups

Land capability classification (irrigated): 4e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: C
Ecological site: COARSE LOAMY (R014XE003CA)

Description of Positas

Setting

Landform: Terraces
Landform position (two-dimensional): Toeslope

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Landform position (three-dimensional): Tread

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Alluvium from mixed rock sources

Typical profile

H1 - 0 to 10 inches: coarse sandy loam

H2 - 10 to 28 inches: clay

H3 - 28 to 40 inches: sandy clay loam

H4 - 40 to 60 inches: stratified sandy loam to gravelly clay loam

Properties and qualities

Slope: 9 to 15 percent

Depth to restrictive feature: 9 to 20 inches to abrupt textural change

Natural drainage class: Well drained

Runoff class: Very high

Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum in profile: 5 percent

Salinity, maximum in profile: Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

Available water storage in profile: Very low (about 1.2 inches)

Interpretive groups

Land capability classification (irrigated): 4e

Land capability classification (nonirrigated): 4e

Hydrologic Soil Group: D

Ecological site: COARSE LOAMY CLAYPAN (R014XE005CA)

Minor Components

Greenfield, fine sandy loam

Percent of map unit: 10 percent

Positas

Percent of map unit: 10 percent

Cropley

Percent of map unit: 4 percent

Hanford, fine sandy loam

Percent of map unit: 3 percent

Unnamed, areas of 15 to 30 percent slope

Percent of map unit: 1 percent

Unnamed, areas of 15 to 30 percent slope

Percent of map unit: 1 percent

Unnamed, areas with cobbles on the surface

Percent of map unit: 1 percent

106—Arbuckle-San Ysidro complex, 2 to 9 percent slopes

Map Unit Setting

National map unit symbol: hbrp

Elevation: 600 to 1,500 feet

Mean annual precipitation: 12 to 20 inches

Mean annual air temperature: 60 to 61 degrees F

Frost-free period: 200 days

Farmland classification: Farmland of statewide importance

Map Unit Composition

Arbuckle and similar soils: 40 percent

San ysidro and similar soils: 20 percent

Minor components: 39 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Arbuckle

Setting

Landform: Terraces

Landform position (two-dimensional): Toeslope

Landform position (three-dimensional): Tread

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Alluvium from mixed rock sources

Typical profile

H1 - 0 to 29 inches: fine sandy loam

H2 - 29 to 38 inches: sandy clay loam

H3 - 38 to 62 inches: stratified sandy loam to very gravelly sandy clay loam

Properties and qualities

Slope: 2 to 9 percent

Depth to restrictive feature: More than 80 inches

Natural drainage class: Well drained

Runoff class: Low

Capacity of the most limiting layer to transmit water (Ksat): Moderately high (0.20 to 0.57 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Available water storage in profile: Moderate (about 6.8 inches)

Interpretive groups

Land capability classification (irrigated): 3e

Land capability classification (nonirrigated): 4e

Hydrologic Soil Group: C

Ecological site: COARSE LOAMY (R014XE003CA)

Description of San Ysidro

Setting

Landform: Terraces
Landform position (two-dimensional): Toeslope
Landform position (three-dimensional): Tread
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from mixed rocks

Typical profile

H1 - 0 to 23 inches: loam
H2 - 23 to 38 inches: clay loam
H3 - 38 to 71 inches: sandy loam

Properties and qualities

Slope: 2 to 9 percent
Depth to restrictive feature: 20 to 37 inches to abrupt textural change
Natural drainage class: Moderately well drained
Runoff class: Very high
Capacity of the most limiting layer to transmit water (Ksat): Very low to moderately low (0.00 to 0.06 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Available water storage in profile: Low (about 3.4 inches)

Interpretive groups

Land capability classification (irrigated): 3e
Land capability classification (nonirrigated): 4e
Hydrologic Soil Group: D
Ecological site: LOAMY CLAYPAN (R014XE029CA)

Minor Components

Greenfield, fine sandy loam

Percent of map unit: 14 percent

Unnamed, similar to san ysidro soil

Percent of map unit: 10 percent

Hanford, fine sandy loam

Percent of map unit: 5 percent

Unnamed, simialr to arbuckle

Percent of map unit: 5 percent

Cropley, clay

Percent of map unit: 2 percent

Rincon, clay loam

Percent of map unit: 2 percent

Unnamed

Percent of map unit: 1 percent
Landform: Drainageways

133—Cropley clay, 2 to 9 percent slopes, MLRA 14

Map Unit Setting

National map unit symbol: 2tb9j
Elevation: 0 to 2,340 feet
Mean annual precipitation: 12 to 28 inches
Mean annual air temperature: 56 to 60 degrees F
Frost-free period: 270 to 365 days
Farmland classification: Prime farmland if irrigated

Map Unit Composition

Cropley and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Cropley

Setting

Landform: Alluvial fans, terraces
Landform position (two-dimensional): Backslope
Landform position (three-dimensional): Base slope, tread, talf
Down-slope shape: Linear
Across-slope shape: Linear
Parent material: Alluvium derived from calcareous shale

Typical profile

A1 - 0 to 11 inches: clay
Bss1 - 11 to 51 inches: clay
BCK1 - 51 to 79 inches: sandy clay loam

Properties and qualities

Slope: 2 to 9 percent
Depth to restrictive feature: More than 80 inches
Natural drainage class: Moderately well drained
Runoff class: Medium
Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum in profile: 15 percent
Gypsum, maximum in profile: 2 percent
Salinity, maximum in profile: Nonsaline to very slightly saline (1.0 to 3.0 mmhos/cm)
Sodium adsorption ratio, maximum in profile: 5.0
Available water storage in profile: High (about 9.1 inches)

Interpretive groups

Land capability classification (irrigated): 2e
Land capability classification (nonirrigated): 3e

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Hydrologic Soil Group: C

Minor Components

Los osos

Percent of map unit: 3 percent

Landform: Ridges, hillslopes

Landform position (two-dimensional): Summit, backslope, shoulder, footslope

Landform position (three-dimensional): Side slope

Down-slope shape: Convex, concave

Across-slope shape: Convex, concave

Salinas

Percent of map unit: 3 percent

Landform: Alluvial fans, terraces

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Base slope, tread, talf

Down-slope shape: Linear

Across-slope shape: Linear

Clear lake

Percent of map unit: 2 percent

Landform: Basin floors

Landform position (three-dimensional): Dip

Down-slope shape: Concave

Across-slope shape: Concave

Capay

Percent of map unit: 2 percent

Landform: Flood plains

Landform position (two-dimensional): Backslope

Landform position (three-dimensional): Base slope, dip

Down-slope shape: Linear

Across-slope shape: Linear

188—Rincon clay loam, 2 to 9 percent slopes, MLRA 14

Map Unit Setting

National map unit symbol: 2tb8p

Elevation: 10 to 3,110 feet

Mean annual precipitation: 11 to 33 inches

Mean annual air temperature: 56 to 62 degrees F

Frost-free period: 250 to 320 days

Farmland classification: Prime farmland if irrigated

Map Unit Composition

Rincon and similar soils: 90 percent

Minor components: 10 percent

Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Rincon

Setting

Landform: Alluvial fans, terraces

Down-slope shape: Linear

Across-slope shape: Linear

Parent material: Clayey alluvium derived from sedimentary rock

Typical profile

A - 0 to 6 inches: clay loam

Ap - 6 to 18 inches: clay loam

Bt - 18 to 52 inches: clay

Btk - 52 to 64 inches: clay loam

Properties and qualities

Slope: 2 to 9 percent

Depth to restrictive feature: More than 80 inches

Natural drainage class: Well drained

Runoff class: High

Capacity of the most limiting layer to transmit water (Ksat): Moderately low to moderately high (0.06 to 0.20 in/hr)

Depth to water table: More than 80 inches

Frequency of flooding: None

Frequency of ponding: None

Calcium carbonate, maximum in profile: 5 percent

Available water storage in profile: High (about 9.8 inches)

Interpretive groups

Land capability classification (irrigated): 2e

Land capability classification (nonirrigated): 4e

Hydrologic Soil Group: C

Minor Components

Arbuckle

Percent of map unit: 2 percent

Cropley

Percent of map unit: 2 percent

Lockwood

Percent of map unit: 2 percent

Capay

Percent of map unit: 2 percent

Brentwood

Percent of map unit: 1 percent

Antioch

Percent of map unit: 1 percent

Soil Information for All Uses

Soil Reports

The Soil Reports section includes various formatted tabular and narrative reports (tables) containing data for each selected soil map unit and each component of each unit. No aggregation of data has occurred as is done in reports in the Soil Properties and Qualities and Suitabilities and Limitations sections.

The reports contain soil interpretive information as well as basic soil properties and qualities. A description of each report (table) is included.

Soil Chemical Properties

This folder contains a collection of tabular reports that present soil chemical properties. The reports (tables) include all selected map units and components for each map unit. Soil chemical properties are measured or inferred from direct observations in the field or laboratory. Examples of soil chemical properties include pH, cation exchange capacity, calcium carbonate, gypsum, and electrical conductivity.

Chemical Soil Properties

This table shows estimates of some chemical characteristics and features that affect soil behavior. These estimates are given for the layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

Depth to the upper and lower boundaries of each layer is indicated.

Cation-exchange capacity is the total amount of extractable cations that can be held by the soil, expressed in terms of milliequivalents per 100 grams of soil at neutrality (pH 7.0) or at some other stated pH value. Soils having a low cation-exchange capacity hold fewer cations and may require more frequent applications of fertilizer than soils having a high cation-exchange capacity. The ability to retain cations reduces the hazard of ground-water pollution.

Effective cation-exchange capacity refers to the sum of extractable cations plus aluminum expressed in terms of milliequivalents per 100 grams of soil. It is determined for soils that have pH of less than 5.5.

Custom Soil Resource Report

Soil reaction is a measure of acidity or alkalinity. It is important in selecting crops and other plants, in evaluating soil amendments for fertility and stabilization, and in determining the risk of corrosion.

Calcium carbonate equivalent is the percent of carbonates, by weight, in the fraction of the soil less than 2 millimeters in size. The availability of plant nutrients is influenced by the amount of carbonates in the soil.

Gypsum is expressed as a percent, by weight, of hydrated calcium sulfates in the fraction of the soil less than 20 millimeters in size. Gypsum is partially soluble in water. Soils that have a high content of gypsum may collapse if the gypsum is removed by percolating water.

Salinity is a measure of soluble salts in the soil at saturation. It is expressed as the electrical conductivity of the saturation extract, in millimhos per centimeter at 25 degrees C. Estimates are based on field and laboratory measurements at representative sites of nonirrigated soils. The salinity of irrigated soils is affected by the quality of the irrigation water and by the frequency of water application. Hence, the salinity of soils in individual fields can differ greatly from the value given in the table. Salinity affects the suitability of a soil for crop production, the stability of soil if used as construction material, and the potential of the soil to corrode metal and concrete.

Sodium adsorption ratio (SAR) is a measure of the amount of sodium (Na) relative to calcium (Ca) and magnesium (Mg) in the water extract from saturated soil paste. It is the ratio of the Na concentration divided by the square root of one-half of the Ca + Mg concentration. Soils that have SAR values of 13 or more may be characterized by an increased dispersion of organic matter and clay particles, reduced saturated hydraulic conductivity and aeration, and a general degradation of soil structure.

Custom Soil Resource Report

Chemical Soil Properties—San Luis Obispo County, California, Paso Robles Area								
Map symbol and soil name	Depth	Cation-exchange capacity	Effective cation-exchange capacity	Soil reaction	Calcium carbonate	Gypsum	Salinity	Sodium adsorption ratio
	<i>In</i>	<i>meq/100g</i>	<i>meq/100g</i>	<i>pH</i>	<i>Pct</i>	<i>Pct</i>	<i>mmhos/cm</i>	
102—Arbuckle-Positas complex, 9 to 15 percent slopes								
Arbuckle	0-29	5.0-10	—	6.1-7.3	0	0	0	0
	29-53	10-15	—	6.1-7.8	0	0	0	0
	53-62	10-15	—	6.1-7.8	0	0	0	0
Positas	0-10	10-15	—	5.6-6.5	0	0	0	0
	10-28	30-40	—	6.1-9.4	0	0	0	0
	28-40	20-25	—	6.6-8.4	0-1	0	0.0-2.0	0
	40-60	15-20	—	6.6-8.4	0-5	0	0.0-2.0	0
106—Arbuckle-San Ysidro complex, 2 to 9 percent slopes								
Arbuckle	0-29	10-15	—	6.1-7.3	0	0	0	0
	29-38	10-15	—	6.1-7.8	0	0	0	0
	38-62	10-15	—	6.1-7.8	0	0	0	0
San ysidro	0-23	15-20	—	7.9-8.4	0	0	0	0
	23-38	25-30	—	7.9-8.4	0	0	0	0
	38-71	20-25	—	6.1-7.8	0	0	0	0
133—Cropley clay, 2 to 9 percent slopes, MLRA 14								
Cropley	0-11	27-37	—	6.2-7.3	1-2	0-2	1.0-2.0	0-5
	11-51	27-37	—	7.0-8.4	1-5	0-2	1.0-3.0	0-5
	51-79	21-33	—	7.3-8.4	2-15	0-2	1.0-3.0	0-5

Custom Soil Resource Report

Chemical Soil Properties—San Luis Obispo County, California, Paso Robles Area								
Map symbol and soil name	Depth	Cation-exchange capacity	Effective cation-exchange capacity	Soil reaction	Calcium carbonate	Gypsum	Salinity	Sodium adsorption ratio
	<i>In</i>	<i>meq/100g</i>	<i>meq/100g</i>	<i>pH</i>	<i>Pct</i>	<i>Pct</i>	<i>mmhos/cm</i>	
188—Rincon clay loam, 2 to 9 percent slopes, MLRA 14								
Rincon	0-6	22-30	—	6.6-7.3	0	0	0	0
	6-18	22-30	—	6.6-7.3	0	0	0	0
	18-52	29-34	—	7.0-8.0	2-5	0	0	0
	52-64	19-28	—	7.9-8.4	2-5	0	0	0

Soil Physical Properties

This folder contains a collection of tabular reports that present soil physical properties. The reports (tables) include all selected map units and components for each map unit. Soil physical properties are measured or inferred from direct observations in the field or laboratory. Examples of soil physical properties include percent clay, organic matter, saturated hydraulic conductivity, available water capacity, and bulk density.

Physical Soil Properties

This table shows estimates of some physical characteristics and features that affect soil behavior. These estimates are given for the layers of each soil in the survey area. The estimates are based on field observations and on test data for these and similar soils.

Depth to the upper and lower boundaries of each layer is indicated.

Particle size is the effective diameter of a soil particle as measured by sedimentation, sieving, or micrometric methods. Particle sizes are expressed as classes with specific effective diameter class limits. The broad classes are sand, silt, and clay, ranging from the larger to the smaller.

Sand as a soil separate consists of mineral soil particles that are 0.05 millimeter to 2 millimeters in diameter. In this table, the estimated sand content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

Silt as a soil separate consists of mineral soil particles that are 0.002 to 0.05 millimeter in diameter. In this table, the estimated silt content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

Clay as a soil separate consists of mineral soil particles that are less than 0.002 millimeter in diameter. In this table, the estimated clay content of each soil layer is given as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter.

The content of sand, silt, and clay affects the physical behavior of a soil. Particle size is important for engineering and agronomic interpretations, for determination of soil hydrologic qualities, and for soil classification.

The amount and kind of clay affect the fertility and physical condition of the soil and the ability of the soil to adsorb cations and to retain moisture. They influence shrink-swell potential, saturated hydraulic conductivity (Ksat), plasticity, the ease of soil dispersion, and other soil properties. The amount and kind of clay in a soil also affect tillage and earthmoving operations.

Moist bulk density is the weight of soil (oven-dry) per unit volume. Volume is measured when the soil is at field moisture capacity, that is, the moisture content at 1/3- or 1/10-bar (33kPa or 10kPa) moisture tension. Weight is determined after the soil is dried at 105 degrees C. In the table, the estimated moist bulk density of each soil horizon is expressed in grams per cubic centimeter of soil material that is less than 2 millimeters in diameter. Bulk density data are used to compute linear extensibility, shrink-swell potential, available water capacity, total pore space, and other soil properties. The moist bulk density of a soil indicates the pore space available for water and roots.

Depending on soil texture, a bulk density of more than 1.4 can restrict water storage and root penetration. Moist bulk density is influenced by texture, kind of clay, content of organic matter, and soil structure.

Saturated hydraulic conductivity (Ksat) refers to the ease with which pores in a saturated soil transmit water. The estimates in the table are expressed in terms of micrometers per second. They are based on soil characteristics observed in the field, particularly structure, porosity, and texture. Saturated hydraulic conductivity (Ksat) is considered in the design of soil drainage systems and septic tank absorption fields.

Available water capacity refers to the quantity of water that the soil is capable of storing for use by plants. The capacity for water storage is given in inches of water per inch of soil for each soil layer. The capacity varies, depending on soil properties that affect retention of water. The most important properties are the content of organic matter, soil texture, bulk density, and soil structure. Available water capacity is an important factor in the choice of plants or crops to be grown and in the design and management of irrigation systems. Available water capacity is not an estimate of the quantity of water actually available to plants at any given time.

Linear extensibility refers to the change in length of an unconfined clod as moisture content is decreased from a moist to a dry state. It is an expression of the volume change between the water content of the clod at 1/3- or 1/10-bar tension (33kPa or 10kPa tension) and oven dryness. The volume change is reported in the table as percent change for the whole soil. The amount and type of clay minerals in the soil influence volume change.

Linear extensibility is used to determine the shrink-swell potential of soils. The shrink-swell potential is low if the soil has a linear extensibility of less than 3 percent; moderate if 3 to 6 percent; high if 6 to 9 percent; and very high if more than 9 percent. If the linear extensibility is more than 3, shrinking and swelling can cause damage to buildings, roads, and other structures and to plant roots. Special design commonly is needed.

Organic matter is the plant and animal residue in the soil at various stages of decomposition. In this table, the estimated content of organic matter is expressed as a percentage, by weight, of the soil material that is less than 2 millimeters in diameter. The content of organic matter in a soil can be maintained by returning crop residue to the soil.

Organic matter has a positive effect on available water capacity, water infiltration, soil organism activity, and tilth. It is a source of nitrogen and other nutrients for crops and soil organisms.

Erosion factors are shown in the table as the K factor (Kw and Kf) and the T factor. Erosion factor K indicates the susceptibility of a soil to sheet and rill erosion by water. Factor K is one of six factors used in the Universal Soil Loss Equation (USLE) and the Revised Universal Soil Loss Equation (RUSLE) to predict the average annual rate of soil loss by sheet and rill erosion in tons per acre per year. The estimates are based primarily on percentage of silt, sand, and organic matter and on soil structure and Ksat. Values of K range from 0.02 to 0.69. Other factors being equal, the higher the value, the more susceptible the soil is to sheet and rill erosion by water.

Erosion factor Kw indicates the erodibility of the whole soil. The estimates are modified by the presence of rock fragments.

Erosion factor Kf indicates the erodibility of the fine-earth fraction, or the material less than 2 millimeters in size.

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Erosion factor T is an estimate of the maximum average annual rate of soil erosion by wind and/or water that can occur without affecting crop productivity over a sustained period. The rate is in tons per acre per year.

Wind erodibility groups are made up of soils that have similar properties affecting their susceptibility to wind erosion in cultivated areas. The soils assigned to group 1 are the most susceptible to wind erosion, and those assigned to group 8 are the least susceptible. The groups are described in the "National Soil Survey Handbook."

Wind erodibility index is a numerical value indicating the susceptibility of soil to wind erosion, or the tons per acre per year that can be expected to be lost to wind erosion. There is a close correlation between wind erosion and the texture of the surface layer, the size and durability of surface clods, rock fragments, organic matter, and a calcareous reaction. Soil moisture and frozen soil layers also influence wind erosion.

Reference:

United States Department of Agriculture, Natural Resources Conservation Service.
National soil survey handbook, title 430-VI. (<http://soils.usda.gov>)

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Physical Soil Properties—San Luis Obispo County, California, Paso Robles Area														
Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensibility	Organic matter	Erosion factors			Wind erodibility group	Wind erodibility index
										Kw	Kf	T		
	<i>In</i>	<i>Pct</i>	<i>Pct</i>	<i>Pct</i>	<i>g/cc</i>	<i>micro m/sec</i>	<i>In/in</i>	<i>Pct</i>	<i>Pct</i>					
102—Arbuckle- Positas complex, 9 to 15 percent slopes														
Arbuckle	0-29	-69-	-16-	10-15- 20	1.50-1.55- 1.60	4.00-9.00-14.00	0.12-0.13-0.1 4	0.0- 1.5- 2.9	0.5- 0.8- 1.0	.28	.28	5	3	86
	29-53	-39-	-37-	18-24- 30	1.35-1.43- 1.50	1.40-2.70-4.00	0.15-0.16-0.1 7	3.0- 4.5- 5.9	0.5- 0.8- 1.0	.37	.37			
	53-62	-61-	-19-	15-20- 25	1.45-1.53- 1.60	1.40-2.70-4.00	0.08-0.11-0.1 4	0.0- 1.5- 2.9	0.0- 0.3- 0.5	.28	.28			
Positas	0-10	-67-	-22-	8-12- 15	1.50-1.55- 1.60	4.00-9.00-14.00	0.10-0.12-0.1 3	0.0- 1.5- 2.9	0.7- 0.9- 1.0	.20	.32	3	5	56
	10-28	-22-	-28-	40-50- 60	1.30-1.40- 1.50	0.01-0.22-0.42	0.03-0.04-0.0 5	6.0- 7.5- 8.9	0.0- 0.3- 0.5	.17	.24			
	28-40	-56-	-15-	25-30- 35	1.45-1.50- 1.55	1.40-2.70-4.00	0.15-0.16-0.1 7	3.0- 4.5- 5.9	0.0- 0.3- 0.5	.15	.20			
	40-60	-37-	-40-	15-23- 30	1.40-1.48- 1.55	1.40-21.70-42.0 0	0.07-0.11-0.1 5	0.0- 1.5- 2.9	0.0- 0.0- 0.0	.20	.37			

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Physical Soil Properties—San Luis Obispo County, California, Paso Robles Area														
Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensibility	Organic matter	Erosion factors			Wind erodibility group	Wind erodibility index
										Kw	Kf	T		
	<i>In</i>	<i>Pct</i>	<i>Pct</i>	<i>Pct</i>	<i>g/cc</i>	<i>micro m/sec</i>	<i>In/in</i>	<i>Pct</i>	<i>Pct</i>					
106—Arbuckle-San Ysidro complex, 2 to 9 percent slopes														
Arbuckle	0-29	-69-	-16-	10-15- 20	1.50-1.55-1.60	4.00-9.00-14.00	0.12-0.13-0.14	0.0- 1.5- 2.9	0.5- 0.8-1.0	.28	.28	5	3	86
	29-38	-39-	-37-	18-24- 30	1.35-1.43-1.50	1.40-2.70-4.00	0.15-0.16-0.17	3.0- 4.5- 5.9	0.5- 0.8-1.0	.37	.37			
	38-62	-61-	-19-	15-20- 25	1.50-1.55-1.60	1.40-2.70-4.00	0.05-0.07-0.08	0.0- 1.5- 2.9	0.0- 0.3-0.5	.15	.28			
San ysidro	0-23	-42-	-38-	15-20- 25	1.45-1.50-1.55	4.00-9.00-14.00	0.14-0.15-0.16	0.0- 1.5- 2.9	0.5- 0.8-1.0	.32	.32	4	6	48
	23-38	-30-	-30-	35-40- 45	1.35-1.43-1.50	0.01-0.22-0.42	0.04-0.05-0.06	6.0- 7.5- 8.9	0.0- 0.0-0.0	.32	.32			
	38-71	-63-	-14-	18-23- 27	1.40-1.48-1.55	1.40-2.70-4.00	0.10-0.13-0.16	3.0- 4.5- 5.9	0.0- 0.0-0.0	.24	.24			
133—Cropley clay, 2 to 9 percent slopes, MLRA 14														
Cropley	0-11	-26-	-29-	35-45- 50	1.35-1.40-1.45	0.42-0.70-1.40	0.14-0.15-0.16	6.0- 9.0-12.0	1.0- 1.5-2.0	.24	.24	5	4	86
	11-51	-22-	-28-	35-50- 50	1.35-1.40-1.45	0.42-0.70-1.40	0.14-0.15-0.16	6.0- 9.0-12.0	1.0- 1.5-2.0	.20	.20			
	51-79	-54-	-14-	27-32- 45	1.35-1.40-1.45	0.42-3.00-4.00	0.14-0.16-0.18	6.0- 6.0-12.0	0.3- 0.5-0.8	.20	.20			

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Physical Soil Properties—San Luis Obispo County, California, Paso Robles Area														
Map symbol and soil name	Depth	Sand	Silt	Clay	Moist bulk density	Saturated hydraulic conductivity	Available water capacity	Linear extensibility	Organic matter	Erosion factors			Wind erodibility group	Wind erodibility index
										Kw	Kf	T		
	<i>In</i>	<i>Pct</i>	<i>Pct</i>	<i>Pct</i>	<i>g/cc</i>	<i>micro m/sec</i>	<i>In/in</i>	<i>Pct</i>	<i>Pct</i>					
188—Rincon clay loam, 2 to 9 percent slopes, MLRA 14														
Rincon	0-6	30-30- 45	30-35- 45	28-35- 38	1.39-1.42- 1.44	1.41-2.70-4.23	0.15-0.17-0.1 9	3.6- 6.1- 7.0	1.0- 1.5- 2.0	.32	.32	5	6	48
	6-18	30-30- 45	30-35- 45	28-35- 38	1.41-1.46- 1.52	1.41-2.70-4.23	0.15-0.17-0.1 9	3.1- 6.1- 7.0	1.0- 1.5- 3.0	.32	.32			
	18-52	20-29- 45	25-30- 40	40-41- 45	1.32-1.42- 1.51	0.42-0.91-1.41	0.15-0.16-0.1 7	5.9- 7.5- 8.7	0.5- 1.0- 2.0	.28	.28			
	52-64	30-30- 45	30-35- 45	28-35- 38	1.51-1.54- 1.56	1.41-2.70-4.23	0.15-0.17-0.1 9	2.8- 5.8- 6.6	0.0- 0.3- 0.5	.32	.32			

Vegetative Productivity

This folder contains a collection of tabular reports that present vegetative productivity data. The reports (tables) include all selected map units and components for each map unit. Vegetative productivity includes estimates of potential vegetative production for a variety of land uses, including cropland, forestland, hayland, pastureland, horticulture and rangeland. In the underlying database, some states maintain crop yield data by individual map unit component. Other states maintain the data at the map unit level. Attributes are included for both, although only one or the other is likely to contain data for any given geographic area. For other land uses, productivity data is shown only at the map unit component level. Examples include potential crop yields under irrigated and nonirrigated conditions, forest productivity, forest site index, and total rangeland production under of normal, favorable and unfavorable conditions.

Forestland Productivity

This table can help forestland owners or managers plan the use of soils for wood crops. It shows the potential productivity of the soils for wood crops.

Potential productivity of merchantable or *common trees* on a soil is expressed as a site index and as a volume number. The *site index* is the average height, in feet, that dominant and codominant trees of a given species attain in a specified number of years. The site index applies to fully stocked, even-aged, unmanaged stands. Commonly grown trees are those that forestland managers generally favor in intermediate or improvement cuttings. They are selected on the basis of growth rate, quality, value, and marketability. More detailed information regarding site index is available in the "National Forestry Manual," which is available in local offices of the Natural Resources Conservation Service or on the Internet.

The *volume of wood fiber*, a number, is the yield likely to be produced by the most important tree species. This number, expressed as cubic feet per acre per year and calculated at the age of culmination of the mean annual increment (CMAI), indicates the amount of fiber produced in a fully stocked, even-aged, unmanaged stand.

Trees to manage are those that are preferred for planting, seeding, or natural regeneration and those that remain in the stand after thinning or partial harvest.

Reference:

United States Department of Agriculture, Natural Resources Conservation Service, National Forestry Manual.

Report—Forestland Productivity

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Forestland Productivity—San Luis Obispo County, California, Paso Robles Area				
Map unit symbol and soil name	Potential productivity			Trees to manage
	Common trees	Site Index	Volume of wood fiber	
			<i>Cu ft/ac</i>	
102—Arbuckle-Positas complex, 9 to 15 percent slopes				
Arbuckle	—	—	—	—
Positas	—	—	—	—
106—Arbuckle-San Ysidro complex, 2 to 9 percent slopes				
Arbuckle	—	—	—	—
San ysidro	—	—	—	—
133—Cropley clay, 2 to 9 percent slopes, MLRA 14				
Cropley	—	—	—	—
188—Rincon clay loam, 2 to 9 percent slopes, MLRA 14				
Rincon	—	—	—	—

Rangeland and Forest Vegetation Classification, Productivity, and Plant Composition

In areas that have similar climate and topography, differences in the kind and amount of rangeland or forest understory vegetation are closely related to the kind of soil. Effective management is based on the relationship between the soils and vegetation and water.

This table shows, for each soil that supports vegetation, the ecological site, plant association, or habitat type; the total annual production of vegetation in favorable, normal, and unfavorable years; the characteristic vegetation; and the average percentage of each species. An explanation of the column headings in the table follows.

An *ecological site, plant association, or habitat type* is the product of all the environmental factors responsible for its development. It has characteristic soils that have developed over time throughout the soil development process; a characteristic hydrology, particularly infiltration and runoff that has developed over time; and a characteristic plant community (kind and amount of vegetation). The hydrology of the site is influenced by development of the soil and plant community. The vegetation, soils, and hydrology are all interrelated. Each is influenced by the others and influences the development of the others. The plant community on an ecological site, plant association, or habitat type is typified by an association of species that differs from that of other ecological sites, plant associations, or habitat types in the kind and/or proportion of species or in total production. Descriptions of ecological sites are provided in the Field Office Technical Guide, which is available in local offices of the Natural Resources Conservation Service (NRCS). Descriptions of plant associations or habitat types are available from local U.S. Forest Service offices.

Total dry-weight production is the amount of vegetation that can be expected to grow annually in a well managed area that is supporting the potential natural plant community. It includes all vegetation, whether or not it is palatable to grazing animals. It includes the current year's growth of leaves, twigs, and fruits of woody plants. It does not include the increase in stem diameter of trees and shrubs. It is expressed in pounds per acre of air-dry vegetation for favorable, normal, and unfavorable years. In a favorable year, the amount and distribution of precipitation and the temperatures make growing conditions substantially better than average. In a normal year, growing conditions are about average. In an unfavorable year, growing conditions are well below average, generally because of low available soil moisture. Yields are adjusted to a common percent of air-dry moisture content.

Characteristic vegetation (the grasses, forbs, shrubs, and understory trees that make up most of the potential natural plant community on each soil) is listed by common name. Under *rangeland composition and forest understory*, the expected percentage of the total annual production is given for each species making up the characteristic vegetation. The percentages are by dry weight for rangeland. Percentages for forest understory are by either dry weight or canopy cover. The amount that can be used as forage depends on the kinds of grazing animals and on the grazing season.

Range management requires knowledge of the kinds of soil and of the potential natural plant community. It also requires an evaluation of the present range similarity index and rangeland trend. Range similarity index is determined by comparing the present plant community with the potential natural plant community on a particular rangeland ecological site. The more closely the existing community resembles the potential community, the higher the range similarity index. Rangeland trend is defined as the direction of change in an existing plant community relative to the potential natural plant community. Further information about the range similarity index and rangeland trend is available in the "National Range and Pasture Handbook," which is available in local offices of NRCS or on the Internet.

The objective in range management is to control grazing so that the plants growing on a site are about the same in kind and amount as the potential natural plant community for that site. Such management generally results in the optimum production of vegetation, control of undesirable brush species, conservation of water, and control of erosion. Sometimes, however, an area with a range similarity index somewhat below the potential meets grazing needs, provides wildlife habitat, and protects soil and water resources.

Reference:

United States Department of Agriculture, Natural Resources Conservation Service,
[National range and pasture handbook](#).

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Rangeland and Forest Vegetation Classification, Productivity, and Plant Composition—San Luis Obispo County, California, Paso Robles Area								
Map unit symbol and soil name	Ecological Site, Plant Association, or Habitat Type	Total dry-weight production			Characteristic rangeland or forest understory vegetation	Composition		
		Favorable year	Normal year	Unfavorable year		Rangeland	Forest understory	Forest understory
		<i>Lb/ac</i>	<i>Lb/ac</i>	<i>Lb/ac</i>		<i>Pct dry wt</i>	<i>Pct dry wt</i>	<i>Pct cover</i>
102—Arbuckle-Positas complex, 9 to 15 percent slopes								

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Rangeland and Forest Vegetation Classification, Productivity, and Plant Composition—San Luis Obispo County, California, Paso Robles Area								
Map unit symbol and soil name	Ecological Site, Plant Association, or Habitat Type	Total dry-weight production			Characteristic rangeland or forest understory vegetation	Composition		
		Favorable year	Normal year	Unfavorable year		Rangeland	Forest understory	Forest understory
		<i>Lb/ac</i>	<i>Lb/ac</i>	<i>Lb/ac</i>		<i>Pct dry wt</i>	<i>Pct dry wt</i>	<i>Pct cover</i>
Arbuckle	COARSE LOAMY (R014XE003CA)	3,000	2,200	1,700	soft chess	15	—	—
					oatgrass	10		
					other annual forbs	5		
					other perennial grasses			
					stork's bill			
					blue oak			
					clover			
					coastal sage scrub oak			
					other shrubs			
					other annual grasses			
					other trees			
					ripgut brome			
Positas	COARSE LOAMY CLAYPAN (R014XE005CA)	3,500	2,500	1,500	soft chess	25	—	—
					wild oat	15		
					Mediterranean barley	10		
					ripgut brome	5		
					stork's bill	1		
					blue oak			
					burclover			
					California buckwheat			
					needlegrass			
					other perennial grasses			
					California sagebrush			

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Rangeland and Forest Vegetation Classification, Productivity, and Plant Composition—San Luis Obispo County, California, Paso Robles Area								
Map unit symbol and soil name	Ecological Site, Plant Association, or Habitat Type	Total dry-weight production			Characteristic rangeland or forest understory vegetation	Composition		
		Favorable year	Normal year	Unfavorable year		Rangeland	Forest understory	Forest understory
		<i>Lb/ac</i>	<i>Lb/ac</i>	<i>Lb/ac</i>		<i>Pct dry wt</i>	<i>Pct dry wt</i>	<i>Pct cover</i>
106—Arbuckle-San Ysidro complex, 2 to 9 percent slopes								
Arbuckle	COARSE LOAMY (R014XE003CA)	3,000	2,200	1,700	soft chess	15	—	—
					oatgrass	10		
					other annual forbs	5		
					other perennial grasses			
					stork's bill			
					blue oak			
					clover			
					coastal sage scrub oak			
					other shrubs			
					other annual grasses			
					other trees			
					ripgut brome			
San ysidro	LOAMY CLAYPAN (R014XE029CA)	2,000	1,500	1,000	soft chess	20	—	—
					burclover	10		
					California buckwheat	5		
					stork's bill			
					wild oat			
					California sagebrush			
					foxtail fescue			
					Mediterranean barley			
					needlegrass			
					ripgut brome			

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Rangeland and Forest Vegetation Classification, Productivity, and Plant Composition—San Luis Obispo County, California, Paso Robles Area								
Map unit symbol and soil name	Ecological Site, Plant Association, or Habitat Type	Total dry-weight production			Characteristic rangeland or forest understory vegetation	Composition		
		Favorable year	Normal year	Unfavorable year		Rangeland	Forest understory	Forest understory
		<i>Lb/ac</i>	<i>Lb/ac</i>	<i>Lb/ac</i>		<i>Pct dry wt</i>	<i>Pct dry wt</i>	<i>Pct cover</i>
133—Cropley clay, 2 to 9 percent slopes, MLRA 14								
Cropley	—	—	—	—	—	—	—	—
188—Rincon clay loam, 2 to 9 percent slopes, MLRA 14								
Rincon	—	—	—	—	—	—	—	—

Rangeland Productivity

In areas that have similar climate and topography, differences in the kind and amount of vegetation produced on rangeland are closely related to the kind of soil. Effective management is based on the relationship between the soils and vegetation and water.

This table shows, for each soil that supports rangeland vegetation, the ecological site and the potential annual production of vegetation in favorable, normal, and unfavorable years. An explanation of the column headings in the table follows.

An *ecological site* is the product of all the environmental factors responsible for its development. It has characteristic soils that have developed over time throughout the soil development process; a characteristic hydrology, particularly infiltration and runoff, that has developed over time; and a characteristic plant community (kind and amount of vegetation). The hydrology of a site is influenced by development of the soil and plant community. The vegetation, soils, and hydrology are all interrelated. Each is influenced by the others and influences the development of the others. The plant community on an ecological site is typified by an association of species that differs from that of other ecological sites in the kind and/or proportion of species or in total production. Descriptions of ecological sites are provided in the Field Office Technical Guide, which is available in local offices of the Natural Resources Conservation Service (NRCS).

Total dry-weight production is the amount of vegetation that can be expected to grow annually on well managed rangeland that is supporting the potential natural plant community. It includes all vegetation, whether or not it is palatable to grazing animals. It includes the current year's growth of leaves, twigs, and fruits of woody plants. It does not include the increase in stem diameter of trees and shrubs. It is expressed in pounds per acre of air-dry vegetation for favorable, normal, and unfavorable years. In a favorable year, the amount and distribution of precipitation and the temperatures make growing conditions substantially better than average. In a normal year, growing conditions are about average. In an unfavorable year, growing conditions are well below average, generally because of low available soil moisture. Yields are adjusted to a common percent of air-dry moisture content.

Range management requires knowledge of the kinds of soil and of the potential natural plant community. It also requires an evaluation of the present range similarity index and rangeland trend. Range similarity index is determined by comparing the present plant community with the potential natural plant community on a particular rangeland ecological site. The more closely the existing community resembles the potential community, the higher the range similarity index. Rangeland trend is defined as the direction of change in an existing plant community relative to the potential natural plant community. Further information about the range similarity index and rangeland trend is available in the "National Range and Pasture Handbook," which is available in local offices of NRCS or on the Internet.

The objective in range management is to control grazing so that the plants growing on a site are about the same in kind and amount as the potential natural plant community for that site. Such management generally results in the optimum production of vegetation, control of undesirable brush species, conservation of water, and control of erosion. Sometimes, however, an area with a range similarity index somewhat below the potential meets grazing needs, provides wildlife habitat, and protects soil and water resources.

Reference:

United States Department of Agriculture, Natural Resources Conservation Service,
[National range and pasture handbook](#).

Report—Rangeland Productivity

Rangeland Productivity—San Luis Obispo County, California, Paso Robles Area				
Map unit symbol and soil name	Ecological site	Total dry-weight production		
		Favorable year	Normal year	Unfavorable year
		<i>Lb/ac</i>	<i>Lb/ac</i>	<i>Lb/ac</i>
102—Arbuckle-Positas complex, 9 to 15 percent slopes				
Arbuckle	Coarse Loamy	3,000	2,200	1,700
Positas	Coarse Loamy Claypan	3,500	2,500	1,500
106—Arbuckle-San Ysidro complex, 2 to 9 percent slopes				
Arbuckle	Coarse Loamy	3,000	2,200	1,700
San ysidro	Loamy Claypan	2,000	1,500	1,000
133—Cropley clay, 2 to 9 percent slopes, MLRA 14				
Cropley	—	—	—	—
188—Rincon clay loam, 2 to 9 percent slopes, MLRA 14				
Rincon	—	—	—	—

Rangeland Productivity and Plant Composition

In areas that have similar climate and topography, differences in the kind and amount of rangeland or forest understory vegetation are closely related to the kind of soil. Effective management is based on the relationship between the soils and vegetation and water.

This table shows, for each soil that supports vegetation suitable for grazing, the ecological site; the total annual production of vegetation in favorable, normal, and unfavorable years; the characteristic vegetation; and the average percentage of each species. An explanation of the column headings in the table follows.

An *ecological site* is the product of all the environmental factors responsible for its development. It has characteristic soils that have developed over time throughout the soil development process; a characteristic hydrology, particularly infiltration and runoff that has developed over time; and a characteristic plant community (kind and amount of vegetation). The hydrology of the site is influenced by development of the soil and plant community. The vegetation, soils, and hydrology are all interrelated. Each is influenced by the others and influences the development of the others. The plant community on an ecological site is typified by an association of species that differs from that of other ecological sites in the kind and/or proportion of species or in total production. Descriptions of ecological sites are provided in the Field Office Technical

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Guide, which is available in local offices of the Natural Resources Conservation Service (NRCS).

Total dry-weight production is the amount of vegetation that can be expected to grow annually in a well managed area that is supporting the potential natural plant community. It includes all vegetation, whether or not it is palatable to grazing animals. It includes the current year's growth of leaves, twigs, and fruits of woody plants. It does not include the increase in stem diameter of trees and shrubs. It is expressed in pounds per acre of air-dry vegetation for favorable, normal, and unfavorable years. In a favorable year, the amount and distribution of precipitation and the temperatures make growing conditions substantially better than average. In a normal year, growing conditions are about average. In an unfavorable year, growing conditions are well below average, generally because of low available soil moisture. Yields are adjusted to a common percent of air-dry moisture content.

Characteristic vegetation (the grasses, forbs, and shrubs that make up most of the potential natural plant community on each soil) is listed by common name. Under *rangeland composition*, the expected percentage of the total annual production is given for each species making up the characteristic vegetation. The amount that can be used as forage depends on the kinds of grazing animals and on the grazing season.

Range management requires knowledge of the kinds of soil and of the potential natural plant community. It also requires an evaluation of the present range similarity index and rangeland trend. Range similarity index is determined by comparing the present plant community with the potential natural plant community on a particular rangeland ecological site. The more closely the existing community resembles the potential community, the higher the range similarity index. Rangeland trend is defined as the direction of change in an existing plant community relative to the potential natural plant community. Further information about the range similarity index and rangeland trend is available in the "National Range and Pasture Handbook," which is available in local offices of NRCS or on the Internet.

The objective in range management is to control grazing so that the plants growing on a site are about the same in kind and amount as the potential natural plant community for that site. Such management generally results in the optimum production of vegetation, control of undesirable brush species, conservation of water, and control of erosion. Sometimes, however, an area with a range similarity index somewhat below the potential meets grazing needs, provides wildlife habitat, and protects soil and water resources.

Reference:

United States Department of Agriculture, Natural Resources Conservation Service, [National range and pasture handbook](#).

Custom Soil Resource Report

Rangeland Productivity and Plant Composition—San Luis Obispo County, California, Paso Robles Area						
Map unit symbol and soil name	Ecological site	Total dry-weight production			Characteristic vegetation	Rangeland composition
		Favorable year	Normal year	Unfavorable year		
		<i>Lb/ac</i>	<i>Lb/ac</i>	<i>Lb/ac</i>		<i>Pct</i>
102—Arbuckle-Positas complex, 9 to 15 percent slopes						
Arbuckle	Coarse Loamy	3,000	2,200	1,700	Soft chess	15
					Oatgrass	10
					Stork's bill	10
					Miscellaneous perennial grasses	10
					Miscellaneous annual forbs	10
					Miscellaneous annual grasses	5
					Miscellaneous shrubs	5
					Miscellaneous trees	5
					Ripgut brome	5
					Blue oak	5
					Coastal sage scrub oak	5
					Clover	5
Positas	Coarse Loamy Claypan	3,500	2,500	1,500	Soft chess	25
					Wild oat	15
					Ripgut brome	10
					Stork's bill	10
					Mediterranean barley	10
					Burclover	5
					Blue oak	5
					Needlegrass	5
					California buckwheat	5
					Miscellaneous perennial grasses	5

Custom Soil Resource Report

Rangeland Productivity and Plant Composition—San Luis Obispo County, California, Paso Robles Area						
Map unit symbol and soil name	Ecological site	Total dry-weight production			Characteristic vegetation	Rangeland composition
		Favorable year	Normal year	Unfavorable year		
		<i>Lb/ac</i>	<i>Lb/ac</i>	<i>Lb/ac</i>		<i>Pct</i>
					California sagebrush	1
106—Arbuckle-San Ysidro complex, 2 to 9 percent slopes						
Arbuckle	Coarse Loamy	3,000	2,200	1,700	Soft chess	15
					Oatgrass	10
					Stork's bill	10
					Miscellaneous annual forbs	10
					Miscellaneous perennial grasses	10
					Miscellaneous shrubs	5
					Miscellaneous trees	5
					Ripgut brome	5
					Miscellaneous annual grasses	5
					Blue oak	5
					Coastal sage scrub oak	5
					Clover	5
San ysidro	Loamy Claypan	2,000	1,500	1,000	Soft chess	20
					California buckwheat	10
					Stork's bill	10
					Burclover	10
					Wild oat	10
					Ripgut brome	5
					California sagebrush	5
					Needlegrass	5
					Foxtail fescue	5
					Mediterranean barley	5

Custom Soil Resource Report

Rangeland Productivity and Plant Composition—San Luis Obispo County, California, Paso Robles Area						
Map unit symbol and soil name	Ecological site	Total dry-weight production			Characteristic vegetation	Rangeland composition
		Favorable year	Normal year	Unfavorable year		
		<i>Lb/ac</i>	<i>Lb/ac</i>	<i>Lb/ac</i>		<i>Pct</i>
133—Cropley clay, 2 to 9 percent slopes, MLRA 14						
Cropley	—	—	—	—	—	—
188—Rincon clay loam, 2 to 9 percent slopes, MLRA 14						
Rincon	—	—	—	—	—	—

Water Features

This folder contains tabular reports that present soil hydrology information. The reports (tables) include all selected map units and components for each map unit. Water Features include ponding frequency, flooding frequency, and depth to water table.

Hydrologic Soil Group and Surface Runoff

This table gives estimates of various soil water features. The estimates are used in land use planning that involves engineering considerations.

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The four hydrologic soil groups are:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas.

Surface runoff refers to the loss of water from an area by flow over the land surface. Surface runoff classes are based on slope, climate, and vegetative cover. The concept indicates relative runoff for very specific conditions. It is assumed that the surface of the soil is bare and that the retention of surface water resulting from irregularities in the ground surface is minimal. The classes are negligible, very low, low, medium, high, and very high.

Report—Hydrologic Soil Group and Surface Runoff

Absence of an entry indicates that the data were not estimated. The dash indicates no documented presence.

Custom Soil Resource Report

Hydrologic Soil Group and Surface Runoff—San Luis Obispo County, California, Paso Robles Area			
Map symbol and soil name	Pct. of map unit	Surface Runoff	Hydrologic Soil Group
102—Arbuckle-Positas complex, 9 to 15 percent slopes			
Arbuckle	40	Medium	C
Positas	30	Very high	D
106—Arbuckle-San Ysidro complex, 2 to 9 percent slopes			
Arbuckle	40	Low	C
San ysidro	20	Very high	D
133—Cropley clay, 2 to 9 percent slopes, MLRA 14			
Cropley	90	Medium	C
188—Rincon clay loam, 2 to 9 percent slopes, MLRA 14			
Rincon	90	High	C

References

American Association of State Highway and Transportation Officials (AASHTO). 2004. Standard specifications for transportation materials and methods of sampling and testing. 24th edition.

American Society for Testing and Materials (ASTM). 2005. Standard classification of soils for engineering purposes. ASTM Standard D2487-00.

Cowardin, L.M., V. Carter, F.C. Golet, and E.T. LaRoe. 1979. Classification of wetlands and deep-water habitats of the United States. U.S. Fish and Wildlife Service FWS/OBS-79/31.

Federal Register. July 13, 1994. Changes in hydric soils of the United States.

Federal Register. September 18, 2002. Hydric soils of the United States.

Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.

National Research Council. 1995. Wetlands: Characteristics and boundaries.

Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_054262

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service, U.S. Department of Agriculture Handbook 436. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053577

Soil Survey Staff. 2010. Keys to soil taxonomy. 11th edition. U.S. Department of Agriculture, Natural Resources Conservation Service. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053580

Tiner, R.W., Jr. 1985. Wetlands of Delaware. U.S. Fish and Wildlife Service and Delaware Department of Natural Resources and Environmental Control, Wetlands Section.

United States Army Corps of Engineers, Environmental Laboratory. 1987. Corps of Engineers wetlands delineation manual. Waterways Experiment Station Technical Report Y-87-1.

United States Department of Agriculture, Natural Resources Conservation Service. National forestry manual. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/home/?cid=nrcs142p2_053374

United States Department of Agriculture, Natural Resources Conservation Service. National range and pasture handbook. <http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/landuse/rangepasture/?cid=stelprdb1043084>

Custom Soil Resource Report

United States Department of Agriculture, Natural Resources Conservation Service. National soil survey handbook, title 430-VI. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/scientists/?cid=nrcs142p2_054242

United States Department of Agriculture, Natural Resources Conservation Service. 2006. Land resource regions and major land resource areas of the United States, the Caribbean, and the Pacific Basin. U.S. Department of Agriculture Handbook 296. http://www.nrcs.usda.gov/wps/portal/nrcs/detail/national/soils/?cid=nrcs142p2_053624

United States Department of Agriculture, Soil Conservation Service. 1961. Land capability classification. U.S. Department of Agriculture Handbook 210. http://www.nrcs.usda.gov/Internet/FSE_DOCUMENTS/nrcs142p2_052290.pdf

Appendix B
California Natural Diversity Database Plant Records (Full)

APPENDIX B – SPECIAL STATUS PLANTS REPORTED FROM THE REGION

	Common Name <i>Scientific Name</i>	Fed/State Status Global/State CRPR Rank	Blooming Period	Habitat Preference	Potential to Occur	Detected in Study Area?	Effect of Activity
1.	Bishop Manzanita <i>Arctostaphylos obispoensis</i>	None/None G3?/None 4.3	February - March	Rocky, gen serpentine soils, chaparral, open close- cone forest near coast; 60-950 m; SCoRO	No. Suitable habitat is not present in the Study Area.	No	No Effect
2.	Brewer's Spineflower <i>Chorizanthe breweri</i>	None/None G2/None 1B.3	May - August	Chaparral, foothill woodland on serpentine; <800 m. Endemic to SLO County	No. Appropriate soil and habitat types are not present in the Study Area.	No	No Effect
3.	Bristlecone Fir <i>Abies bracteata</i>	None/None G2G3/S2S3 1B.3	n/a	Steep, rocky, fire-resistant slopes, generally in canyon-live-oak phase of mixed-evergreen forest, sometimes serpentine. 150-1465 m. n SCoRO (Santa Lucia Range)	No. Suitable habitat is not present in the Study Area.	No	No Effect
4.	Cambria Morning- glory <i>Calystegia subacaulis</i> subsp. <i>episcopalis</i>	None/None G3T3/None 4.2	April - May	Dry, open scrub, woodland, or grassland; <500 m. c SCoRO Endemic to SLO County	No. The Study Area is outside the known range of the species.	No	No Effect
5.	Cuesta Pass Checkerbloom <i>Sidalcea hickmanii</i> subsp. <i>anomala</i>	None/CR G3T1/CR 1B.2	May - June	Closed-cone-conifer forest, gen serpentine; 600-800 m. Endemic to SLO County	No. Appropriate habitat and soil types are not present in the Study Area.	No	No Effect
6.	Cuesta Ridge Thistle <i>Cirsium occidentale</i> var. <i>lucianum</i>	None/None G3G4T2/None 1B.2	April – July	Chaparral, woodland or forest openings, often on serpentine; 500-750m. s SCoRO (s Santa Lucia Range, San Luis Obispo, CA)	No. Suitable habitat is not present in the Study Area.	No	No Effect
7.	Douglas' Fiddleneck <i>Amsinckia douglasiana</i>	None/None G3/None 4.2	March – June	Unstable shaly sedimentary slopes; (100) 150–1600 m. SCoR, w WTR	No. Appropriate shaly slopes are not present in the Study Area.	No	No Effect

	Common Name Scientific Name	Fed/State Status Global/State CRPR Rank	Blooming Period	Habitat Preference	Potential to Occur	Detected in Study Area?	Effect of Activity
8.	Douglas' Spineflower <i>Chorizanthe douglasii</i>	None/None G3/None 4.3	April - July	Foothill woodland, pine forest, chaparral, sandy or gravelly soils; 200-1600 m. e SCoRO, SCoRI	No. Undisturbed suitable habitat is not present in the Study Area.	No	No Effect
9.	Dune Larkspur <i>Delphinium parryi</i> subsp. <i>blochmaniae</i>	None/None G4T2/None 1B.2	April - May	Coastal chaparral, sand. 0-200 m. s CCo	No. Appropriate coastal sand does not occur in the Study Area.	No	No Effect
10.	Dwarf Calycadenia <i>Calycadenia villosa</i>	None/None G3/None 1B.1	May - October	Dry, rocky hills, ridges, in chaparral, woodland, meadows and seeps; <1100 m. c&s SCoRO	No. Suitable undisturbed dry hill and woodland habitat is not present in the Study Area.	No	No Effect
11.	Eastwood's Larkspur <i>Delphinium parryi</i> subsp. <i>eastwoodiae</i>	None/None G4T2/None 1B.2	March – May	Coastal chaparral, grassland, on serpentine; 100-500 m. s CCo, SCoRO (San Luis Obispo County)	No. Appropriate soil does not occur in the Study Area.	No	No Effect
12.	Hardham's Evening-Primrose <i>Camissoniopsis hardhamiae</i>	None/None G1Q/None 1B.2	April - May	Decomposed carbonate soils, in chaparral, cismontane woodland. Monterey, SLO Counties	No. Appropriate high-carbonate weathered rock and challow soil habitats are not present in the Study Area.	No	No Effect
13.	Hogwallow Starfish <i>Hesperevax caulescens</i>	None/None G3/None 4.2	March - June	Clay soils, mesic sites in valley and foothill grassland; 0-505 m.	No. Appropriate habitat is not found where grassland occurs on clay soils in the Study Area.	No	No Effect
14.	Hooked Popcornflower <i>Plagiobothrys uncinatus</i>	None/None G2/None 1B.2	April - May	Canyon sides, chaparral; on sandstone. 300-600 m. n SCoR (Gabilan Range, Santa Lucia Mountains)	No. Appropriate habitat is not present in the Study Area.	No	No Effect

	Common Name Scientific Name	Fed/State Status Global/State CRPR Rank	Blooming Period	Habitat Preference	Potential to Occur	Detected in Study Area?	Effect of Activity
15.	Hoover's Bent Grass <i>Agrostis hooveri</i>	None/None G2/S2 1B.2	April - July	Dry sandy soils, open chaparral, oak woodland; < 600 m. s CCo, s SCoRO (San Luis Obispo, Santa Barbara cos.)	No. Suitable soil is not present within the Study Area.	No	No Effect
16.	Jared's Pepper-grass <i>Lepidium jaredii</i> subsp. <i>jaredii</i>	None/None G2T1T2/None 1B.2	March - May	Alkali bottoms, slopes, washes, <500 m. SCoRI, SnJV	No. Appropriate habitat does not occur in the Study Area.	No	No Effect
17.	Jones' Bush-mallow <i>Malacothamnus jonesii</i>	None/None G3/None 4.3	May - July	Open chaparral in foothill woodland; 250-830 m. SCoRO (Monterey, SLO Counties).	No. Chaparral habitat is not present in the Study Area.	No	No Effect
18.	Kellogg's Horkelia <i>Horkelia cuneata</i> var. <i>sericea</i>	None/None G4T2/None 1B.1	April - September	Old dunes, coastal sand hills; <200 m. CCo	No. Dune habitat is not present in the Study Area.	No	No Effect
19.	La Panza Mariposa Lily <i>Calochortus simulans</i>	None/None G2/None 1B.3	April - May	Grassland, oak woodland & pine forest, on sand, granite, or serpentine; <1100 m. Endemic to SLO County	No. Suitable habitat is not present in the Study Area.	No	No Effect
20.	Lemmon's Jewelflower <i>Caulanthus lemmonii</i>	None/None G3/None 1B.2	March – May	Dry, exposed slopes, grassland, chaparral, scrub; 80-1100 m. sw SnJv, se SnFrb, e SCoRO, SCoRIs;	No. Appropriate undisturbed habitat is not present with the Study Area.	No	No Effect
21.	Lompoc Ceanothus <i>Ceanothus cuneatus</i> var. <i>fascicularis</i>	None/None G5T3/None 4.2	February - April	Chaparral on coastal sandy mesas; <400 m. s Cco	No. Appropriate coastal habitat does not occur in the Study Area.	No	No Effect
22.	Mesa Horkelia <i>Horkelia cuneata</i> var. <i>puberula</i>	None/None G4T2/None 1B.1	February - September	Dry, sandy coastal chaparral; gen 70-700 m. SCoRO, SCo.	No. Suitable habitat and soil types do not occur in the Study Area.	No	No Effect

	Common Name Scientific Name	Fed/State Status Global/State CRPR Rank	Blooming Period	Habitat Preference	Potential to Occur	Detected in Study Area?	Effect of Activity
23.	Miles' Milk-vetch <i>Astragalus didymocarpus</i> var. <i>milesianus</i>	None/None G5T2/None 1B.2	March - June	Clay or serpentine soils in coastal scrub, grassy areas near coast. 0-90 m. Endemic to SLO County	No. Appropriate coastal habitat is not present in the Study Area.	No	No Effect
24.	Most Beautiful Jewelflower <i>Streptanthus albidus</i> subsp. <i>peramoenus</i>	None/None G2T2/None 1B.2	April - June	Open, grassy or ±barren slopes, often serpentine; ±150-800 m. c SCoRO	No. Appropriate soils are not found in the Study Area.	No	No Effect
25.	Mouse-gray Dudleya <i>Dudleya abramsii</i> subsp. <i>murina</i>	None/None G4T2/S2 1B.3	May - June	Chaparral, valley and foothill grassland, cismontane woodland, serpentine outcrops; 25- 535 m. s SCoRO (San Luis Obispo Co.)	No. Appropriate habitat is not present in the Study Area.	No	No Effect
26.	Ojai Fritillary <i>Fritillaria ojaiensis</i>	None/None G2/None 1B.2	March - May	Rocky slopes, river basins; 300-500 m. SCoRO, WTR	No. Suitable rocky habitat is not present in the Study Area.	No	No Effect
27.	Oregon meconella <i>Meconella oregana</i>	None/None G2G3/S2 1B.1	March - May	Coastal prairie, coastal scrub, open, moist places, shaded canyons; 60-640 m. m. CCo (Fort Ord), SnFrB (Berkeley Hills, Mount Hamilton)	No. Appropriate habitat is not present in the Study Area.	No	No Effect
28.	Oval-leaved Snapdragon <i>Antirrhinum ovatum</i>	None/None G3/None 4.2	May - November	Heavy, adobe-clay soils on gentle, open slopes, also disturbed areas; 200- 1000 m. s SnJV, s SCoRI	Moderate. Appropriate soils and previously disturbed sloping habitat is present in the Study Area.	No	No Effect
29.	Palmer's Monardella <i>Monardella palmeri</i>	None/None G2/None 1B.2	June - August	Serpentine soils in chaparral, forest; 200- 800 m. SCoRO	No. Appropriate habitat and soil is not present in the Study Area.	No	No Effect

	Common Name Scientific Name	Fed/State Status Global/State CRPR Rank	Blooming Period	Habitat Preference	Potential to Occur	Detected in Study Area?	Effect of Activity
30.	Palmer's Spineflower <i>Chorizanthe palmeri</i>	None/None G3?/None 4.2	May – August	Serpentine; 60-700m. SCoRO (w Monterey, w San Luis Obispo Ccos.)	No. Appropriate soil is not present in the Study Area.	No	No Effect
31.	Paniculate Tarplant <i>Deinandra paniculata</i>	None/None G3G4/None 4.2	May - November	Vernally mesic or sandy soils in coastal scrub and grassland habitats; <1320 m.	No. Appropriate coastal grassland or scrub habitat does not occur in the Study Area.	No	No Effect
32.	Salinas Milk-vetch <i>Astragalus macrodon</i>	None/None G3/None 4.3	April - July	Eroded pale shales or sandstone, or serpentine alluvium; 300-950 m. SCoR	No. Appropriate habitat and soil does occur in the Study Area.	No	No Effect
33.	San Luis Mariposa Lily <i>Calochortus obispoensis</i>	None/None G2/None 1B.2	May - July	Chaparral, coastal scrub, valley and foothill grassland, often on serpentine but also sandstone; 100-500 m. SCoRO Endemic to SLO County	No. Appropriate coastal habitat is not present in the Study Area.	No	No Effect
34.	San Luis Obispo Fountain Thistle <i>Cirsium fontinale var. obispoense</i>	FE/CE G2T2/CE 1B.2	February - July	Serpentine seeps and streams; <300 m. Endemic to SLO County	No. Appropriate serpentine seep habitat is not present in the Study Area.	No	No Effect
35.	San Luis Obispo Owl's-clover <i>Castilleja densiflora var. obispoensis</i>	None/None G5T2/None 1B.2	April	Coastal grassland, <100 m. Endemic to SLO County.	No. Appropriate undisturbed annual grassland habitat is not present in the Study Area.	No	No Effect
36.	San Luis Obispo Sedge <i>Carex obispoensis</i>	None/None G2G3/None 1B.2	April - June	Serpentine springs, stream sides; <600 m. Endemic to SLO County	No. Appropriate serpentine springs or streamsides do not occur in the Study Area.	No	No Effect

	Common Name Scientific Name	Fed/State Status Global/State CRPR Rank	Blooming Period	Habitat Preference	Potential to Occur	Detected in Study Area?	Effect of Activity
37.	Santa Lucia Bush-mallow <i>Malacothamnus palmeri</i> var. <i>palmeri</i>	None/None G3T2Q/None 1B.2	May - July	Chaparral, cismontane woodland, coastal scrub; 30-1100 m. s CCo, SCoRO	No. Chaparral habitat is not present in the Study Area.	No	No Effect
38.	Santa Lucia Dwarf Rush <i>Juncus luciensis</i>	None/None G2G3/None 1B.2	April – July	Vernal pools, ephemeral drainages, wet meadow habitats, and streams;	High. Suitable ephemeral drainage habitat is present in the Study Area.	No	No Effect
39.	Santa Lucia Manzanita <i>Arctostaphylos luciana</i>	None/None G3/None 1B.2	February - March	Shale outcrops, slopes, chaparral, 500-700 m. Cuesta Pass, SLO County.	No. Suitable shale outcrops and slopes are not present in the Study Area.	No	No Effect
40.	Santa Margarita Manzanita <i>Arctostaphylos pilosula</i>	None/None G3/None 1B.2	December - March	Shale outcrops, slopes, chaparral; 300-1100 m. s SCoRO. Endemic to SLO County	No. Suitable shale outcrops and slopes are not present in the Study Area.	No	No Effect
41.	Shining Navarretia <i>Navarretia nigelliformis</i> subsp. <i>radians</i>	None/None G4T2/None 1B.2	May - July	Vernal pools, clay depressions, dry grasslands; 150-1000 m. SCoR	High. Clay soils and depressions could potentially support this species.	No	No Effect
42.	Slender Clarkia <i>Clarkia exilis</i>	None/None G3/None 4.3	April - May	Woodland; <1000 m.; s SNF, TeHhe.	No. Appropriate habitat does not occur in the Study Area.	No	No Effect
43.	Small Spikerush <i>Eleocharis parvula</i>	None/None G5/None 4.3	Late Winter – Fall	Brackish, wet soil, coastal; <50 m. NCo, SnFrB, SCo; to BC; KS to NL, FL, LA; Mex, C.Am, Eurasia	No. Brackish wet habitat does not occur in the Study Area.	No	No Effect
44.	Small-flowered Gypsum-loving Larkspur <i>Delphinium gypsophilum</i> subsp. <i>parviflorum</i>	None/None G4T3?Q/None 3.2	March - June	Clay soil in cismontane woodland; 200-350 m.	No. Suitable woodland habitat does not occur in the Study Area.	No	No Effect

	Common Name Scientific Name	Fed/State Status Global/State CRPR Rank	Blooming Period	Habitat Preference	Potential to Occur	Detected in Study Area?	Effect of Activity
45.	Small-flowered Morning-glory <i>Convolvulus simulans</i>	None/None G3/None 4.2	April - June	Clay substrates, occ serpentine, annual grassland, coastal -sage scrub, chaparral, seeps; 30-875 m.; s SNF, SnFrB, s SCoRO, Sco, ChI, WTR, PR; AZ, Baja CA.	No. Undisturbed grassland habitat does not occur in the Study Area.	No	No Effect
46.	Spreading Navarretia <i>Navarretia fossalis</i>	FT/None G1/None 1B.1	April - June	Chenopod scrub, marshes and swamps, playas, and vernal pools; 30-1300 m. SCoRO, SCo, to Baja Cal.	Moderate. Ephemeral pools are present in the Study Area.	No	No Effect
47.	Straight-awned Spineflower <i>Chorizanthe rectispina</i>	None/None G1/None 1B.3	May - July	Chaparral, dry woodland in sandy soil; 200-600 m. SCoRO	No. Suitable soil and habitat types are not present in the Study Area.	No	No Effect
48.	Umbrella Larkspur <i>Delphinium umbraculorum</i>	None/None G2G3/None 1B.3	April - June	Moist oak forest; 400-1600 m.	No. Suitable moist oak habitat is not present in the Study Area.	No	No Effect
49.	Woodland Woolythreads <i>Monolopia gracilens</i>	None/None G2G3/None 1B.2	March – July	Chaparral, serpentine grassland, cismontane woodland, sandy to rocky soils; SnFrB, SCoR	No. Appropriate serpentine soils are not present in the Study Area.	No	No Effect
50.	Yellow-flowered Eriastrum <i>Eriastrum luteum</i>	None/None G2/None 1B.2	May – June	Bare sandy decomposed granite slopes in cismontane woodland, chaparral, forest; 360- 1000 m. SCoR, Monterey, SLO Counties	No. Appropriate decomposing granite slopes do not occur in the Study Area.	No	No Effect

Appendix C

California Natural Diversity Database Animal Records (Full)

APPENDIX C – SPECIAL STATUS ANIMALS REPORTED FROM THE REGION

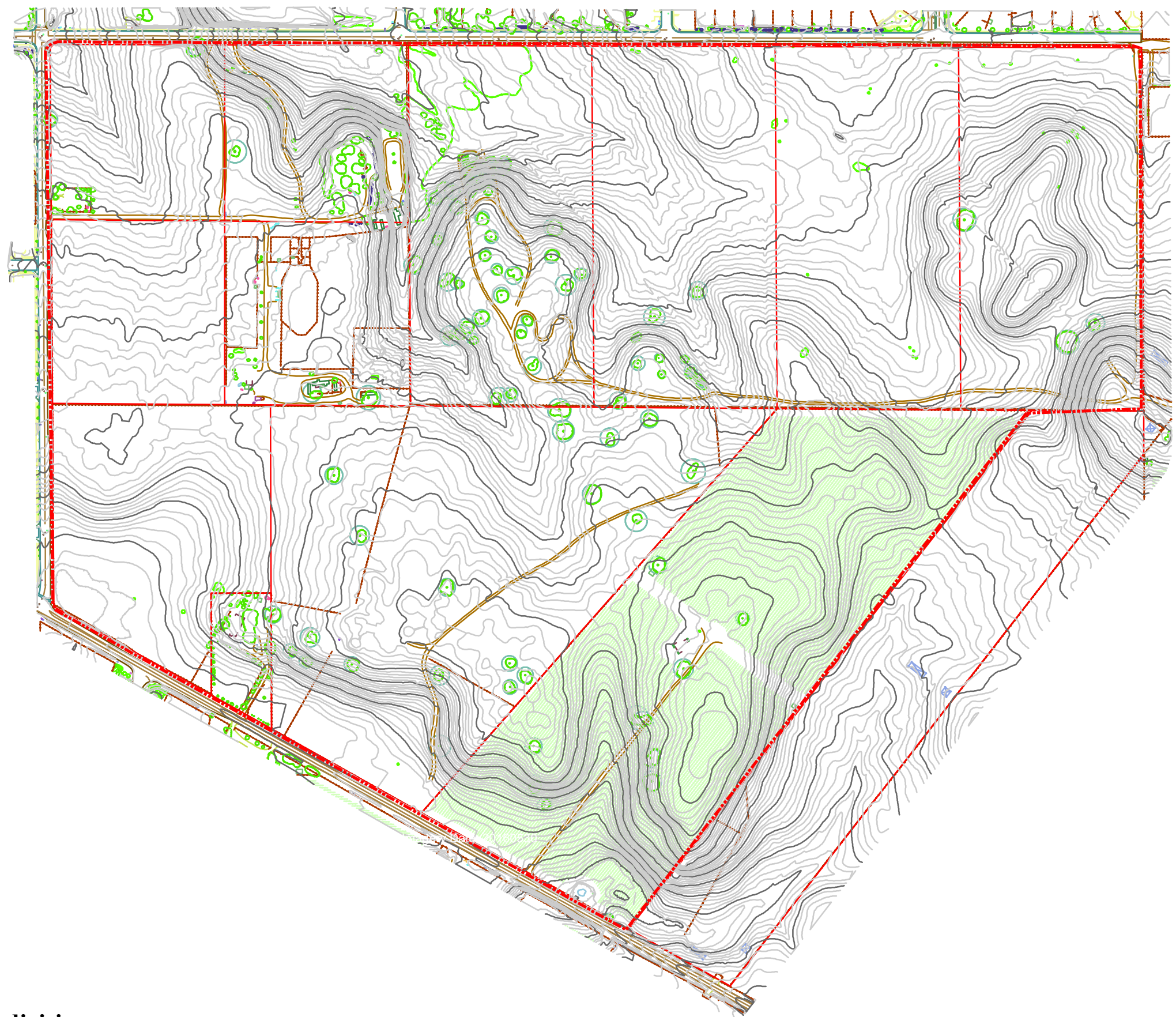
	Common Name <i>Scientific Name</i>	Fed/State Status Global/State Rank CDFW Rank	Nesting/ Breeding Period	Habitat Preference	Potential to Occur	Detected in Study Area?	Effect of Activity
1.	American Badger <i>Taxidea taxus</i>	None/None G5/S4 SSC	February – May	Needs friable soils in open ground with abundant food source such as California ground squirrels.	Moderate. Suitable soils and open grassland habitat is present in the Study Area.	No	Potential Adverse Effect can be Mitigated
2.	California Red-legged Frog <i>Rana draytonii</i>	FT/None G2G3/S2S3 SSC	January - September	Lowlands and foothills in or near sources of deep water with dense, shrubby or emergent riparian vegetation. Requires 11-20 weeks for larval development.	No. Appropriate aquatic habitat is not present in the Study Area.	No	No Effect
3.	Coast Horned Lizard <i>Phrynosoma blainvillii</i>	None/None G3G4/S3S4 SSC	May - September	Frequents a wide variety of habitats, most common in lowlands along sandy washes with scattered low bushes.	No. Appropriate habitat is not present in the Study Area.	No	No Effect
4.	Coast Range Newt <i>Taricha torosa</i>	None/None G4/S4 SSC	December - May	Slow moving streams, ponds, and lakes with surrounding evergreen/oak forests along coast.	No. Appropriate aquatic habitat is not present in the Study Area.	No	No Effect
5.	Ferruginous Hawk <i>Buteo regalis</i>	None/None G4/S3S4 WL	October - April (Wintering)	Winters locally in open grassland or savannah habitats. More common in interior SLO County than coast.	Low. Appropriate wintering habitat does occur in the Study Area.	No	Potential Adverse Effect can be Mitigated
6.	Foothill Yellow-legged Frog <i>Rana boylei</i>	None/None G3/S2S3 SSC	March - September	Partly shaded, shallow streams and riffles with rocky substrate. Min. 15 weeks for larval development.	No. Appropriate aquatic habitat is not present in the Study Area.	No	No Effect

	Common Name <i>Scientific Name</i>	Fed/State Status Global/State Rank CDFW Rank	Nesting/ Breeding Period	Habitat Preference	Potential to Occur	Detected in Study Area?	Effect of Activity
7.	Golden Eagle** <i>Aquila chrysaetos</i>	None/None G5/S3 FP	March 15 through August 15	Nests in large, prominent trees in valley and foothill woodland. Requires adjacent food source.	No. Suitable nesting habitat is not present in the Study Area.	No	No Effect
8.	Least Bell's Vireo <i>Vireo bellii pusillus</i>	FE/CE G5T2/S2 WL	March 15 - August 15	Riparian habitat, near water or dry streambed, <2000 ft. Nests in willows, mesquite, Baccharis.	No. Appropriate nesting habitat is not present in the Study Area.	No	No Effect
9.	Lewis' Woodpecker* <i>Melanerpes lewis</i>	None/None G4/S4 WL	Late April - July	Open woodlands near streams, oak woodlands, orchards, and pinyon-juniper woodlands.	Moderate. Appropriate oak tree habitat is present in the Study Area.	No	No Effect
10.	Loggerhead Shrike* <i>Lanius ludovicianus</i>	None/None G4/S4 SSC (Nesting)	March 15 - August 15	Open areas with appropriate perches, near shrubby vegetation for nesting.	Moderate. Moderate nesting habitat does occur in the Study Area.	Yes (not nesting)	Potential Adverse Effect can be Mitigated
11.	Monterey Dusky-footed Woodrat <i>Neotoma macrotis luciana</i>	None/None G5T3?/S3? SSC	n/a	Variety of habitats with moderate to dense understory vegetation	No. Dense understory vegetation habitat is not present in the Study Area.	No	No Effect
12.	Northern California legless lizard <i>Anniella pulchra</i>	None/None G3/S3 SSC	n/a	Sandy or loose loamy soils under sparse vegetation in chaparral, coastal dunes or coastal scrub; soil moisture is essential.	Moderate. Appropriate woodland habitat and moist soils are present in the Study Area.	No	No Effect
13.	Pallid Bat <i>Antrozous pallidus</i>	None/None G5/S3 SSC	Spring - Summer	Rock crevices, caves, tree hollows, mines, old buildings, and bridges.	Moderate. The blue oak woodland and anthropogenic structures provide suitable habitat for a nesting colony.	No	Potential Adverse Effect can be Mitigated

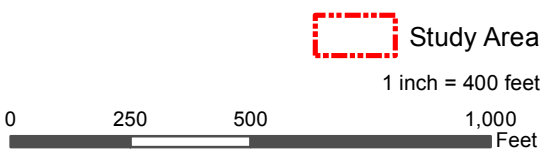
	Common Name Scientific Name	Fed/State Status Global/State Rank CDFW Rank	Nesting/ Breeding Period	Habitat Preference	Potential to Occur	Detected in Study Area?	Effect of Activity
14.	Purple Martin <i>Progne subis</i>	None/None G5/S3 SSC	March 15 - August 15	In San Luis Obispo County prefers nesting in Sycamore trees along riparian corridors.	No. Suitable sycamore riparian habitat is not present in the Study Area.	No	No Effect
15.	Salinas Pocket Mouse <i>Perognathus inornatus psammophilus</i>	None/None G4T2/S2? SSC	n/a	Annual grassland and desert shrub in Salinas Valley, with friable soils	No. Suitable annual grassland habitat is not present in the Study Area.	No	No Effect
16.	San Joaquin Kit Fox <i>Vulpes macrotis mutica</i>	FE/CT G4T2T3/S2S3 SA	December – July	Annual grasslands or grassy open stages with scattered shrubby vegetation. Needs loose textured sandy soil and prey base.	Low. Low quality potential habitat is present in the Study Area.	No	Potential Adverse Effect can be Mitigated
17.	Swainson's Hawk* <i>Buteo swainsoni</i>	None/Threatened G5/S2 SA (Nesting)	March 15 - August 15	Breeds in grasslands with scattered trees, juniper- sage flats, riparian areas, savannahs, agricultural fields.	Low. The Study Area is outside the core breeding range and migration path of this species, but may provide limited foraging habitat.	No	Potential Adverse Effect can be Mitigated
18.	Townsend's Big-eared Bat <i>Corynorhinus townsendii</i>	None/None G3G4/S2S3 SSC	Spring - Summer	Caves, buildings, and mine tunnels. Cave like attics as day roosts. On coast roosts are normally within 100 m. of creeks.	Moderate. The anthropogenic structures found in the Study Area may provide suitable habitat for day roosts.	No	Potential Adverse Effect can be Mitigated
19.	Vernal Pool Fairy Shrimp <i>Branchinecta lynchi</i>	FT/None G3/S2S3 SA	Rainy Season	Clear water sandstone depression pools, grassed swale, earth slump, or basalt flow depression pools.	Low. Potential habitat is present in some of the seasonal depressions in the Study Area.	Protocol Surveys Recommended	To Be Determined

	Common Name <i>Scientific Name</i>	Fed/State Status Global/State Rank CDFW Rank	Nesting/ Breeding Period	Habitat Preference	Potential to Occur	Detected in Study Area?	Effect of Activity
20.	Western Pond Turtle [=Pacific Pond Turtle] <i>Emys marmorata</i> [= <i>Actinemys marmorata</i>]	None/None G3G4/S3 SSC	April - August	Permanent or semi-permanent streams, ponds, lakes.	No. Appropriate aquatic habitat is not present in the Study Area.	No	No Effect
21.	Western Spadefoot <i>Spea hammondi</i>	None/None G3/S3 SSC	January – August	Vernal pools in grassland and woodland habitats	Low. Suitable habitat is present in the ephemeral pool in the Study Area.	No	Potential Adverse Effect can be Mitigated
22.	White-tailed Kite <i>Elanus leucurus</i>	None/None G5/S3 FP	March 15 - August 15	Nests in dense tree canopy near open foraging areas	No. Appropriate dense tree canopy is not present in the Study Area.	No	No Effect

Appendix D
Preliminary Site Plans for Beechwood Estates



Beechwood Subdivision
Map Updated November 16, 2017 02:33 PM by JBB



Attachment A
Vernal Pool Branchiopod Surveys

Special Status Invertebrate DRY Season Survey

NINETY-DAY REPORT

USFWS TAKE PERMIT # TE-102310-3

**SURVEY FOR THE BEECHWOOD RANCH AREA SPECIFIC PLAN
IN PASO ROBLES, SAN LUIS OBISPO COUNTY, CALIFORNIA**

USFWS # 08EVEN00-2012-B-0070

Prepared By:



MITCHELL C. DALLAS

Branchiopod Surveyor
USFWS Take Permit #TE-102310-3
(805) 459-2907

3/8/15

DATE

I certify that the information in this survey report and attached exhibits fully and accurately represents my work.

Introduction

This report is required under United States Fish and Wildlife Service ESA §10(a)(1)(A) permit # TE-102310-3. The current permit expires on 9/7/18.

This report is submitted in fulfillment of conditions in the Permit, the Special Terms and Conditions for Mitchell C. Dallas and the U.S. Fish and Wildlife Service Interim Survey Guidance to Permittees of 4/19/96 that is attached to that permit. A full DRY SEASON protocol level survey was conducted. Dry season sampling was conducted to determine the presence or absence of federally listed fairy and tadpole shrimp either within the project footprint or that may be affected by the project.

Permission to conduct the survey was granted by email from Chris Kofron and Juile Vanderwier of the U.S. Fish and Wildlife Service Ventura Office on 11/6/14. The following authorized surveyor conducted surveys during the dry season: Mitchell C. Dallas.

In total, 18 features have been identified as having the potential to hold water and provide potential habitat for Vernal Pool Branchiopods (see map). These observations were made during inadequate USFWS protocol level rain fall years with the 2013/14 season being the driest year on record. Eighteen potential features were surveyed. The soil samples were collected on 11/16/14, 11/17/14 & 11/29/14. A reproduction of a U. S. Geological Survey topographic Templeton quadrangle map is attached showing the location surveyed. The coordinates for the potential features are located in the Required Information Section #1 of this report and on the attached dry survey field data sheets for the pool.

The information presented below is presented in the same order and with the same numbering system used in the guidance.

Project Description: The proposed project will build new homes and roads in the Paso Robles area.

Required Information

1. The project site can be located on the attached U. S. Geological Survey Templeton, California, 7.5 minute topographic quadrangle map (Appendix 1). The location of the specific sites sampled is depicted in the following table. The Beechwood site shows characteristics of grazing, current and past residential use, row crops (grapes) and tilling of the soil. Although disturbed land conditions exist, the site's low lying areas do have various indicators of standing water which would indicate the potential for Vernal Pool Branchiopod habitat.

Beechwood Potentail Vernal Pool Locations		
USGS Templeton Quadrangle M27S 12E 11		
Location #	Latitude	Longitude
1	35°35.55792'	-120°38.877'
2	35°35.67726'	-120°38.9208'
3	35°35.7411'	-120°38.958'
4	35°35.7453'	-120°38.985'
5	35°35.73066'	-120°38.997'
6	35°35.76414'	-120°39.047'
7	35°35.77254'-	-120°39.0264'
8	35°35.80182'	-120°39.006'
9	35°35.8479'	-120°39.1926'
10	35°35.8478'	-120°39.1668'
11	35°35.63226'	-120°39.0264'
12	35°35.73066'	-120°38.258'
13	35°35.85'	-120°38.258'
14	35°36.006'	-120°38.9154'
15	35°35.932680'	-120°38.8476'
16	35°35.05934'	-120°38.478'
17	35°35.06144'	-120°38.5652'
18	35°35.03216'	-120°38.6699'

- Color aerial photos of the project location are included in the attached Appendix 2.
- The estimated number of crustaceans observed in the pool complex is listed in the attached data sheets. Estimates for the pool are as follows:

Species	Location Number								
	#1	#2	#3	#4	#5	#6	#7	#8	#9
<i>Branchinecta lynchi</i>	N	N	N	N	N	N	N	N	N
<i>Branchinecta conservatio</i>	N	N	N	N	N	N	N	N	N
<i>Branchinecta longiantenna</i>	N	N	N	N	N	N	N	N	N
<i>Lepidurus packardi</i>	N	N	N	N	N	N	N	N	N
<i>Streptocephalus Woottoni</i>	N	N	N	N	N	N	N	N	N

Estimates are as per the guidance: none (N), few (F) (< 50) and many (M) (>50). Details are available in the attached data sheets.

	Location Number								
Species	#10	#11	#12	#13	#14	#15	#16	#17	#18
<i>Branchinecta lynchi</i>	N	N	N	N	N	N	N	N	N
<i>Branchinecta conservatio</i>	N	N	N	N	N	N	N	N	N
<i>Branchinecta longiantenna</i>	N	N	N	N	N	N	N	N	N
<i>Lepidurus packardi</i>	N	N	N	N	N	N	N	N	N
<i>Streptocephalus Woottoni</i>	N	N	N	N	N	N	N	N	N

Estimates are as per the guidance: none (N), few (F) (< 50) and many (M) (>50). Details are available in the attached data sheets.

4. No listed crustaceans cysts were found, none were preserved.
5. Qualitative description of the vernal pool community: The pools are located in San Luis Obispo County adjacent to Creston Road, Beechwood Drive and Meadowlark Road. (see attached mapping). The pools are adjacent to row crops (grapes), rural housing and horse stables/business. The potential pools occur on previously disturbed ground. Although disturbed land conditions exist, the site's low lying areas do have various indicators of standing water which would indicate the potential for Vernal Pool Branchiopod habitat.
6. Data collected during the field visit can be found on the attached dry season data sheets in Appendix 3. Listed vernal pool crustaceans or cysts were not observed during the surveys.
7. Additional water quality data: none.
8. The survey methodology used was that described in guidance attached to Permit # TE-102310-3 in order to determine the presence or absence of federally listed fairy and tadpole shrimp either within the project footprint or that may be affected by the project.

Conclusion

Listed branchiopods were not found in the potential features within the project footprint during this Dry season protocol level survey.

Contact: If you have any questions or require more information about the invertebrate survey, please contact Mitch Dallas, Authorized Surveyor, TE-102310-3 at (805) 459-2907 or email mitchdallas@hotmail.com.

Appendices

Appendix 1.

USGS original scale map showing the area surveyed.

Appendix 2.

Aerial photo of the pool locations. A total of eighteen potential features were surveyed.

Appendix 3.

Dry Season Data Sheets

Appendix 1

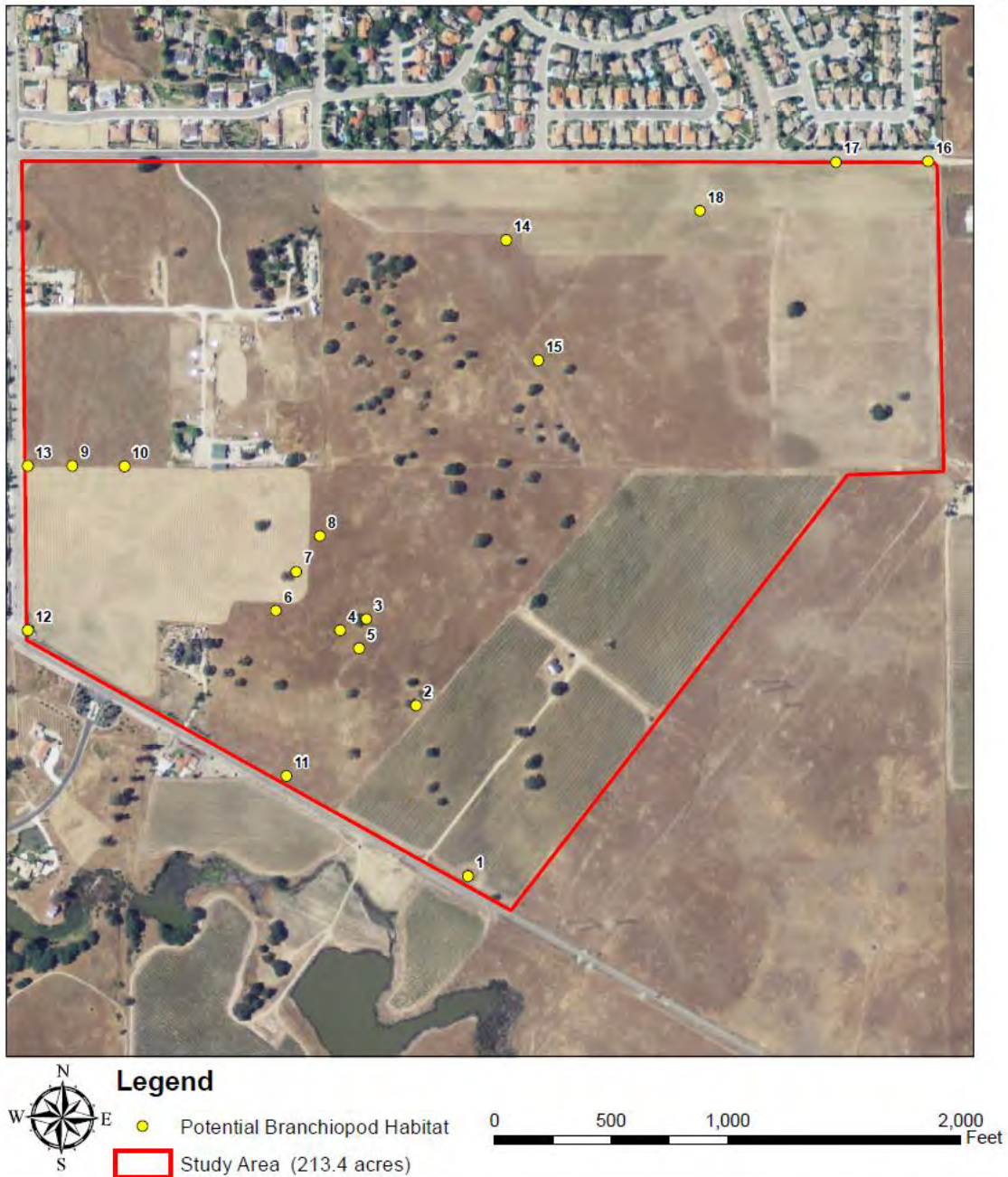
USGS Templeton Quadragle

San Luis Obispo California



Appendix 2

Potential Branchiopod Habitat



Appendix 3

Dry Season Survey Soil Analysis Data Sheets

Special Status Invertebrate Wet Season Survey

NINETY-DAY REPORT

USFWS TAKE PERMIT # TE-102310-3

**SURVEY FOR THE BEECHWOOD RANCH AREA SPECIFIC PLAN
IN PASO ROBLES, SAN LUIS OBISPO COUNTY, CALIFORNIA**

USFWS # 08EVEN00-2012-B-0070

Prepared By:



MITCHELL C. DALLAS

Branchiopod Surveyor
USFWS Take Permit #TE-102310-3
(805) 459-2907

6/8/15
DATE

I certify that the information in this survey report and attached exhibits fully and accurately represents my work.

Introduction

This report is required under United States Fish and Wildlife Service ESA §10(a)(1)(A) permit # TE-102310-3. The current permit expires on 9/7/18.

This report is submitted in fulfillment of conditions in the Permit, the Special Terms and Conditions for Mitchell C. Dallas and the U.S. Fish and Wildlife Service Interim Survey Guidance to Permittees of 4/19/96 that is attached to that permit. A full WET SEASON protocol level survey was conducted. Wet season sampling was conducted to determine the presence or absence of federally listed fairy and tadpole shrimp either within the project footprint or that may be affected by the project as a follow up to dry season surveys occurring in 2014.

Permission to conduct the survey was granted by email from Chris Kofron and Juile Vanderwier of the U.S. Fish and Wildlife Service Ventura Office on 12/16/14. The following authorized surveyor conducted surveys during the wet season: Mitchell C. Dallas.

In total, one feature held water and was surveyed. Pool # 1 was surveyed on 12/21/14, 1/4/15, 1/18/15, 2/1/14, 2/16/15, 3/1/15, 3/15/15, 3/29/15, 4/12/15, and 4/26/15. See attached photos.

A reproduction of a U. S. Geological Survey topographic Templeton quadrangle map is attached showing the location surveyed. The coordinates for Pool #1 are located in the Required Information Section of this report and on the attached survey field data sheets for the pool.

The information presented below is presented in the same order and with the same numbering system used in the guidance.

Project Description: The proposed project will build new homes and roads in the Paso Robles area.

Required Information

1. The project site can be located on the attached U. S. Geological Survey Templeton, California, 7.5 minute topographic quadrangle map (Appendix 1). The location of the specific sites sampled is Township M27S Range 12E Section 11 35°35.55792' -120° 38.877'. The Beechwood Pool #1 site shows characteristics of row crops (grapes) and tilling of the soil and looks to be man made.

Beechwood Vernal Pool Location		
USGS Templeton Quadrangle M27S 12E 11		
Location #	Latitude	Longitude
1	35°35.55792'	-120°38.877'

2. A color aerial photo of the project location is included in the attached Appendix 2.
3. The estimated number of crustaceans observed in Pool #1 is listed in the attached data sheets. Estimates for the pool are as follows:

Species	Feature#1
<i>Branchinecta lynchi</i>	N
<i>Branchinecta conservatio</i>	N
<i>Branchinecta longiantenna</i>	N
<i>Lepidurus packardi</i>	N
<i>Streptocephalus Woottoni</i>	N

Estimates are as per the guidance: none (N), few (F) (< 50) and many (M) (>50). Details are available in the attached data sheets.

4. Federally listed fairy and tadpole shrimp were not found, none were preserved.
5. Qualitative description of the vernal pool community: The pool is located in San Luis Obispo County within the City of Paso Robles. The pool is adjacent to row crops (grapes) and Creston Road.
6. Data collected during the field visits can be found on the attached wet season data sheets in Appendix 3. Listed vernal pool branchiopods were not observed during the surveys.
7. Additional water quality data: none.
8. The survey methodology used was that described in guidance attached to Permit # TE-102310-3 in order to determine the presence or absence of federally listed fairy and tadpole shrimp either within the project footprint or that may be affected by the project.

Conclusion

Federally listed fairy and tadpole shrimp were not found in the potential features within the project footprint during this Wet Season protocol level survey.

Contact: If you have any questions or require more information about this project or the invertebrate survey, please contact Mitchell Dallas, Authorized Surveyor, TE-102310-3 at (805) 459-2907 or email mitchdallas@hotmail.com.

Appendices

Appendix 1.

USGS original scale map showing the area surveyed.

Appendix 2.

Aerial photo of the potential pool locations.

Appendix 3.

Wet Season Data Sheets and Photos

Appendix 1

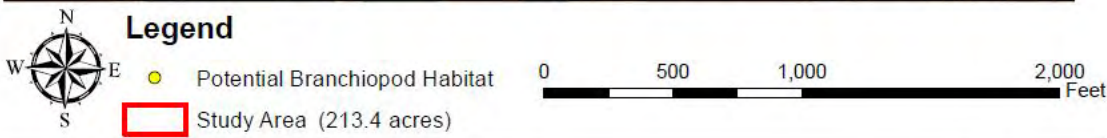
USGS Templeton Quadrangle

San Luis Obispo California



Appendix 2

Potential Branchiopod Habitat



Beechwood Estate

2012 San Luis Obispo County
NAIP Aerial Photography
Map Updated: November 18, 2014, 01:50 PM



Appendix 3

Wet Season Survey Data Sheets

Special Status Invertebrate Wet Season Survey

NINETY-DAY REPORT

USFWS TAKE PERMIT # TE-102310-3

**SURVEY FOR THE BEECHWOOD RANCH AREA SPECIFIC PLAN
IN PASO ROBLES, SAN LUIS OBISPO COUNTY, CALIFORNIA**

USFWS # 08EVEN00-2012-B-0070

Prepared By:



MITCHELL C. DALLAS

Branchiopod Surveyor
USFWS Take Permit #TE-102310-3
(805) 459-2907



DATE

I certify that the information in this survey report and attached exhibits fully and accurately represents my work.

Introduction

This report is required under United States Fish and Wildlife Service ESA §10(a)(1)(A) permit # TE-102310-3. The current permit expires on 9/7/18.

This report is submitted in fulfillment of conditions in the Permit, the Special Terms and Conditions for Mitchell C. Dallas and the U.S. Fish and Wildlife Service Interim Survey Guidance to Permittees of 4/19/15 that is attached to that permit. A full WET SEASON protocol level survey was conducted. Wet season sampling was conducted to determine the presence or absence of federally listed fairy and tadpole shrimp either within the project footprint or that may be affected by the project as a follow up to dry season surveys occurring in 2014.

Permission to conduct the survey was granted by email from Chris Kofron and Juile Vanderwier of the U.S. Fish and Wildlife Service Ventura Office on 11/19/15. The following authorized surveyor conducted surveys during the wet season: Mitchell C. Dallas.

A Vernal Pool Branchiopod Habitat Assessment of the Beechwood Ranch Area Specific Plan was prepared in April 2014 and the habitat features identified in this report follow the habitat feature number in the habitat assessment. The action area was surveyed following rain events in order to determine if any features (pools) held water on 11/29/15, 12/18/15, 12/28/15, 1/10/16, 1/24/16, 2/5/16, 3/6/16, 3/18/1, 4/2/16 & 4/23/16. In total, three features held water for a short duration. Feature # 16 and two tire ruts within feature #18 were the features that held water for a short duration. The features were surveyed on 3/6/16 (#16 & 18) & 3/18/16 (#18) and were dry by 4/2/16. See attached photos and data sheets.

A reproduction of a U. S. Geological Survey topographic Templeton quadrangle map is attached showing the location surveyed. The coordinates for feature #16 & 18 are located in the Required Information Section of this report and on the attached survey field data sheets.

The information presented below is presented in the same order and with the same numbering system used in the guidance.

Project Description: The proposed project will build new homes and roads in the Paso Robles area.

Required Information

1. The project site can be located on the attached U. S. Geological Survey Templeton, California, 7.5 minute topographic quadrangle map (Appendix 1). The location of the specific sites sampled is Township M27S Range 12E Section 11 Feature # 16 35°35.05934'

-120° 38.478' and feature #18 at 16 35°35.03216' -120° 38.6699'. The Beechwood feature #16 is highly disturbed. The feature #18 site show characteristics of past tilling of the soil and light cattle grazing.

Beechwood Vernal Pool Location		
USGS Templeton Quadrangle M27S 12E 11		
Location #	Latitude	Longitude
16	35°35.05934'	-120°38.478'
18	35°35.03216'	-120°38.6699'

2. A color aerial photo of the project location is included in the attached Appendix 2.
3. The estimated number of crustaceans observed in Pool #1 is listed in the attached data sheets. Estimates for the pool are as follows:

Species	Feature#16	#18
<i>Branchinecta lynchi</i>	N	N
<i>Branchinecta conservatio</i>	N	N
<i>Branchinecta longiantenna</i>	N	N
<i>Lepidurus packardi</i>	N	N
<i>Streptocephalus Woottoni</i>	N	N

Estimates are as per the guidance: none (N), few (F) (< 50) and many (M) (>50). Details are available in the attached data sheets.

4. Federally listed fairy and tadpole shrimp were not found, none were preserved.
5. Qualitative description of the vernal pool community: The action area is located in San Luis Obispo County within the City of Paso Robles. The feature # 16 is adjacent to Meadowlark Road and feature 18 is also adjacent Medowlark Road but set back further from the existing fence. .
6. Data collected during the field visits can be found on the attached wet season data sheets in Appendix 3. Listed vernal pool branchiopods were not observed during the surveys.
7. Additional water quality data: none.
8. The survey methodology used was that described in guidance attached to Permit # TE-102310-3 in order to determine the presence or absence of federally listed fairy and tadpole shrimp either within the project footprint or that may be affected by the project.

Conclusion

Federally listed fairy and tadpole shrimp were not found in the potential habitat features within the project action area (footprint) during this Wet Season protocol level survey.

Contact: If you have any questions or require more information about this project or the invertebrate survey, please contact Mitchell Dallas, Authorized Surveyor, TE-102310-3 at (805) 459-2907 or email **mitchdallas@hotmail.com**.

Appendices

Appendix 1.

USGS original scale map showing the area surveyed.

Appendix 2.

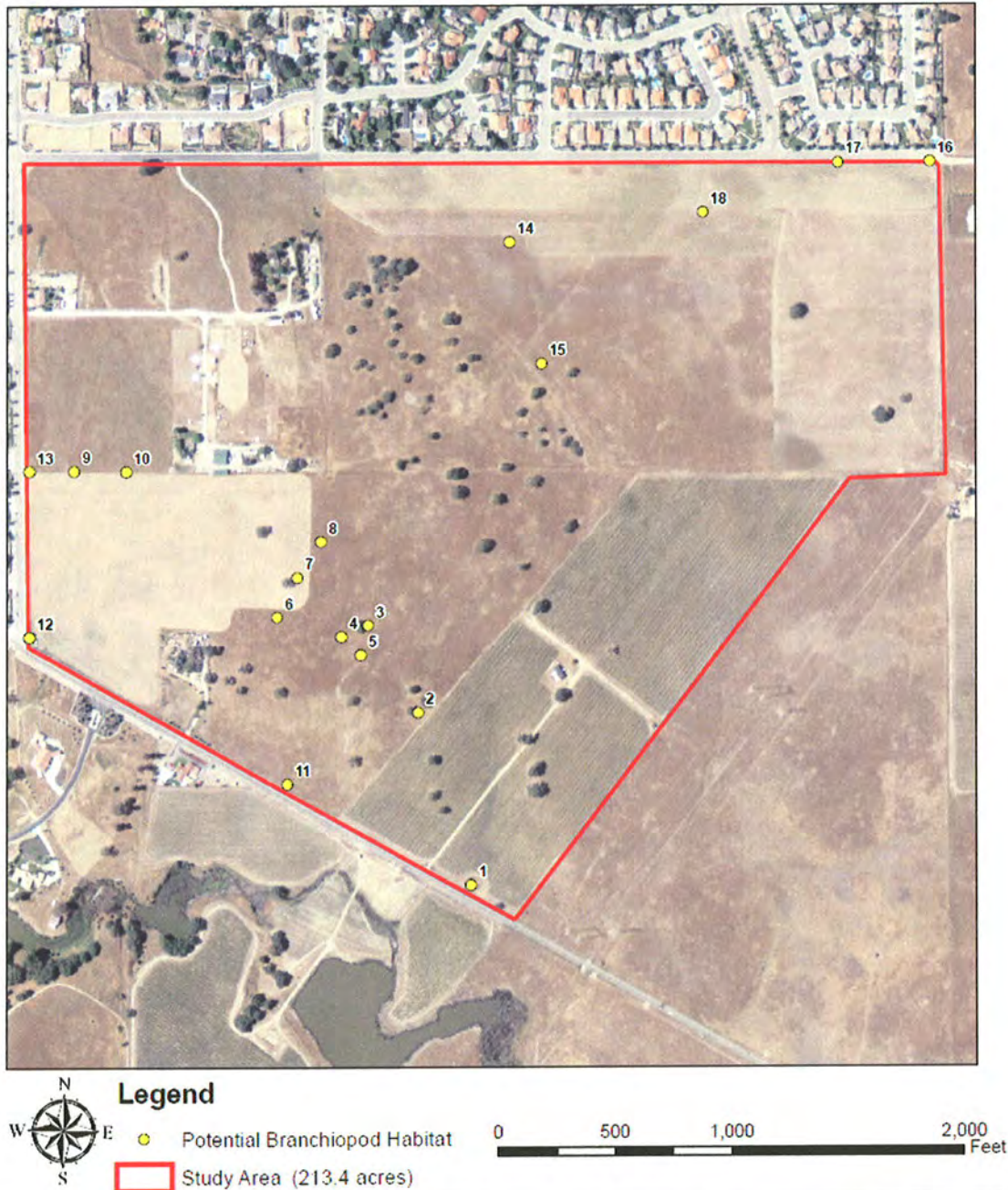
Aerial photo of the potential pool locations.

Appendix 3.

Wet Season Data Sheets and Photos

Appendix 2

Potential Branchiopod Habitat



Beechwood Estate

Appendix 3

Wet Season Survey Data Sheets

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report: ___ no X yes

Required color slides and/or photographs for the project site are included: ___ no X yes

Date: 3/6/16 Time: 1230 County: CLO Quad: Templeton

Collector(s): M. Dallas Permit #: TE102310-

Site/Project Name: Beechwood Pool #: 16

Township: M27S Range: 12E Section: 11 35°35.05934' - 120°52.978 lat. long.

Temperature: Water: 58°F °C Air: 62°F °C

Pool Depth: at time of sampling: 3 1/2" cm Surface Area: 1 1/2' x 28'
estimated maximum: 8" cm at time of sampling: m x m
estimated maximum: m x m

Habitat Condition: (circle where appropriate)

- undisturbed disturbed: tire tracks garbage discing/plowing
- ungrazed grazed: cattle horses sheep other
light moderate heavy
- land use of habitat: Hay, cattle

(Optional) Water Chemistry Data None

Alkalinity (total): ppm or mg/l Conductivity: uMHO

Dissolved NH₄: ppt or ppm Dissolved Oxygen: ppm or mg/l

pH: Turbidity: (secchi disc depth) cm or: clear to bottom

Salinity: ppt or ppm Total Dissolved Solids (TDS): ppm

Notes:

37' 11"
28'

Pool just filled

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: *None*
(note reproductive status)

Notostracans: *None*
(note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no
Other (specify)		

Insects: (adult or larvae)

Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no
Other (specify)		

Voucher Specimens *None*

Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

<u>Species</u>	<u># Individuals</u>	<u>Accession/Catalog #</u>	<u>Pool #</u>
----------------	----------------------	----------------------------	---------------

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report: ☐ no ☒ yes

Required color slides and/or photographs for the project site are included: ☐ no ☒ yes

Date: 3/6/16 Time: 1:00 County: SG Quad: Templeton

Collector(s): M. Dallas Permit #: TE102310-3

Site/Project Name: Beechwood Pool #: 18

Township: N27S Range: 12E Section: 11 35°35.03216' lat. -120°38.6697' long.

Temperature: Water: 58.0 °C Air: 62 °C

Pool Depth: _____ cm at time of sampling: _____ cm
Surface Area: _____ m x _____ m at time of sampling: _____ m x _____ m

estimated maximum: 12 cm estimated maximum: _____ m x _____ m

Habitat Condition: (circle where appropriate)

- undisturbed disturbed: tire tracks garbage discing/plowing

- ungrazed grazed: cattle horses sheep other _____
 light moderate heavy

- land use of habitat: Hay cattle

(Optional) Water Chemistry Data *None*

Alkalinity (total): _____ ppm or mg/l Conductivity: _____ uMHO

Dissolved NH_4 : _____ ppt or ppm Dissolved Oxygen: _____ ppm or mg/l

pH: _____ Turbidity: (secchi disc depth) _____ cm or: clear to bottom _____

Salinity : _____ ppt or ppm Total Dissolved Solids (TDS): _____ ppm

Notes:

Notes:

2 sets of Time Tests w/in #25

Due to "Perk Test"? noted on lath.

↑
rot #1

1

rot #2

Brain

(USF&WS rev. 4/96)

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans:
(note reproductive status) \emptyset

Notostracans:
(note reproductive status) \emptyset

(Optional) Species Observations:

Cladocerans: yes no

Conchostracans: yes no

Copepods: yes no

Ostracods yes no

Fish yes no

Frogs yes no

Salamanders yes no

Waterfowl yes no

Other (specify) _____

Insects: (adult or larvae)

Anisoptera: yes no

Zygoptera: yes no

Hydrophilidae: yes no

Dytiscidae: yes no

Corixidae: yes no

Notonectidae: yes no

Belostomatidae: yes no

Other (specify) _____

Voucher Specimens

Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species

Individuals

Accession/Catalog #

Pool #

None

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report: ☐ no ☒ yes

Required color slides and/or photographs for the project site are included: no yes

Date: 3 / 18 / 16 Time: 5:20 County: SLO Quad: Templeton

Collector(s): M. Dallas Permit #: TE 102310-3

Site/Project Name: Beechwood Pool #: 18

Township: M27S Range: 12E Section: 16 lat. 44 long. 114

Temperature: Water: 66 °F °C Air: 73 °F °C

Pool Depth: _____ at time of sampling: 4.5 m

Surface Area: _____ at time of sampling: 12 m x 32 m

estimated maximum: 12 cm estimated maximum: m x m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other _____
		light	moderate	heavy	

- land use of habitat:

(Optional) Water Chemistry Data

Alkalinity (total): ppm or mg/l Conductivity: _____ uMHO

Dissolved NH_4 : _____ ppt or ppm Dissolved Oxygen: _____ ppm or mg/l

pH: _____ Turbidity: (secchi disc depth) _____ cm or: clear to bottom _____

Salinity : _____ ppt or ppm Total Dissolved Solids (TDS): _____ ppm

Notes:

lots of Bird feathers -
looks to be used as drink etc spot for small birds

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans:

(note reproductive status)

None

Notostracans:

(note reproductive status)

None

(Optional) Species Observations:

Cladocerans: yes no

Conchostracans: yes no

Copepods: yes no

Ostracods yes no

Fish yes no

Frogs yes no

Salamanders yes no

Waterfowl yes no

Other (specify) _____

Insects: (adult or larvae)

Anisoptera: yes no

Zygoptera: yes no

Hydrophilidae: yes no

Dytiscidae: yes no

Corixidae: yes no

Notonectidae: yes no

Belostomatidae: yes no

Other (specify) _____

Voucher Specimens

Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

<u>Species</u>	<u># Individuals</u>	<u>Accession/Catalog #</u>	<u>Pool #</u>
----------------	----------------------	----------------------------	---------------

**U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey**

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report: ___ no ☒ yes

Required color slides and/or photographs for the project site are included: ___ no ☒ yes

Date: 3/6/16 Time: 1:30 County: SLC Quad: Templeton

Collector(s): M. Dallas Permit #: TE 102310-3

Site/Project Name: Rockwood Pool #: 18 out #2

Township: N27S Range: 12E Section: 11 35°51'03.216" N - 120°38'00.99" W lat. ___ long.

Temperature: Water: 58°F °C Air: 62°F °C

Pool Depth: Surface Area:

at time of sampling: 3' cm at time of sampling: ___ m x ___ m

estimated maximum: 8' cm estimated maximum: ___ m x ___ m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed: <u>tire tracks</u>	garbage	discing/plowing	
- ungrazed	grazed: <u>cattle</u>	horses	sheep	other: _____
		light	moderate	heavy
- land use of habitat:	<u>Hay cattle</u>			

(Optional) Water Chemistry Data None

Alkalinity (total): _____ ppm or mg/l

Dissolved NH₄: _____ ppt or ppm

pH: _____

Salinity: _____ ppt or ppm

Conductivity: _____ uMHO

Dissolved Oxygen: _____ ppm or mg/l

Turbidity: (secchi disc depth) _____ cm or: clear to bottom _____

Total Dissolved Solids (TDS): _____ ppm

Notes:

Pool # 2 in #18

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

1x2'

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans: yes no
Conchostracans: yes no
Copepods: yes no
Ostracods yes no
Fish yes no
Frogs yes no
Salamanders yes no
Waterfowl yes no
Other (specify) _____

Insects: (adult or larvae)
Anisoptera: yes no
Zygoptera: yes no
Hydrophilidae: yes no
Dytiscidae: yes no
Corixidae: yes no
Notonectidae: yes no
Belostomatidae: yes no
Other (specify) _____

Voucher Specimens Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species

Individuals

Accession/Catalog #

Pool #

NONE

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report: ___ no ☒ yes

Required color slides and/or photographs for the project site are included: ___ no ☒ yes

Date: 3/18/16 Time: 5:00 County: SLO Quad: Templeton

Collector(s): M. Dallas Permit #: TE 102210-3

Site/Project Name: Roachwood Pool #: 18 RUT#2

Township: N27S Range: 12E Section: 11 lat. 35°35.03216' long. 120°38.6499'

Temperature: Water: 16 °C Air: 73 °C

Pool Depth: at time of sampling: 2" cm Surface Area: 2' x 1.5'
estimated maximum: 8" - 10" cm estimated maximum: 6' x 3' m

Habitat Condition: (circle where appropriate)

- undisturbed ☒ disturbed: ☒ tire tracks ☐ garbage ☐ discing/plowing
- ungrazed ☒ grazed: ☒ cattle ☐ horses ☐ sheep ☐ other ☐
☒ light ☐ moderate ☐ heavy
- land use of habitat: Hay

(Optional) Water Chemistry Data None

Alkalinity (total): ___ ppm or mg/l

Conductivity: ___ uMHO

Dissolved NH₄: ___ ppt or ppm

Dissolved Oxygen: ___ ppm or mg/l

pH: ___ Turbidity: (secchi disc depth) ___ cm or: clear to bottom ___

Salinity: ___ ppt or ppm

Total Dissolved Solids (TDS): ___ ppm

Notes: Pool smaller - still water

Ø

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans:

(note reproductive status)

None

Notostracans:

(note reproductive status)

None

(Optional) Species Observations:

Cladocerans: yes no

Conchostracans: yes no

Copepods: yes no

Ostracods yes no

Fish yes no

Frogs yes no

Salamanders yes no

Waterfowl yes no

Other (specify) _____

Insects: (adult or larvae)

Anisoptera: yes no

Zygoptera: yes no

Hydrophilidae: yes no

Dytiscidae: yes no

Corixidae: yes no

Notonectidae: yes no

Belostomatidae: yes no

Other (specify) _____

Voucher Specimens

Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species

Individuals

Accession/Catalog #

Pool #



Beechwood feature # 16 on 3/6/16 looking east.



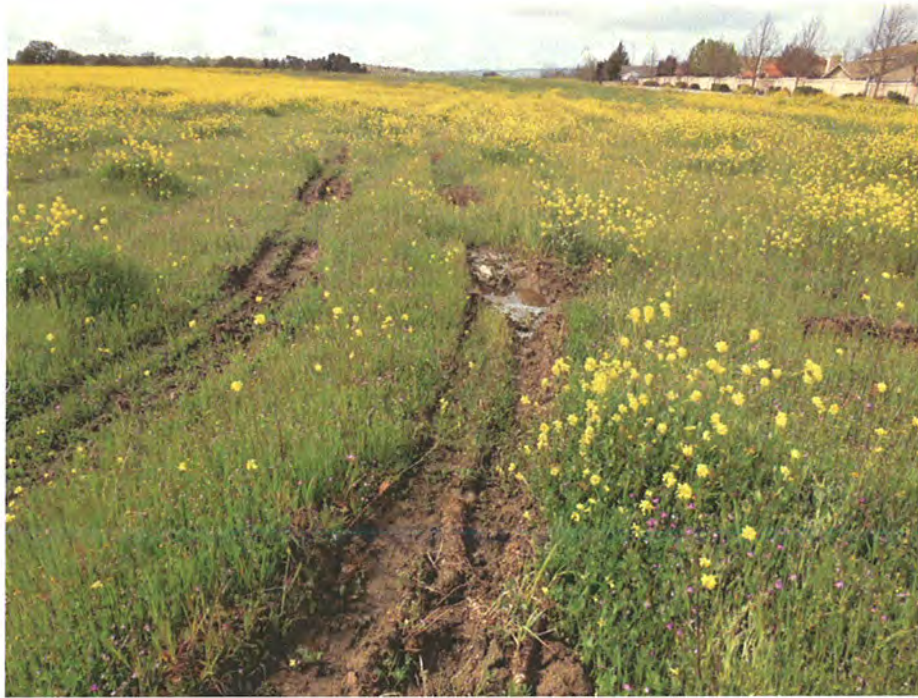
Beechwood feature #16 on 3/6/16 looking west



Beechwood feature #18 tire rut #1 on 3/6/16 looking west.



Beechwood feature #18 tire rut #1 on 3/6/16 looking east.



Beechwood feature #18 tire rut #2 on 3/6/16 looking west.



Beechwood feature #18 tire rut #2 on 3/6/16 looking east.



Beechwood feature #18 tire rut #1 on 3/18/16 looking west.



Beechwood feature #18 tire rut # 1 on 3/18/16 looking east.



Beechwood feature #18 tire rut #2 on 3/18/16 looking west.



Beechwood feature #18 tire rut #2 on 3/18/16 looking east.



United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ventura Fish and Wildlife Office
2493 Portola Road, Suite B
Ventura, California 93003



IN REPLY REFER TO:
08EVEN00-2016-CPA-0146

August 15, 2016

Beechwood Owner's Group
c/o Dan Lloyd
P.O. Box 378
Cayucos, California 93430

Subject: Beechwood Ranch Specific Plan, City of Paso Robles, County of San Luis
Obispo, California

Dear Mr. Lloyd:

This letter has been prepared to resolve a long-standing issue regarding possible presence of the federally listed threatened vernal pool fairy shrimp (*Branchinecta lynchi*) in seasonally inundated features found within the Beechwood Ranch Specific Plan Area (BRSPA).

The BRSPA is 236 acres comprised of 13 contiguous parcels located in the southeast corner of the City of El Paso de Robles. It is bordered by Meadowlark Road to the north, Beechwood Drive to the south, Creston Road to the south, and a PG&E transmission line easement to the east. The proposed plan includes predominantly residential development and the infrastructure to support it; a small amount of commercial use; and open space, parks, and multi-purpose trails. The property has been subject to limited residential use, viticulture and dry land farming, and grazing. When not farmed, required weed abatement has resulted in much of the property being shallowly disked. Existing surrounding land uses include residential development to the north and west and rural residential development and agriculture to the south and east.

An ongoing concern related to the development of this property has been the potential for vernal pool fairy shrimp to occur in seasonally inundated features onsite. Vernal pool fairy shrimp inhabit alkaline pools, ephemeral drainages, pools on rock outcrops, ditches, stream oxbows, stock ponds, vernal pools, vernal swales, and other seasonal wetlands. Such conditions are present onsite and the species is known from similar seasonally inundated features in this region of the County (Service files).

In August 2005, a vernal pool habitat assessment survey was conducted and 27 vernal pools¹ and 7 swales were identified; all were considered to be potential habitat for vernal pool fairy shrimp (Morro Group 2006). At this time, the proposed project was known as the Olsen Ranch

¹ The Ventura Fish and Wildlife Service considers those features identified on the Beechwood property to be seasonally inundated features rather than vernal pool as the latter are typically characterized by a unique suite of both plant and animals species not observed onsite.

Beechwood Specific Plan and comprised 484 acres. In February 2012, another habitat assessment survey was conducted, with 25 features being identified as having a potential hydroperiod sufficient for vernal pool branchiopods, in particular the vernal pool fairy shrimp, to complete a life cycle (Dallas 2012). The 2012 observations were made during relatively dry conditions.

In addition to the habitat assessment surveys, attempts to complete required wet season surveys were initiated by David Wolff in 2011 and Mitch Dallas in the 2011-2012 and 2012-2013; however, due to extended drought conditions, none were completed. When ponding was present, no branchiopods were observed by Mr. Dallas. Surveys were not attempted in the 2013-2014 season.

Another attempt to complete a wet season survey was made for the 2014-2015 season; however, ponding was not of a sufficient duration to complete the effort. A final habitat assessment survey was completed in 2014 to refine the 2005 and 2012 assessment results using observations made during a wet period combined with wet season ponding observations made during the 3 previous years (Dallas 2014). Mr. Dallas, the consulting biologist, and Service biologist Julie M. Vanderwier, further examined potential features in the field in June 2014 to confirm the need for surveys. Despite past disking activities, evidence of ponding in most features was discernable indicating their continued potential to function as habitat for branchiopod species. Based upon this field review, it was determined that 18 features should be the subject of dry season sampling and identification of any resting eggs present.

Service guidance in place in 2014 required the completion of either two wet season surveys within a 5-year period or one wet season survey and one dry season sampling effort for resting eggs within the same sampling year in order to address the question of species presence. Our current guidance requires the completion of both a wet season survey and dry season sampling effort within a 3-year period. In both cases, a wet season survey is considered part of the effort needed to comply with Service guidance.

Our 2015 survey guidance for listed large branchiopod species also provides for modifications or deviations if approved in writing by the Service prior to the commencement of the survey effort. Because climatological conditions have effectively precluded the landowners from addressing our concerns regarding the potential presence of the vernal pool fairy shrimp in one or more of the features on the BRSPA since 2005, we approved Mr. Dallas to go forward with the collection and identification of resting eggs as part of a dry season sampling effort that would otherwise follow this guidance. Mr. Dallas is currently permitted by special conditions 7(h)(i-iv) in recovery permit TE-102310-3 to process soil samples and identify resting eggs. The Service would then make a determination regarding species presence based upon the results of this work.

Mr. Dallas provided his survey results in a 90-day report submitted in March 2015. While information in the report indicates that no resting eggs of listed branchiopods were identified in any of the samples taken from the 18 features, in a conversation between Ms. Vanderwier and Mr. Dallas, he clarified that no resting eggs of any branchiopod species were detected. Despite any previous disturbance onsite and its potential to damage or destroy cysts, it is likely that resting eggs would still be detectable in these features if they had been occupied at some time in

the past. As such, it was Mr. Dallas' conclusion that these features are not suitable for occupation by vernal pool fairy shrimp or any other listed large branchiopod species.

As there were substantial, credible predictions that El Niño conditions for last winter would present conditions conducive to the completion of a wet season survey effort, we asked that a final attempt be made to complete a wet season survey and complete both wet and dry season surveys in accordance with our 2015 survey guidance. We did note that if rainfall amounts were again insufficient to complete a wet season survey, we would accept the results of the dry season sampling effort completed by Mr. Dallas and no further survey work would be required. The anticipated rainfall last winter did not materialize such that surveys sufficient to complete a full wet season protocol could be completed as documented in his 90-day report submitted on June 5, 2016. Based on these results we concur with Mr. Dallas' conclusion that onsite features are not likely to provide habitat for the vernal pool fairy shrimp or any other listed large branchiopod species. No further survey work is deemed necessary.

Please note that take, in any form, of listed large branchiopod species, or any other federally-listed species, is not authorized by this letter. If any listed species are detected onsite at any time, activities that could result in take should cease and the Service be contacted regarding how to proceed.

If you have any questions about the survey guidance or the contents of this letter, please contact Ms. Vanderwier of my staff at (805) 644-1766 or by email at julie_vanderwier@fws.gov.

Sincerely,

A handwritten signature in blue ink, appearing to read "Glen W. Knowles".

Glen W. Knowles
Assistant Field Supervisor

ecc:

Tom Erskine, Beechwood Owner's Group



G e o t e c h n i c a l E n g i n e e r i n g S e r v i c e s

GEOTECHNICAL ENGINEERING REPORT

**Proposed Beechwood Subdivision
Beechwood Drive / Meadowlark Road
Paso Robles, CA**

for:

**Harrod Etal
2530 B Beechwood Drive
Paso Robles, CA 93446**

Date: March 25, 2016

Report No. 16750

File No. 16-7404

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1 INTRODUCTION

This report presents the results of our geotechnical investigation performed at the site of the proposed residential development located on Beechwood Drive in the City of Paso Robles.

The principal purpose of this investigation was to determine the geotechnical properties of the surface and subsurface soils in order to provide recommendations for general site grading and tract improvements. From a geotechnical stand point the site appears to be suitable to support the proposed development when prepared as recommended herein.

Research and exploratory work was conducted in accordance with presently accepted procedures consistent with the scope of work you have requested for this development. No warranty regarding the uniformity of subsurface conditions is implied.

2 SCOPE OF THE GEOTECHNICAL INVESTIGATION

The scope of our geotechnical investigation consisted of the following:

- a. 5 truck mounted auger borings extended to depths of 4 to 15 feet. The location and identification of the excavations are shown on the attached drawings.
- b. Observing existing man-made and natural field conditions.
- c. Obtaining and testing representative bulk and undisturbed soil samples and logging the formations encountered.
- d. Analysis of the field observations and laboratory testing.

3 SUMMARY OF FINDINGS

3.1 SITE DESCRIPTION

The proposed development will be situated on the southeast corner of the intersection of Beechwood Drive and Meadowlark Road. The site contains rolling terrain that varies from nearly level to less than 15 percent slopes with a poorly defined drainage swale descending to the northwest in the northern portion of the site. Mature oak trees are located throughout the site.

3.2 EXPANSIVE NATURE OF THE SOIL

The surface soils are a very low to low expansive sandy material that are underlain with low to medium expansive sandy and clayey soils.

3.3 EXISTING SOIL CONDITIONS

The loose to medium dense sandy surface soils were encountered to 1 to 2 feet below grade and are underlain with firm to stiff clayey material and hard sandy soils.

3.4 GROUND WATER CONDITION

At the time of our investigation no ground water was encountered in the excavations to a depth of 15 feet below existing grade. Fluctuation in the level of the ground water may occur due to variation in rainfall, temperature, or other factors.

3.5 SEISMIC PARAMETERS

We have reviewed the available information regarding the site locations and soil type. The purpose of our review was to determine the appropriate seismic parameters for the 2016 CBC Section 1613 requirements. The site is underlain with generally hard sandy material according to the logs available from the area. Density of the soil with respect to blow counts, shear strength, or shear wave velocities to a depth of 100 feet, has not been determined. However, due to the sandy nature of the near-surface material and the high blow counts in the upper 15 feet of material, we recommend that a site class D be used for the project. Based on information provided in IBC Figures 1613.5(3) and 1613.5(4) and Tables 1613.5.3, the maximum considered earthquake spectral response acceleration values, adjusted for site class effects, are as follows:

short periods: $S_{DS} = 0.890g$

1-second periods: $S_{D1} = 0.498g$

3.6 LIQUEFACTION POTENTIAL

We have reviewed the subsurface data to provide an opinion regarding the liquefaction potential of the site. Exploratory borings were extended 15 feet deep in the proposed area. In all of the excavations, hard sandy material was noted within about 2 to 4 feet of the existing grade. In addition, no groundwater was observed in either test boring.

Liquefaction is generally considered a result from development of pore pressure in loose saturated sandy soil during a seismic event. The potential of liquefaction is based on the seismicity of the site, the presence and depth of groundwater, the presence of sandy soil, and density of the soil.

We have not extended an exploratory boring more than 15 feet deep in the building area. Based on the presence of hard sandy material at a depth of about 2 to 4 feet and no groundwater in the area, it is our opinion that the likelihood of liquefaction of the site is very low.

4 GRADING RECOMMENDATIONS

The following recommendations are made based on your representations that a residential development will be constructed on the site. This report will address the grading of the tract improvements only. Lot specific grading recommendations can be provided once the grading plans are prepared. It is your responsibility to notify the geotechnical engineer of any changes to the proposed development. If changes occur, the recommendations contained in this report will be reviewed and may need to be revised.

4.1 GENERAL GRADING RECOMMENDATIONS

- a. All grading work should be done in a professional manner and in conformance with the current local jurisdiction's grading ordinances and per the grading recommendations stated herein. In addition, all grading work shall be observed by the geotechnical engineers representatives.

- b. All removal areas, keys and footing excavations shall be observed by the representative of the geotechnical engineer before any fill or steel reinforcement is placed. It is your responsibility to notify MID-COAST Geotechnical, Inc. when grading operations or construction begins so that the required observations can be made.
- c. All surface vegetation and debris shall be removed from the work area as grading operations begin.
- d. A careful search shall be made for subsurface debris and abandoned water wells, septic tanks, etc., during grading operations. If any such subsurface cavities are encountered, they shall be removed down to the firm underlying soil and properly backfilled and compacted as directed by a representative of the geotechnical engineer.
- e. Special inspections should be performed in accordance with Table 1705.6 below:

**TABLE 1705.6
REQUIRED VERIFICATION AND INSPECTION OF SOILS**

VERIFICATION AND INSPECTION TASK	CONTINUOUS DURING TASK LISTED	PERIODICALLY DURING TASK LISTED
1. Verify materials below footings are adequate to achieve the design bearing capacity.	-----	X
2. Verify excavations are extended to proper depth and have reached proper material.	-----	X
3. Perform classification and testing of controlled filled materials.	-----	X
4. Verify use of proper materials, densities and lift thicknesses during placement and compaction of controlled fill.	X	-----
5. Prior to placement of controlled fill, observe subgrade and verify that the site has been prepared properly.	-----	X

*2016 California Building Code

4.2 PREPARATION OF DRIVEWAYS AND STREETS

The following guidelines are to be used for grading in the streets and driveways:

- a. **Fill areas:** In those areas to receive fill, the existing surface soils shall be removed down to firm native material. The exposed soils at the bottom of the removal areas

shall then be scarified to a depth of 8 inches, brought to near optimum moisture content, and compacted to a minimum of 90 percent of the maximum density (ASTM D-1557) before any fill is placed.

- b. **Cut areas:** In those areas where the existing surface elevation is to be lowered more than 18 inches below the original grade, the exposed material at the bottom of the cut areas shall be processed and recompactd to a minimum of 95 percent of maximum density (ASTM D-1557) for a minimum depth of 12 inches below the structural section.

4.3 TENTATIVE STRUCTURAL SECTION

A tentative structural section for the roadway and driveway areas is 3" AC / 12"AB. All subgrade soils shall be compacted to a minimum of 95 percent of the maximum density (ASTM D1557) to a minimum depth of 12 inches below the subgrade elevation.

Aggregate Base (AB) shall be defined as "Processed Miscellaneous Base" or "Class II Base" material as required by the local jurisdiction. The structural sections will need to be confirmed or modified by R-value testing as necessary when the subgrade is prepared.

4.4 BOTTOM CHECK AND PROCESSING OF REMOVAL AREA

Field observations will be required to confirm that the removal bottom has been established in firm natural material prior to processing operations.

The exposed material at the bottom of the removal areas shall then be properly prepared and brought to near optimum moisture content before any fill is placed. The removed soil may be used as backfill providing all the deleterious materials, if any, are picked out.

4.5 PLACEMENT OF FILL

All fill shall be placed in layers approximately 8 inches in depth, brought to a moisture content near optimum moisture content, and compacted to a minimum of 90 percent of the maximum density (ASTM D1557) up to final pad subgrade. Fill compacted at high moisture content may be subject to yielding. Yielding or pumping grades will not be approved by this office.

Material placed as certified fill shall be free of debris and rocks greater than six inches in width across the widest point.

4.6 IMPORT MATERIAL

All imported material, if any, to be used for structural fills shall be observed and approved by a representative of the geotechnical engineer prior to transport to the site. Imported fill material shall be free of debris and rocks greater than six (6) inches at the widest point. Imported soils shall be similar or less expansive than those existing on the site. The rock-to-soil ratio of the import material shall not exceed 50 percent.

4.7 FILL SLOPE CONSTRUCTION

A key shall be provided at the toe of all fills placed on an existing slope steeper than 5:1. The key is a significant initial bench at the base of the proposed fill slope used to lock the slope into the existing grade. The key shall extend a minimum of 18 inches into firm natural material and a minimum of 3 feet beyond the toe of the slope. The depth of the key is measured on the down hill side of the excavation. The exposed soils at the bottom of the removal areas shall then be properly prepared and brought to near optimum moisture content before any fill is replaced. As the fill is replaced, it shall be properly benched into the existing slopes. A typical detail, Plate E, is provided as an enclosure of this report.

We recommend that the resulting fill slopes be overfilled and trimmed back in order to ensure proper compaction at the face of the slope. Alternatively, the slope faces may be compacted by backing compaction equipment over the slope at frequent vertical intervals. Thin layers of material should not be placed on the outside of the finished slope without proper benching.

All fill slopes shall be constructed at a maximum 2:1 ratio and in compliance with the recommendations contained herein and with the local jurisdiction's requirements.

4.8 CUT SLOPE CONSTRUCTION

Cut slopes may be constructed at maximum 2:1 gradient and in compliance with the local jurisdiction's grading ordinance. The cut slope shall be observed by a representative from our office during excavation. Any loose or raveling material left on the cut slope after grading should be removed.

4.9 EROSION CONTROL

Any slopes constructed flatter than 10 percent should be planted with a deep-rooted, light-weight ground cover. This ground cover should be maintained to control surficial and larger-scale erosion and surficial stability of the slopes. Steeper slopes may require a permanent erosion control blanket to reduce surficial erosion and instability.

4.10 SITE DRAINAGE

Small ponds of water near any structure should be eliminated. Final grading shall provide a positive drainage away from the footings. If a swale is required to collect the flow, the swale bottom should preferably be at least 5 feet from the footings or outside of the foundation wall backfill and sloped sufficiently to direct the runoff away from the building area and lot. All pad and roof drainage should be collected and transferred away from the buildings in non-erosive devices. Proper drainage shall also be provided away from the

building footings and from the lot during construction. This is especially important when construction takes place during the rainy season. All drainage plans should also be in compliance with the local jurisdictions grading requirements.

5 FOUNDATION DESIGN RECOMMENDATIONS

The foundation design recommended below shall be confirmed or modified, if necessary, after grading operations are completed, depending upon the nature of the soils resulting on the surface of the graded building pad. The following recommendations would apply to structures associated with the site improvements. Foundation design for residential structures can be provided on a site specific basis.

5.1 SOIL EXPANSION POTENTIAL

At a minimum, any foundation design should take into consideration construction on soils in the expansion index range of 51 to 90. The actual expansion index range may vary depending on the nature of the soil resulting after the completion of grading. Structural details of any foundations, such as footing thickness, concrete strength and the amount of reinforcement should be established by your structural engineer.

5.2 BEARING CAPACITY: CONTINUOUS FOOTINGS

Continuous footings supported on firm native or certified fill material are adequate for foundation support of the proposed structures and may be designed using a bearing pressure of 1500 psf. The footing depth should meet the minimum recommendations noted above. The recommended bearing values are based on an assumed embedment of a minimum of 21 inches into certified fill material and be a minimum of 12 inches wide. A 5 percent increase of bearing pressure values is allowable for each additional 6-inch increment of width or depth up to a maximum value of 2500 psf.

5.3 FOUNDATIONS NEAR SLOPES

All foundations excavated on or adjacent to any existing or proposed slopes will require a minimum 10 feet horizontal distance to daylight. The horizontal distance is measured from the bottom of the footings to daylight on the slope or to the extent of the competent material on the slope, i.e., all slough or loose material on the slope will be discounted when measuring the distance to daylight.

5.4 WIND AND SEISMIC LOADS

The bearing pressures given are for the total of dead and frequently applied live loads and may be increased by one-third for short duration loading which includes the effects of wind or seismic forces.

5.5 PASSIVE AND FRICTIONAL RESISTANCE

Resistance to lateral loading may be provided by friction acting at the base of foundations and by passive earth pressure. An allowable coefficient of friction of 0.35 may be used with the dead load forces in the approved bearing material.

Passive earth pressure may be computed as an equivalent fluid having a density of 350 pcf with a maximum earth pressure of 1750 psf. When combining passive and friction for lateral resistance, the passive component should be reduced by one-third.

5.6 RETAINING WALLS: ACTIVE EARTH PRESSURE

Retaining walls may be designed for an equivalent fluid pressure of 35 psf per foot of depth. Additional active pressure should be added for a surcharge condition due to sloping ground, vehicular traffic, or adjacent structures. The allowable bearing, friction, and passive earth pressure may be found in the preceding sections.

All other retaining walls may be designed for the corresponding active pressures shown on the table below:

Surface Slope of Retained Material <u>Horizontal to Vertical</u>	Equivalent Fluid Weight <u>(pcf)</u>
Level	35
5 to 1	37
4 to 1	40
3 to 1	43
2 to 1	48

All walls should be backfilled with a minimum 1-foot wide layer of free draining soil, approved by MID-COAST Geotechnical, Inc., synthetic drain product, or clean, uniform sized gravel placed against the wall up to 18 inches below finish grade. Where the cavity to be filled behind a wall is less than 18 inches at the surface, the use of gravel is allowed without testing if compacted to the satisfaction of the geotechnical engineer. In the case of walls constructed with gravel backfill in areas where subsurface water is anticipated, we recommend that a geotextile fabric be placed between the backfill and cut.

In order to reduce the migration of water behind the wall, the surface of the gravel backfill should be sealed by pavement or covered by 18 inches of compacted soil. The surface water drainage shall be directed away from the wall and shall meet the requirements of the current local jurisdiction's building code. Where weep holes are not used at the base of the retaining wall, a perforated pipe shall be placed within a bed of approved rock at the base of the retaining wall and shall be drained to discharge into an approved drainage course.

6 ADDITIONAL RECOMMENDATIONS

6.1 COMPACTION OF EXCESS SOIL

Soils generated during footing excavation operations should not be placed across the pads unless the materials are compacted to at least 90 percent relative compaction. This also applies to sand, agricultural, and landscape fill exceeding 12 inches in depth. Compaction

tests should be taken in additional fills placed in order to confirm that the minimum relative compaction requirements are achieved. It is your responsibility to notify MID-COAST Geotechnical, Inc. if testing is needed.

7 OBSERVATIONS AND TESTING

All foundation excavations should be approved by this firm prior to placing concrete or any steel reinforcement. All removal excavation bottoms shall be observed and approved by a geotechnical engineer or his representative prior to placement of backfill. Any fill placed for engineering purposes should be tested and certified.

Temporary wall excavations should be observed by a representative of this firm. It is your responsibility to notify MID-COAST Geotechnical, Inc. at each stage of the excavations so that observations can be made. If the examination reveals any hazard, appropriate treatment will be recommended. Please advise this office at least 24 hours prior to any required observations.

8 LIMITS AND LIABILITY

Please be aware that our contract fee for our services to prepare this report do not include additional work which may be required such as grading observation and testing, footing observations, presaturation observations, etc. Since the extent of grading and the amount of involvement of our services varies for each project, our services are normally billed on an hourly rate or per-test basis.

This report provides recommendations and comments in accordance with currently accepted practice applicable to the scope of your project. Further requirements may be imposed by the reviewing agency or necessary as a result of changes to your building or grading plans. Where additional services are requested or required, you will be billed for any equipment costs and on an hourly basis for consultation or analysis.

All documents, including maps, plans, drawings, specification and test results which we prepare or furnish or which are prepared or furnished by our independent professional associates and consultants pursuant to this agreement are considered instruments of service with respect to the project, and we will retain an ownership and property interest therein, whether or not the project is completed. Without limiting the foregoing, we reserve the right to make use of all information obtained in the performance of our services in projects for other clients, including without limitation, the right to use all test results and reports in performing services for future owners of your property.

The limits of our liability for data contained in this report and our warranty are presented on the following page.

This report is issued with the understanding that it is the responsibility of the owner, or his representative, to assure that the information and recommendations contained herein are called to the attention of the designers and builders for the project.



Respectfully submitted,
MID-COAST Geotechnical, Inc.

A handwritten signature in blue ink, appearing to read "Dane C. Jensen".

Dane C. Jensen, RCE/CE0675
Expiration Date 12/31/2016

DCJ/ans
Harrod Etal (3 + email)

9 WARRANTY

This report is based on the development plans provided to our office. In the event that any significant changes in the design or location of the structure(s) as outlined in this report are planned, the conclusions and recommendations contained in this report may not be considered valid unless the changes are reviewed and the conclusions of this report are modified or approved by the geotechnical engineer.

The subsurface conditions, excavations, and characteristics described herein have been projected from individual borings or test pits placed on the subject property. The subsurface conditions, excavation, and characteristics shown should in no way be construed to reflect any variation which may occur between these borings or test pits.

It should be noted that fluctuations in the level of the groundwater may occur due to variation in rainfall, temperature, changes in drainage and grading, and other factors not evident at the time measurements were made and reported herein. MID-COAST Geotechnical, Inc. assumes no responsibility for variations which may occur across the site.

If conditions encountered during construction appear to differ from those disclosed, this office shall be notified so as to consider the need for modifications. No responsibility for construction compliance with the design concepts, specifications or recommendations is assumed unless on-site construction review is performed during the course of construction which pertains to the specific recommendations contained herein.

This report has been prepared in accordance with generally accepted practice. No warranties, either express or implied, are made as to the professional advice provided under the terms of the agreement and included in this report.

APPENDIX

(Laboratory results, maps, and logs)

10 LABORATORY TEST RESULTS

10.1 MOISTURE-DENSITY DETERMINATIONS

Maximum Density-Optimum Moisture data were determined in the laboratory from soil samples using the ASTM D-1557-07 Method of Compaction.

<u>SOIL TYPE</u>	<u>SOIL DESCRIPTION</u>	<u>MAXIMUM DRY DENSITY (lbs/cu.ft)</u>	<u>OPTIMUM MOISTURE (%)</u>
C1	Reddish brown sandy CLAY	122/0	11/5
S2	Reddish brown silty SAND	128.0	8.5
S5	Reddish brown silty SAND w/ gr.	124.5	9.5
S6	Brown clayey SAND	120.0	12.0
S7	Dark brown silty SAND w/ gr.	125.0	10.0

10.2 FIELD DENSITY SUMMARY (Ring Density Method)

<u>TEST NO.</u>	<u>DEPTH (FT)</u>	<u>SOIL TYPE</u>	<u>FIELD MOISTURE CONTENT (%)</u>	<u>DRY DENSITY (lbs/cu.ft)</u>	<u>% OF MAX. DRY DENSITY</u>
B1	2	C1	18.2	108.0	89
B1	5	S2	9.5	111.2	87
B1	10	C2	20.3		
B1	15	S3	12.2		
B2	2	S5	10.2		
B3	2	S5	8.5	117.4	94
B4	2	C1	12.5	107.6	88
B4	5	S6	16.6	109.8	92
B4	10	S6	11.4		
B4	15	S7	4.5		
B5	2	S6	14.4	102.7	86
B5	5	S6	19.7	102.7	86
B5	10	S7	8.9	114.9	92

10.3 EXPANSION INDEX TEST

Each Expansion Index Test was performed on a representative bulk sample of the soil collected during our investigation. Expansion index test procedure is performed in accordance with ASTM D4289-03. The results follow:

<u>SOIL TYPE</u>	<u>LOCATION</u>	<u>EXPANSION INDEX</u>
C1	B1 @ 2-3'	44
C1	B4 @ 0-2.5'	67



Legend

- Exploratory Soils Boring

N.T.S.

*PLAN PROVIDED BY OTHERS

Harrod Etal
Proposed Beechwood Subdivision
Beechwood Drive / Meadowlark Road
Paso Robles
California

MCG MID-COAST
GEOTECHNICAL, INC.

Date: March 25, 2016

Plate 2

LOG OF BORING B1



3124 El Camino Real Atascadero CA 93422
Telephone: 805-461-0965 Fax:

CLIENT: Harrod Etal
PROJECT: Beechwood Subdivision
LOCATION: Beechwood Drive / Meadowlark Road, Paso Robles
NUMBER: 16-7404

DATE(S) DRILLED: 2/24/2016

FIELD DATA			LABORATORY DATA							CLASS.		DRILLING METHOD(S):	
DEPTH (FT)	SAMPLES	N: BLOWS/FT P: TONS/SQ FT T: TONS/SQ FT PERCENT RECOVERY/ ROCK QUALITY DESIGNATION	MOISTURE CONTENT (%)	DRY DENSITY POUNDS/CU.FT	RELATIVE COMPACTION (%)	ATTERBERG LIMITS			EXPANSION INDEX	MINUS NO. 200 SIEVE (%)	USCS	SOIL SYMBOL	SOIL TYPE
						LIQUID LIMIT LL	PLASTIC LIMIT PL	PLASTICITY INDEX PI					
GROUNDWATER INFORMATION: No ground water encountered at time of drilling.													
SURFACE ELEVATION:													
DESCRIPTION OF STRATUM													
1													Aggregate Base
2	N = 18		18	108	89				44			S1	Brown clayey SAND w/gravel, medium dense, humid
3												C1	Reddish brown sandy CLAY, stiff, moist
4												S2	Reddish brown silty SAND, hard, damp
5	N = 45		9	111	87								
6													Light brown sandy CLAY, stiff, damp
7													
8													
9													
10			20									C2	
11													
12													
13													
14												S3	Reddish brown clayey SAND, hard, damp
15			12										Boring was terminated at 15' below grade.
N - STANDARD PENETRATION TEST RESISTANCE P - POCKET PENETROMETER RESISTANCE T - POCKET TORVANE SHEAR STRENGTH												REMARKS: Boring was backfilled with auger clippings.	

LOG OF BORING 16-7404 SOILS.GPJ MIDCOAST.GDT 5/30/16

LOG OF BORING B2



3124 El Camino Real Atascadero CA 93422
Telephone: 805-461-0965 Fax:

CLIENT: Harrod Etal
PROJECT: Beechwood Subdivision
LOCATION: Beechwood Drive / Meadowlark Road, Paso Robles
NUMBER: 16-7404

DATE(S) DRILLED: 2/24/2016

FIELD DATA			LABORATORY DATA							CLASS.		DRILLING METHOD(S): B24 Mobile Auger Drill Rig	
DEPTH (FT)	SAMPLES N: BLOWS/FT P: TONS/SQ FT T: TONS/SQ FT PERCENT RECOVERY/ ROCK QUALITY DESIGNATION	MOISTURE CONTENT (%)	DRY DENSITY POUNDS/CU.FT	RELATIVE COMPACTION (%)	ATTERBERG LIMITS			EXPANSION INDEX	MINUS NO. 200 SIEVE (%)	USCS	SOIL SYMBOL	SOIL TYPE	GROUNDWATER INFORMATION: No ground water encountered at time of drilling.
					LL	PL	PI						
					LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX						
1												S4	Brown silty SAND w/ gravel, medium dense, damp
2	N = 50+	10										S5	Mottled brown silty SAND w/ gravel, hard, damp
3													
4													Refusal at 4' Gravels
N - STANDARD PENETRATION TEST RESISTANCE P - POCKET PENETROMETER RESISTANCE T - POCKET TORVANE SHEAR STRENGTH												REMARKS: Boring was backfilled with auger clippings.	

LOG OF BORING B3



3124 El Camino Real Atascadero CA 93422
Telephone: 805-461-0965 Fax:

CLIENT: Harrod Etal
PROJECT: Beechwood Subdivision
LOCATION: Beechwood Drive / Meadowlark Road, Paso Robles
NUMBER: 16-7404

DATE(S) DRILLED: 2/24/2016

DRILLING METHOD(S):
B24 Mobile Auger Drill Rig

GROUNDWATER INFORMATION:
No ground water encountered at time of drilling.

SURFACE ELEVATION:

DESCRIPTION OF STRATUM

Brown clayey SAND w/gravel, medium dense, humid

S1

Reddish brown silty SAND w/ gravel, hard, damp

S5

Refusal at 4' on Gravels

N - STANDARD PENETRATION TEST RESISTANCE
P - POCKET PENETROMETER RESISTANCE
T - POCKET TORVANE SHEAR STRENGTH

REMARKS:
Boring was backfilled with auger clippings.

LOG OF BORING B4



3124 El Camino Real Atascadero CA 93422
Telephone: 805-461-0965 Fax:

CLIENT: Harrod Etal
PROJECT: Beechwood Subdivision
LOCATION: Beechwood Drive / Meadowlark Road, Paso Robles
NUMBER: 16-7404
DATE(S) DRILLED: 2/24/2016

FIELD DATA				LABORATORY DATA						CLASS.		DRILLING METHOD(S): B24 Mobile Auger Drill Rig		
DEPTH (FT)	SAMPLES N: BLOWS/FT P: TONS/SQ FT T: TONS/SQ FT PERCENT RECOVERY/ ROCK QUALITY DESIGNATION	MOISTURE CONTENT (%)	DRY DENSITY POUNDS/CU.FT	RELATIVE COMPACTION (%)	ATTERBERG LIMITS			EXPANSION INDEX	MINUS NO. 200 SIEVE (%)	USCS	SOIL SYMBOL	SOIL TYPE	GROUNDWATER INFORMATION: No ground water encountered at time of drilling.	
					LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX						SURFACE ELEVATION:	
					LL	PL	PI							DESCRIPTION OF STRATUM
1								67				C1	Brown sandy CLAY w/gravel, firm, damp	
2	N = 32	12	108	88										Brown clayey SAND, hard, damp
3														
4														
5	N = 42	17	110	92										
6														
7														
8														
9														
10		11												
11														
12														
13														Brown silty SAND, hard, damp
14													S7	
15		4												Boring was terminated at 15' below grade.
N - STANDARD PENETRATION TEST RESISTANCE P - POCKET PENETROMETER RESISTANCE T - POCKET TORVANE SHEAR STRENGTH													REMARKS: Boring was backfilled with auger clippings.	

LOG OF BORING 16-7404 SOILS.GPJ MIDCOAST.GDT 5/30/16

LOG OF BORING B5



3124 El Camino Real Atascadero CA 93422
Telephone: 805-461-0965 Fax:

CLIENT: Harrod Etal
PROJECT: Beechwood Subdivision
LOCATION: Beechwood Drive / Meadowlark Road, Paso Robles
NUMBER: 16-7404
DATE(S) DRILLED: 2/24/2016

FIELD DATA			LABORATORY DATA							CLASS.		DRILLING METHOD(S): B24 Mobile Auger Drill Rig			
DEPTH (FT)	SAMPLES	N: BLOWS/FT P: TONS/SQ FT T: TONS/SQ FT PERCENT RECOVERY/ ROCK QUALITY DESIGNATION	MOISTURE CONTENT (%)	DRY DENSITY POUNDS/CU.FT	RELATIVE COMPACTION (%)	ATTERBERG LIMITS			EXPANSION INDEX	MINUS NO. 200 SIEVE (%)	USCS	SOIL SYMBOL	SOIL TYPE	GROUNDWATER INFORMATION: No ground water encountered at time of drilling.	
						LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX						SURFACE ELEVATION:	
						LL	PL	PI						DESCRIPTION OF STRATUM	
1													S1	Brown silty SAND, loose, humid	
2	N = 50+		14	103	86								C1	Brown sandy CLAY, stiff, damp	
3															
4															
5	N = 48		20	103	86								S6	Brown clayey SAND, hard, damp	
6															
7															
8														Dark brown silty SAND w/ gravel, hard, damp	
9													S7		
10	N = 50+		9	115	92										
														Boring was terminated at 15' below grade.	
N - STANDARD PENETRATION TEST RESISTANCE P - POCKET PENETROMETER RESISTANCE T - POCKET TORVANE SHEAR STRENGTH														REMARKS: Boring was backfilled with auger clippings.	

March 25, 2016
File No. 16-7404
Report No. 16751

Harrod, Et al
2530 B Beechwood Drive
Paso Robles, CA 93446

SUBJECT: Proposed Development, Beechwood Street and Meadowlark Road, Paso Robles

Dear Mr. Harrod:

We have performed shallow quick infiltration testing at the subject site, in the area of the proposed stormwater control measures (SCM). The testing was performed in fifteen locations, at depths of 3 to 5 feet below the existing grade, the assumed bottom of the SCM. The test pits were excavated using a 6" solid flight auger and were cased with a 4" diameter perforated pipe and fine gravel. In addition to the test pits, a 15' deep profile boring was excavated in the area of the test pits. A site plan showing the location of the infiltration test pits and the profile borings is attached to this report. The test pits were pre-saturated the day before the testing was performed. The infiltration tests were performed between February 11 and March 4, 2016 with the final test duration of two hours. The results of the testing follow:

Infiltration Test Location	Slowest Inf. Rate Observed (in/hr)	
	3' Depth	5' Depth
P1	0	2
P2	1.75	3.75
P3	0.13	0.38
P4	0.71	0
P5	0	0
P6	48	48
P7	1.5	3.25
P8	0	0

Infiltration Test Location	Slowest Inf. Rate Observed (in/hr)	
	3' Depth	5' Depth
P9	2	4
P10	No readings	due to large gravel at 3'
P11	0	0
P12	4	3
P13	0	8
P14	0.63	2.25
P15	0	2

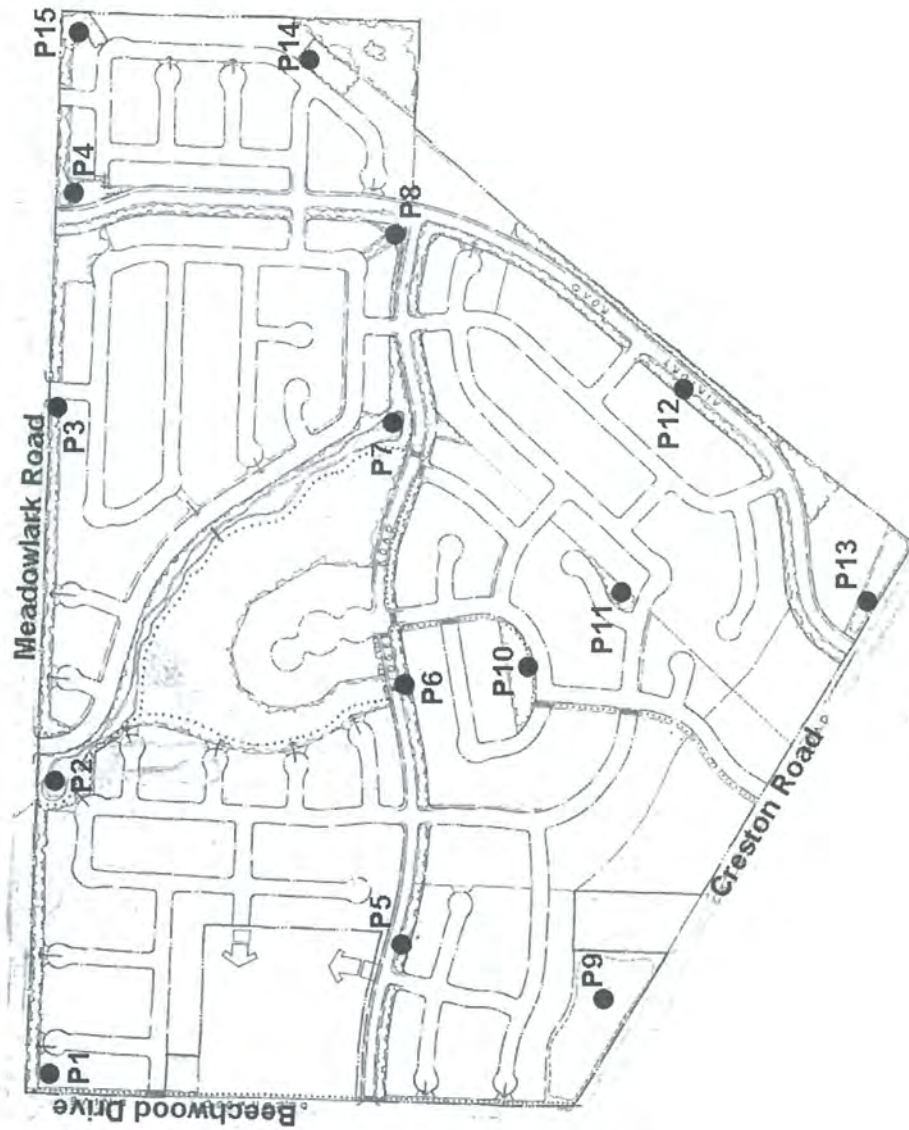
Based on the standards set forth in the *Post Construction Requirement Handbook (Version 1.1-March 2014 Draft)*, Appendix D, infiltration of small volumes of stormwater at the depths and locations tested appears to be feasible at some locations. If we can be of further assistance in this matter, please contact the undersigned.



Respectfully submitted,
MID-COAST Geotechnical, Inc.

Dane C. Jensen
Dane C. Jensen, RCE 60675
Expiration date, 12-31-2014

DCJ:dmv
Harrod, Et al (2)
Dan Lloyd (e-mail)



Legend N.T.S.

- Infiltration Test Location

*PLAN PROVIDED BY OTHERS



Harrod, Et al
Proposed Residential Development
Beechwood Drive and Meadowlark Road
Paso Robles
California

Date: 03-25-2016

Plate 1

LOG OF BORING P1



3124 El Camino Real Atascadero CA 93422
Telephone: 805-461-0965 Fax:

CLIENT: Harrod Etal
PROJECT: Beechwood Subdivision
LOCATION: Beechwood Drive / Meadowlark Road, Paso Robles
NUMBER: 16-7404
DATE(S) DRILLED: 2/24/2016

FIELD DATA			LABORATORY DATA							CLASS.		DRILLING METHOD(S): B24 Mobile Auger Drill Rig	
DEPTH (FT)	SAMPLES N: BLOWS/FT P: TONS/SQ FT T: TONS/SQ FT PERCENT RECOVERY/ ROCK QUALITY DESIGNATION	MOISTURE CONTENT (%)	DRY DENSITY POUNDS/CU.FT	RELATIVE COMPACTION (%)	ATTERBERG LIMITS			EXPANSION INDEX	MINUS NO. 200 SIEVE (%)	USCS	SOIL SYMBOL	SOIL TYPE	GROUNDWATER INFORMATION: No ground water encountered at time of drilling.
					LL	PL	PI						
					LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX						
													SURFACE ELEVATION:
													DESCRIPTION OF STRATUM
1													Brown sandy CLAY w/gravel, firm, moist
2													Light brown sandy CLAY w/gravel, firm, damp
3													
4													
5													Light brown clayey SAND, hard, damp
6													
7													
8													Light brown poorly graded SAND, hard, damp
9													
10													Light brown sandy CLAY w/gravel, stiff, damp
11													
12													
13													
14													
15													Boring was terminated at 15' below grade.
N - STANDARD PENETRATION TEST RESISTANCE P - POCKET PENETROMETER RESISTANCE T - POCKET TORVANE SHEAR STRENGTH												REMARKS: Boring was backfilled with auger clippings.	

LOG OF BORING 16-7404 INFIL.GPJ MIDCOAST.GDT 5/30/16

LOG OF BORING P2



3124 El Camino Real Atascadero CA 93422
Telephone: 805-461-0965 Fax:

CLIENT: Harrod Etal
PROJECT: Beechwood Subdivision
LOCATION: Beechwood Drive / Meadowlark Road, Paso Robles
NUMBER: 16-7404

DATE(S) DRILLED: 2/24/2016

FIELD DATA			LABORATORY DATA							CLASS.		DRILLING METHOD(S): B24 Mobile Auger Drill Rig	
DEPTH (FT)	SAMPLES N: BLOWS/FT P: TONS/SQ FT T: TONS/SQ FT PERCENT RECOVERY/ ROCK QUALITY DESIGNATION	MOISTURE CONTENT (%)	DRY DENSITY POUNDS/CU.FT	RELATIVE COMPACTION (%)	ATTERBERG LIMITS			EXPANSION INDEX	MINUS NO. 200 SIEVE (%)	USCS	SOIL SYMBOL	SOIL TYPE	GROUNDWATER INFORMATION: No ground water encountered at time of drilling.
					LL	PL	PI						
					LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX						
													SURFACE ELEVATION:
													DESCRIPTION OF STRATUM
1													Brown sandy CLAY w/ gravel, firm, moist
2													Brown clayey SAND w/ gravel, medium dense, damp
3													
4													Light brown silty SAND, hard, damp
5													
6													
7													
8													
9													Light brown sandy CLAY w/gravel, stiff, damp
10													
11													
12													
13													
14													
15													Boring was terminated at 15' below grade.
N - STANDARD PENETRATION TEST RESISTANCE P - POCKET PENETROMETER RESISTANCE T - POCKET TORVANE SHEAR STRENGTH												REMARKS: Boring was backfilled with auger clippings.	

LOG OF BORING 16-7404 INFIL.GPJ MIDCOAST.GDT 5/30/16

LOG OF BORING P3



3124 El Camino Real Atascadero CA 93422
Telephone: 805-461-0965 Fax:

CLIENT: Harrod Etal
PROJECT: Beechwood Subdivision
LOCATION: Beechwood Drive / Meadowlark Road, Paso Robles
NUMBER: 16-7404

DATE(S) DRILLED: 2/24/2016

FIELD DATA				LABORATORY DATA						CLASS.		DRILLING METHOD(S): B24 Mobile Auger Drill Rig	
DEPTH (FT)	SAMPLES	N: BLOWS/FT P: TONS/SQ FT T: TONS/SQ FT PERCENT RECOVERY/ ROCK QUALITY DESIGNATION	MOISTURE CONTENT (%)	DRY DENSITY POUNDS/CU.FT	RELATIVE COMPACTION (%)	ATTERBERG LIMITS			EXPANSION INDEX	MINUS NO. 200 SIEVE (%)	USCS	SOIL SYMBOL	SOIL TYPE
						LL	PL	PI					
						LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX					
GROUNDWATER INFORMATION: No ground water encountered at time of drilling.													
SURFACE ELEVATION:													
DESCRIPTION OF STRATUM													
1													Brown sandy CLAY w/ gravel, soft, moist
2													Light brown clayey SAND, hard, damp
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													Boring was terminated at 15' below grade.
N - STANDARD PENETRATION TEST RESISTANCE P - POCKET PENETROMETER RESISTANCE T - POCKET TORVANE SHEAR STRENGTH													REMARKS: Boring was backfilled with auger clippings.

LOG OF BORING 16-7404 INFIL.GPJ MIDCOAST.GDT 5/30/16

LOG OF BORING P4



3124 El Camino Real Atascadero CA 93422
Telephone: 805-461-0965 Fax:

CLIENT: Harrod Etal
PROJECT: Beechwood Subdivision
LOCATION: Beechwood Drive / Meadowlark Road, Paso Robles
NUMBER: 16-7404
DATE(S) DRILLED: 2/24/2016

FIELD DATA				LABORATORY DATA						CLASS.		DRILLING METHOD(S): B24 Mobile Auger Drill Rig	
DEPTH (FT)	SAMPLES	N: BLOWS/FT P: TONS/SQ FT T: TONS/SQ FT PERCENT RECOVERY/ ROCK QUALITY DESIGNATION	MOISTURE CONTENT (%)	DRY DENSITY POUNDS/CU.FT	RELATIVE COMPACTION (%)	ATTERBERG LIMITS			EXPANSION INDEX	MINUS NO. 200 SIEVE (%)	USCS	SOIL SYMBOL	SOIL TYPE
						LL	PL	PI					
						LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX					
GROUNDWATER INFORMATION: No ground water encountered at time of drilling.													
SURFACE ELEVATION:													
DESCRIPTION OF STRATUM													
1													Brown sandy CLAY w/ gravel, firm, moist
2													
3													
4													Light brown clayey SAND w/ gravel, hard, damp
5													
6													
7													
8													
9													Light brown sandy CLAY w/ gravel, stiff, damp
10													
11													
12													
13													
14													
15													Boring was terminated at 15' below grade.
N - STANDARD PENETRATION TEST RESISTANCE P - POCKET PENETROMETER RESISTANCE T - POCKET TORVANE SHEAR STRENGTH												REMARKS: Boring was backfilled with auger clippings.	

LOG OF BORING 16-7404 INFIL.GPJ MIDCOAST.GDT 5/30/16

LOG OF BORING P5



3124 El Camino Real Atascadero CA 93422
Telephone: 805-461-0965 Fax:

CLIENT: Harrod Etal
PROJECT: Beechwood Subdivision
LOCATION: Beechwood Drive / Meadowlark Road, Paso Robles
NUMBER: 16-7404
DATE(S) DRILLED: 2/24/2016

FIELD DATA				LABORATORY DATA						CLASS.		DRILLING METHOD(S): B24 Mobile Auger Drill Rig	
DEPTH (FT)	SAMPLES	N: BLOWS/FT P: TONS/SQ FT T: TONS/SQ FT PERCENT RECOVERY/ ROCK QUALITY DESIGNATION	MOISTURE CONTENT (%)	DRY DENSITY POUNDS/CU.FT	RELATIVE COMPACTION (%)	ATTERBERG LIMITS			EXPANSION INDEX	MINUS NO. 200 SIEVE (%)	USCS	SOIL SYMBOL	SOIL TYPE
						LL	PL	PI					
						LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX					
GROUNDWATER INFORMATION: No ground water encountered at time of drilling.													
SURFACE ELEVATION:													
DESCRIPTION OF STRATUM													
1													Brown sandy CLAY w/ gravel, firm, damp
2													Light brown sandy CLAY w/ gravel, stiff, damp
3													
4													
5													
6													
7													Refusal at 7' on Large Gravel
N - STANDARD PENETRATION TEST RESISTANCE P - POCKET PENETROMETER RESISTANCE T - POCKET TORVANE SHEAR STRENGTH												REMARKS: Boring was backfilled with auger clippings.	

LOG OF BORING 16-7404 INEIL.GPJ MIDCOAST.GDT 5/30/16

LOG OF BORING P6



3124 El Camino Real Atascadero CA 93422
Telephone: 805-461-0965 Fax:

CLIENT: Harrod Etal
PROJECT: Beechwood Subdivision
LOCATION: Beechwood Drive / Meadowlark Road, Paso Robles
NUMBER: 16-7404
DATE(S) DRILLED: 2/24/2016

FIELD DATA		LABORATORY DATA							CLASS.		DRILLING METHOD(S):	
DEPTH (FT)	SAMPLES N: BLOWS/FT P: TONS/SQ FT T: TONS/SQ FT PERCENT RECOVERY/ ROCK QUALITY DESIGNATION	MOISTURE CONTENT (%)	DRY DENSITY POUNDS/CU.FT	RELATIVE COMPACTION (%)	ATTERBERG LIMITS			EXPANSION INDEX	MINUS NO. 200 SIEVE (%)	USCS	SOIL SYMBOL	SOIL TYPE
					LL	PL	PI					
					LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX					
GROUNDWATER INFORMATION: No ground water encountered at time of drilling.												
SURFACE ELEVATION:												
DESCRIPTION OF STRATUM												
1												Brown silty SAND w/ gravel, medium dense, damp
2												
3												Lt brown silty SAND w/ gravel, medium dense, damp
4												
5												
6												
7												
8												Brown clayey SAND w/ gravel, hard, damp
9												
10												
11												
12												
13												
14												
15												Boring was terminated at 15' below grade.
N - STANDARD PENETRATION TEST RESISTANCE P - POCKET PENETROMETER RESISTANCE T - POCKET TORVANE SHEAR STRENGTH												REMARKS: Boring was backfilled with auger clippings.

LOG OF BORING 16-7404 INFIL.GPJ MIDCOAST.GDT 5/30/16

LOG OF BORING P7



3124 El Camino Real Atascadero CA 93422
Telephone: 805-461-0965 Fax:

CLIENT: Harrod Etal
PROJECT: Beechwood Subdivision
LOCATION: Beechwood Drive / Meadowlark Road, Paso Robles
NUMBER: 16-7404

DATE(S) DRILLED: 2/24/2016

DRILLING METHOD(S):

B24 Mobile Auger Drill Rig

GROUNDWATER INFORMATION:

No ground water encountered at time of drilling.

SURFACE ELEVATION:

DESCRIPTION OF STRATUM

Brown sandy CLAY w/gravel, soft, moist

Light brown clayey SAND, hard, moist

Boring was terminated at 15' below grade.

REMARKS:

Boring was backfilled with auger clippings.

FIELD DATA

LABORATORY DATA

CLASS.

DEPTH (FT)	SAMPLES N: BLOWS/FT P: TONS/SQ FT T: TONS/SQ FT PERCENT RECOVERY/ ROCK QUALITY DESIGNATION	MOISTURE CONTENT (%)	DRY DENSITY POUNDS/CU.FT	RELATIVE COMPACTION (%)	ATTERBERG LIMITS			EXPANSION INDEX	MINUS NO. 200 SIEVE (%)	USCS	SOIL SYMBOL	SOIL TYPE
					LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX					
					LL	PL	PI					
1												
2												
3												
4												
5												
6												
7												
8												
9												
10												
11												
12												
13												
14												
15												

N - STANDARD PENETRATION TEST RESISTANCE
P - POCKET PENETROMETER RESISTANCE
T - POCKET TORVANE SHEAR STRENGTH

LOG OF BORING 16-7404 INFIL.GPJ MIDCOAST.GDT 5/30/16

LOG OF BORING P8



3124 El Camino Real Atascadero CA 93422
Telephone: 805-461-0965 Fax:

CLIENT: Harrod Etal
PROJECT: Beechwood Subdivision
LOCATION: Beechwood Drive / Meadowlark Road, Paso Robles
NUMBER: 16-7404

DATE(S) DRILLED: 2/24/2016

DRILLING METHOD(S):

B24 Mobile Auger Drill Rig

GROUNDWATER INFORMATION:

No ground water encountered at time of drilling.

SURFACE ELEVATION:

DESCRIPTION OF STRATUM

Brown sandy CLAY, firm, moist

Light brown sandy CLAY, stiff, damp

Light brown clayey SAND, hard, damp

Boring was terminated at 15' below grade

REMARKS:

Boring was backfilled with auger clippings.

FIELD DATA

LABORATORY DATA

CLASS.

DEPTH (FT)	SAMPLES	N: BLOWS/FT P: TONS/SQ FT T: TONS/SQ FT PERCENT RECOVERY/ ROCK QUALITY DESIGNATION	MOISTURE CONTENT (%)	DRY DENSITY POUNDS/CU.FT	RELATIVE COMPACTION (%)	ATTERBERG LIMITS			EXPANSION INDEX	MINUS NO. 200 SIEVE (%)	USCS	SOIL SYMBOL	SOIL TYPE
						LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX					
						LL	PL	PI					
1													
2													
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													

N - STANDARD PENETRATION TEST RESISTANCE
P - POCKET PENETROMETER RESISTANCE
T - POCKET TORVANE SHEAR STRENGTH

LOG OF BORING 16-7404 INFIL.GPJ MIDCOAST.GDT 5/30/16

LOG OF BORING P9



3124 El Camino Real Atascadero CA 93422
Telephone: 805-461-0965 Fax:

CLIENT: Harrod Etal
PROJECT: Beechwood Subdivision
LOCATION: Beechwood Drive / Meadowlark Road, Paso Robles
NUMBER: 16-7404
DATE(S) DRILLED: 2/24/2016

FIELD DATA				LABORATORY DATA						CLASS.		DRILLING METHOD(S): B24 Mobile Auger Drill Rig	
DEPTH (FT)	SAMPLES	N: BLOWS/FT P: TONS/SQ FT T: TONS/SQ FT PERCENT RECOVERY/ ROCK QUALITY DESIGNATION	MOISTURE CONTENT (%)	DRY DENSITY POUNDS/CU.FT	RELATIVE COMPACTION (%)	ATTERBERG LIMITS			EXPANSION INDEX	MINUS NO. 200 SIEVE (%)	USCS	SOIL SYMBOL	SOIL TYPE
						LL	PL	PI					
						LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX					
GROUNDWATER INFORMATION: No ground water encountered at time of drilling.													
SURFACE ELEVATION:													
DESCRIPTION OF STRATUM													
1													Brown clayey SAND, medium dense, damp
2													
3													Light brown silty SAND, cemented, hard, damp
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													Boring was terminated at 15' below grade.
N - STANDARD PENETRATION TEST RESISTANCE P - POCKET PENETROMETER RESISTANCE T - POCKET TORVANE SHEAR STRENGTH													REMARKS: Boring was backfilled with auger clippings.

LOG OF BORING P10



3124 El Camino Real Atascadero CA 93422
Telephone: 805-461-0965 Fax:

CLIENT: Harrod Etal
PROJECT: Beechwood Subdivision
LOCATION: Beechwood Drive / Meadowlark Road, Paso Robles
NUMBER: 16-7404
DATE(S) DRILLED: 2/24/2016

FIELD DATA				LABORATORY DATA						CLASS.		DRILLING METHOD(S): B24 Mobile Auger Drill Rig	
DEPTH (FT)	SAMPLES	N: BLOWS/FT P: TONS/SQ FT T: TONS/SQ FT PERCENT RECOVERY/ ROCK QUALITY DESIGNATION	MOISTURE CONTENT (%)	DRY DENSITY POUNDS/CU.FT	RELATIVE COMPACTION (%)	ATTERBERG LIMITS			EXPANSION INDEX	MINUS NO. 200 SIEVE (%)	USCS	SOIL SYMBOL	SOIL TYPE
						LL	PL	PI					
						LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX					
1													
2													
3													
													GROUNDWATER INFORMATION: No ground water encountered at time of drilling.
													SURFACE ELEVATION: DESCRIPTION OF STRATUM Brown clayey SAND w/ gravel, medium dense, damp
													Refusal at 3' on Large Gravel
N - STANDARD PENETRATION TEST RESISTANCE P - POCKET PENETROMETER RESISTANCE T - POCKET TORVANE SHEAR STRENGTH													REMARKS: Boring was backfilled with auger clippings.

LOG OF BORING 16-7404 INFIL.GPJ MIDCOAST.GDT 5/30/16

LOG OF BORING P11



3124 El Camino Real Atascadero CA 93422
Telephone: 805-461-0965 Fax:

CLIENT: Harrod Etal
PROJECT: Beechwood Subdivision
LOCATION: Beechwood Drive / Meadowlark Road, Paso Robles
NUMBER: 16-7404

DATE(S) DRILLED: 2/24/2016

DRILLING METHOD(S):
B24 Mobile Auger Drill Rig

GROUNDWATER INFORMATION:
No ground water encountered at time of drilling.

SURFACE ELEVATION:

DESCRIPTION OF STRATUM

Brown clayey SAND w/gravel, medium dense, damp

Light brown sandy CLAY w/ gravel, stiff, damp

Refusal at 7' on Large Gravel

REMARKS:

Boring was backfilled with auger clippings.

FIELD DATA

LABORATORY DATA

CLASS.

DEPTH (FT)	SAMPLES	N: BLOWS/FT P: TONS/SQ FT T: TONS/SQ FT PERCENT RECOVERY/ ROCK QUALITY DESIGNATION	MOISTURE CONTENT (%)	DRY DENSITY POUNDS/CU.FT	RELATIVE COMPACTION (%)	ATTERBERG LIMITS			EXPANSION INDEX	MINUS NO. 200 SIEVE (%)	USCS	SOIL SYMBOL	SOIL TYPE
						LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX					
						LL	PL	PI					
1													
2													
3													
4													
5													
6													
7													

N - STANDARD PENETRATION TEST RESISTANCE
P - POCKET PENETROMETER RESISTANCE
T - POCKET TORVANE SHEAR STRENGTH

LOG OF BORING 16-7404 INFIL.GPJ MIDCOAST.GDT 5/30/16

LOG OF BORING P12



3124 El Camino Real Atascadero CA 93422
Telephone: 805-461-0965 Fax:

CLIENT: Harrod Etal
PROJECT: Beechwood Subdivision
LOCATION: Beechwood Drive / Meadowlark Road, Paso Robles
NUMBER: 16-7404

DATE(S) DRILLED: 2/24/2016

FIELD DATA				LABORATORY DATA						CLASS.		DRILLING METHOD(S): B24 Mobile Auger Drill Rig	
DEPTH (FT)	SAMPLES	N: BLOWS/FT P: TONS/SQ FT T: TONS/SQ FT PERCENT RECOVERY/ ROCK QUALITY DESIGNATION	MOISTURE CONTENT (%)	DRY DENSITY POUNDS/CU.FT	RELATIVE COMPACTION (%)	ATTERBERG LIMITS			EXPANSION INDEX	MINUS NO. 200 SIEVE (%)	USCS	SOIL SYMBOL	SOIL TYPE
						LL	PL	PI					
						LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX					
GROUNDWATER INFORMATION: No ground water encountered at time of drilling.													
SURFACE ELEVATION:													
DESCRIPTION OF STRATUM													
1													Aggregate Base
2													Brown clayey SAND w/gravel, medium dense, humid
3													Reddish brown sandy CLAY, stiff, moist
4													Reddish brown silty SAND, hard, damp
5													
6													Light brown sandy CLAY, stiff, damp
7													
8													
9													
10													
11													
12													
13													
14													Reddish brown clayey SAND, hard, damp
15													Boring was terminated at 15' below grade.
N - STANDARD PENETRATION TEST RESISTANCE P - POCKET PENETROMETER RESISTANCE T - POCKET TORVANE SHEAR STRENGTH												REMARKS: Boring was backfilled with auger clippings.	

LOG OF BORING 16-7404 INFIL.GPJ MIDCOAST.GDT 5/30/16

LOG OF BORING P13



3124 El Camino Real Atascadero CA 93422
Telephone: 805-461-0965 Fax:

CLIENT: Harrod Etal
PROJECT: Beechwood Subdivision
LOCATION: Beechwood Drive / Meadowlark Road, Paso Robles
NUMBER: 16-7404

DATE(S) DRILLED: 2/24/2016

FIELD DATA				LABORATORY DATA							CLASS.		DRILLING METHOD(S):		
DEPTH (FT)	SAMPLES	N: BLOWS/FT P: TONS/SQ FT T: TONS/SQ FT PERCENT RECOVERY/ ROCK QUALITY DESIGNATION	MOISTURE CONTENT (%)	DRY DENSITY POUNDS/CU.FT	RELATIVE COMPACTION (%)	ATTERBERG LIMITS			EXPANSION INDEX	MINUS NO. 200 SIEVE (%)	USCS	SOIL SYMBOL	SOIL TYPE	GROUNDWATER INFORMATION: No ground water encountered at time of drilling.	
						LL	PL	PI							
						LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX							
														SURFACE ELEVATION:	
														DESCRIPTION OF STRATUM	
1														Brown sandy CLAY, firm, damp	
2															
3															
4															
5														Light brown silty SAND, medium dense to hard, damp	
6															
7															
8															
9														Light brown sandy CLAY, stiff, damp	
10															
11															
12															
13														Boring was terminated at 15' below grade.	
14															
15															

N - STANDARD PENETRATION TEST RESISTANCE
P - POCKET PENETROMETER RESISTANCE
T - POCKET TORVANE SHEAR STRENGTH

REMARKS:
Boring was backfilled with auger clippings.

LOG OF BORING 16-7404 INFIL.GPJ MIDCOAST.GDT 5/30/16

LOG OF BORING P14



3124 El Camino Real Atascadero CA 93422
Telephone: 805-461-0965 Fax:

CLIENT: Harrod Etal
PROJECT: Beechwood Subdivision
LOCATION: Beechwood Drive / Meadowlark Road, Paso Robles
NUMBER: 16-7404

DATE(S) DRILLED: 2/24/2016

FIELD DATA				LABORATORY DATA							CLASS.		DRILLING METHOD(S): B24 Mobile Auger Drill Rig		
DEPTH (FT)	SAMPLES	N: BLOWS/FT P: TONS/SQ FT T: TONS/SQ FT PERCENT RECOVERY/ ROCK QUALITY DESIGNATION	MOISTURE CONTENT (%)	DRY DENSITY POUNDS/CU.FT	RELATIVE COMPACTION (%)	ATTERBERG LIMITS			EXPANSION INDEX	MINUS NO. 200 SIEVE (%)	USCS	SOIL SYMBOL	SOIL TYPE	GROUNDWATER INFORMATION: No ground water encountered at time of drilling.	
						LL	PL	PI							
						LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX							
														SURFACE ELEVATION:	
														DESCRIPTION OF STRATUM	
1														Brown silty SAND, medium dense, damp	
2														Brown sandy CLAY, stiff, damp	
3														Light brown clayey SAND, hard, damp	
4															
5															
6															
7															
8															
9															
10															
11															
12															
13															
14															
15														Boring was terminated at 15' below grade.	
N - STANDARD PENETRATION TEST RESISTANCE P - POCKET PENETROMETER RESISTANCE T - POCKET TORVANE SHEAR STRENGTH														REMARKS: Boring was backfilled with auger clippings.	

LOG OF BORING 16-7404 INFIL.GPJ MIDCOAST.GDT 5/30/16

LOG OF BORING P15



3124 El Camino Real Atascadero CA 93422
Telephone: 805-461-0965 Fax:

CLIENT: Harrod Etal
PROJECT: Beechwood Subdivision
LOCATION: Beechwood Drive / Meadowlark Road, Paso Robles
NUMBER: 16-7404

DATE(S) DRILLED: 2/24/2016

FIELD DATA				LABORATORY DATA						CLASS.		DRILLING METHOD(S):	
DEPTH (FT)	SAMPLES	N: BLOWS/FT P: TONS/SQ FT T: TONS/SQ FT PERCENT RECOVERY/ ROCK QUALITY DESIGNATION	MOISTURE CONTENT (%)	DRY DENSITY POUNDS/CU.FT	RELATIVE COMPACTION (%)	ATTERBERG LIMITS			EXPANSION INDEX	MINUS NO. 200 SIEVE (%)	USCS	SOIL SYMBOL	SOIL TYPE
						LL	PL	PI					
						LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX					
1													
2													
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													

N - STANDARD PENETRATION TEST RESISTANCE
P - POCKET PENETROMETER RESISTANCE
T - POCKET TORVANE SHEAR STRENGTH

REMARKS:
Boring was backfilled with auger clippings.

GROUNDWATER INFORMATION:
No ground water encountered at time of drilling.

SURFACE ELEVATION:

DESCRIPTION OF STRATUM

Brown clayey SAND, medium dense, humid

Brown sandy CLAY, stiff, damp

Light brown silty SAND, hard, damp

Boring was terminated at 15' below grade.

LOG OF BORING 16-7404 INFIL.GPJ MIDCOAST.GDT 5/30/16

Oak Tree Protection Plan

Beechwood Development

Prepared By

**Chip Tamagni
Certified Arborist #WE 6436-A
Certified Hazard Risk Assessor #1209**

**Steven Alvarez
Certified Arborist #WE 0511-A**

**P.O. Box 1311
Templeton, CA 93465
(805) 434-0131**

A & T ARBORISTS

P.O. BOX 1311 TEMPLETON, CA 93465 (805)
434-0134



As consulting arborists, we have been hired to inform and educate how to protect trees both during the design phase and construction. Different species can adapt to more impacts than others just as young trees can sustain more root disturbance than older trees. All individuals and firms involved in the planning stages should be made completely aware of the limitations regarding setbacks from critical root zones that are recommended to protect the trees. When we are given a plan, it should show **all** possible disturbances within the critical root zone areas. This includes all cuts, fills, over-excavation limits, building clearances, and all utilities. We will suggest changes if we feel the impacts are too great and it is up to the owner or their designee to follow our recommendations. If the plan we receive is not complete with potential impacts, we will fairly assume any additions will fall completely out of the critical root zone areas. It is the burden of the property owner or their designee to inform us of any changes, omissions, or deletions that may impact the critical root zone area of the trees in any way.

It is the responsibility of the **owner** or their designee to provide a copy of this tree protection plan to any and all contractors and subs that work within the critical root zone of any native oak tree. We recommend making it mandatory that the grading/trenching operator have all of his/her employees sign that they have read this plan. It is highly recommended that all other contractors sign and acknowledge this tree protection plan as well. In addition, each their respective employees shall be made aware of this tree plan.

The term “critical root zone” is often referred to in this report. The CRZ is an imaginary circle around the trunk of the tree with a radius in feet equal to the tree’s diameter in inches. Therefore, a 10 inch diameter tree would have a critical root zone with a 10 foot radius.

This tree evaluation and protection plan is in regard to the Beechwood housing development. We originally visited the site with a set of plans and tagged all the native oaks with regard to size, condition, and impacts. Our total tree count for the development was 105 oak trees consisting of one valley oak (*Quercus lobata*) and 104 blue oaks (*Quercus douglasii*). The removals numbered approximately 27 trees. We worked with the developer in shifting some of the roads which has reduced the removal number to 21 with one of those trees being dead. The majority of these trees are in poor condition. We still have a few more trees that may be able to be saved as long as engineering parameters allow. We would like to see tree #92 saved as it is a high quality tree. Maybe skewing the road to the north a little bit might work. This is a quality tree worth at least exploring some options. Trees #59, 72, 74, and 50 are located in the middle of a road. If the whole road could be shifted west, may three of these trees could be saved with the exception of 72 which is the lowest quality tree of the four. The other three trees are not specimen trees but are worth exploring to save. If the tree removals can be limited with the above recommendations, 10 of the 16 removals will be low quality trees, three will be average

quality trees and the last three will be of better quality. For a project of this magnitude, we feel this is very acceptable. Once the final disposition is made with regard to which trees will be preserved, we will photograph the planned removals for city council approval.

Trees #34, 45, 61, and 49 at a minimum will require tree wells to keep fill off of the trunks. There may be a few others as the plans are finalized depending on exact fill lines. These decisions will be at the project arborist's discretion. Any tree that has any cut within the critical root zone shall have proper root pruning performed by the project arborist. The general contractor shall be responsible for applying moisture to the cut face within the crz and covering it with burlap stapled to the ground. This area shall be thoroughly wetted and then covered with mulch three inches deep. If mulch cannot be applied within 24 hours of the grading, the ground shall at least be covered with burlap and wetted daily until mulching is possible.

The plans we worked with did not include individual lots or utilities which will be developed at a later date. All utilities shall be planned outside of all crzs unless the owner is prepared to bore or hand dig leaving all roots over one inch in diameter intact. Advanced plotting of utilities shall include arborist instruction with regard to the trees.

All lots that have oak trees shall be designed with a building envelope that keeps all disturbance outside of the crz. If some disturbance is required to fit a home/driveway on a specific lot, the project arborist shall be made aware of this beforehand in case the impact is too great and changes can still be made.

Project monitoring shall be fully documented for this project. For all trees impacted, the project arborist is required to be on site for advice, documentation, and recommendation of any possible mitigation measures.

Part of a responsible tree preservation plan is not only protecting trees during construction but actually acting to preserve the trees for the long term. The trees on this site shall be pruned for weight reduction and elimination of all mistletoe and major deadwood. This action will reduce risk of future failures and promote better healing when dead stubs are removed.

Projects usually require an on-site pre-construction meeting with the city, owner, grading contractor and the arborist. Topics will include fencing, monitoring and requirements for a positive final occupancy letter. It is the owner's responsibility to adequately inform us prior to any meetings where we need to be present.

All trees potentially impacted by this project are numbered and identified on both the grading plan and the spreadsheet. Trees whose CRZ edges are greater than 50 feet from site disturbance will generally not be tagged and inventoried. Trees that are inherently protected by other saved trees will also not be tagged. Trees are numbered on the grading plans and in the field with an aluminum tag. Tree protection fencing is shown on the grading plan.

Tree Rating System

A rating system of 1-10 was used for visually establishing the overall condition of each tree on the spreadsheet.

Determining factors include:

- Previous impacts to tree root zone
- Observation of cavities, conks or other structurally limiting factors
- Pest, fungal, or bacterial disorders
- Past failures
- Current growth habit

The rating system is defined as follows:

<u>Rating</u>	<u>Condition</u>
0	Deceased
1	Evidence of massive past failures, extreme disease and is in severe decline.
2	May be saved with attention to class 4 pruning, insect/pest eradication and future monitoring.
3	Some past failures, some pests or structural defects that may be mitigated by class IV pruning.
4	May have had minor past failures, excessive deadwood or minor structural defects that can be mitigated with pruning.
5	Relatively healthy tree with little visual structural and or pest defects.
6	Healthy tree that probably can be left in its natural state. Future pruning may be required.
7-9	The tree has had proper arboricultural pruning and attention or have no apparent structural defects.
10	Specimen tree with perfect shape, structure and foliage in a protected setting (i.e. park, arboretum).

The following mitigation measures/methods must be fully understood and followed by anyone working within the drip line of any native tree. Any necessary clarification will be provided by us (the arborists) upon request.

Fencing: The proposed fencing shall be shown in orange ink on the grading plan. It must be a minimum of 4' high chain link, snow or safety fence staked at the edge of the CRZ or line of encroachment for each tree or group of trees. The fence shall be up before any construction or earth moving begins. The owner or their designee shall be responsible for maintaining an erect fence throughout the construction period. The arborist(s), upon notification, will inspect the fence placement once it is erected. After this time, fencing shall not be moved without arborist inspection/approval. If the orange plastic fencing is used, a minimum of four zip ties shall be used on each stake to secure

the fence. All efforts shall be made to maximize the distance from each saved tree. The fencing must be constructed prior to the city pre-construction meeting for inspection by the city and the arborists. Fence maintenance is an issue with many job sites. Windy conditions and other issues can cause the fence to sag and fall. Keeping it erect should be a part of any general contractor's bid for a project. Down fencing is one of the causes for a stop work notice to be placed on a project.

Soil Aeration Methods: Soils within the CRZ that have been compacted by heavy equipment and/or construction activities must be returned to their original state before all work is completed. Methods include adding specialized soil conditioners, water jetting, adding organic matter, and boring small holes with an auger (18" deep, 2-3' apart with a 2-4" auger) and the application of moderate amounts of nitrogen fertilizer. The arborist(s) shall advise.

Chip Mulch: All areas within the CRZ of the trees that cannot be fenced shall receive a 4-6" layer of chip mulch to retain moisture, soil structure and reduce the effects of soil compaction.

Trenching Within CRZ: All trenching/excavation for foundations within the CRZ of native trees shall be **hand dug**. All major roots shall be avoided whenever possible. All exposed roots larger than 1" in diameter shall be clean cut with sharp pruning tools and not left ragged. A **Mandatory** meeting between the arborists and grading/trenching contractor(s) shall take place prior to work start. This activity shall be monitored by the arborist(s) to insure proper root pruning is taking place. Any landscape architects and contractors involved shall not design any irrigation or other features within any drip line unless previously approved by the project arborist.

Grading Within CRZ: Grading shall not encroach within the drip line unless approved by the project arborist. Grading should not disrupt the normal drainage pattern around the trees. Fills should not create a ponding condition and excavations should not leave the tree on a rapidly draining mound.

Exposed Roots: Any exposed roots shall be re-covered the same day they were exposed. If they cannot, they must be covered with burlap or another suitable material and wetted down 2x per day until re-buried.

Paving Within The CRZ: The preferred method on paving within the drip line consists of placing base material on existing grade. Any grade lowering removes important surface roots. Pavers can be used with limitations. The base material must be above natural grade and the curbing to retain the pavers shall not be trenched any deeper than six inches into the natural grade.

Equipment Operation: Vehicles and all heavy equipment shall not be driven under the trees, as this will contribute to soil compaction. Also there is to be no parking of equipment or personal vehicles in these areas. All areas behind fencing are off limits unless pre-approved by the arborist. All soil compaction within drip line areas shall be mitigated as described previously.

Existing Surfaces: The existing ground surface within the CRZ of all native trees shall not be cut, filled, compacted or pared, unless shown on the grading plans **and** approved by the arborist.

Construction Materials And Waste: No liquid or solid construction waste shall be dumped on the ground within the CRZ of any native tree. The CRZ areas are not for storage of materials either. Any violations shall be remedied through proper cleanup approved by the project arborist at the expense of the owner.

Arborist Monitoring: An arborist shall be present for selected activities (trees identified on spreadsheet and items bulleted below). The monitoring does not necessarily have to be continuous but observational at times during these activities. It is the responsibility of the owner(s) or their designee to inform us prior to these events so we can make arrangements to be present. It is the responsibility of the owner to contract (prior to construction) a locally licensed and insured arborist that will document all monitoring activities.

- pre-construction fence placement
- any utility or drainage trenching within any CRZ
- All grading and trenching near trees requiring monitoring on the spreadsheet

Pre-Construction Meeting: An on-site pre-construction meeting with the Arborist(s), Owner(s), Planning Staff, and all contractors and subs is highly recommended prior to the start of any work. At a minimum, the grading contractor shall be present. It is the sole responsibility of the owner that all topics covered during the preconstruction meeting are appropriately passed on to non-present contractors. Prior to final occupancy, a letter from the arborist(s) shall be required verifying the health and condition of all impacted trees and providing any recommendations for any additional mitigation. The letter shall verify that the arborist(s) were on site for all grading and/or trenching activity that encroached into the CRZ of the selected native trees, and that all work done in these areas was completed to the standards set forth above.

Pruning: All native tree pruning shall be completed by a licensed and insured D49 tree trimming contractor that has a valid city business license. Class II pruning consists of removal of dead, dying, decaying, interfering, obstructing and weak branches as well as selective thinning to lesson wind resistance. Class IV pruning includes: Crown reduction pruning consisting of reduction of tops, sides or individual limbs in and effort to prevent future major breakage. A trained arborist shall perform all pruning. Any tree company working on site shall have a certified arborist on staff that is on the City of Paso Robles's approved list. No pruning shall take more than 25% of the live crown of any native tree without the project arborist's approval. Any trees that may need pruning for road/home clearance shall be pruned **prior** to any grading activities to avoid any branch tearing. Absolutely to skill saw pruning is allowed.

Landscape: All landscape under the CRZ shall be drought tolerant or native varieties. Lawns shall be avoided. All irrigation trenching shall be routed around drip lines; otherwise above ground drip-irrigation shall be used. It is the owner's responsibility to notify the landscape architect and contractor regarding this mitigation.

The project arborist shall approve all landscape materials and irrigation within the CRZ of any oak tree.

Utility Placement: All utilities and sewer/storm drains shall be placed down the roads/driveways and when possible outside of the CRZ. If roads exist between two trees, the utilities shall be routed down the middle of the road or completely hand dug. The arborist shall supervise trenching within the CRZ. **All trenches in these areas shall be exposed by air spade or hand dug with utilities routed under/over the roots.** Roots greater than 2 inches in diameter shall **not** be cut.

Fertilization and Cultural Practices: As the project moves toward completion, the arborist(s) may suggest fertilization, insecticide, fungicide, soil amendments, and/or mycorrhiza applications that will benefit tree health.

The included spreadsheet includes trees listed by number, species and multiple stems if applicable, diameter and breast height (4.5'), condition (scale from poor to excellent), status (avoided, impacted, removed, exempt), percent of drip line impacted, mitigation required (fencing, root pruning, monitoring), construction impact (trenching, grading), recommended pruning and individual tree notes.

Final Inspection Letter: Upon project completion, the City of Paso Robles shall require a final letter from the project arborist. This final inspection shall note any problems with the trees ranging from failure to monitor critical root zone activities, improper pruning such as leaving stubs, and any visual declining tree health.

If **all** the above mitigation measures are followed, we feel there will be no additional long-term significant impacts to the remaining native trees.

A & T Arborists strongly suggests that the responsible party (owner of their designee) make copies of this report. Any reproduction by A & T Arborists or changes to this original report will require an additional charge.

Please let us know if we can be of any future assistance to you for this project.

Chip Tamagni
Certified Arborist #WE 6436-A
CA State Pest Control Advisor and Applicator
ISA Certified Hazard Risk Assessor #1209
Cal Poly B.S. Forestry and Natural Resources Management

TREE PROTECTION SPREAD SHEET

1	2	3	4	5	6	7	8	9	10	11	12	13	14
TREE #	TREE SPECIES	SCIENTIFIC NAME	TRUNK DBH	TREE COND.	CONST STATUS	CRZ % IMPACT	CONST IMPACT	MITIGATION PROPOSAL	MONT REQUIRED	PRUNING CLASS	AESTH. VALUE	FIELD NOTES	NS EW
1	BO	<i>Q. doug.</i>	26	3	I	?	GR	F,RP,M	YES	II, IV	fair	Suppressed	25/25
2	BO	<i>Q. doug.</i>	36	4	I	?	GR	F,RP,M	YES	II, IV	good		50/50
3	BO	<i>Q. doug.</i>	44	2	I	15%	GR	F,RP,M	YES	II, IV	good	Cavity/ Decay	45/45
4	BO	<i>Q. doug.</i>	24	3	A	0%	NONE	F	NO	II, IV	good	Mistletoe	40/40
5	BO	<i>Q. doug.</i>	28	1	A	0%	NONE	F	NO	II, IV	fair	Mass Failure	40/35
6	BO	<i>Q. doug.</i>	25	2	A	0%	NONE	F	NO	II, IV	fair	Failure	40/40
7	BO	<i>Q. doug.</i>	13	4	A	0%	NONE	F	NO	II, IV	good		25/25
8	BO	<i>Q. doug.</i>	16	4	A	0%	NONE	F	NO	II, IV	good		40/35
9	BO	<i>Q. doug.</i>	16	3	A	0%	NONE	F	NO	II, IV	good		25/25
10	BO	<i>Q. doug.</i>	16	4	A	0%	NONE	F	NO	II, IV	good		25/25
11	BO	<i>Q. doug.</i>	6	2	A	0%	NONE	F	NO	II, IV	fair	Suppressed	10/10
12	BO	<i>Q. doug.</i>	25	3	A	0%	NONE	F	NO	II, IV	fair	suppressed by 13	30/40
13	BO	<i>Q. doug.</i>	28	5	A	0%	NONE	F	NO	II, IV	fair	Mistletoe	60/60
14	BO	<i>Q. doug.</i>	20	4	A	0%	NONE	F	NO	II, IV	good		50/40
15	BO	<i>Q. doug.</i>	17	4	A	0%	NONE	F	NO	II, IV	fair		40/40
16	BO	<i>Q. doug.</i>	15	0	A	0%	NONE	F	NO	II, IV	poor	DEAD	
17	BO	<i>Q. doug.</i>	18	0	A	0%	NONE	F	NO	II, IV	poor	DEAD	
18	BO	<i>Q. doug.</i>	13	2	A	0%	NONE	F	NO	II, IV	fair		25/20
19	BO	<i>Q. doug.</i>	15	4	A	0%	NONE	F	NO	II, IV	fair		25/25
20	BO	<i>Q. doug.</i>	9	2	A	0%	NONE	F	NO	II, IV	fair		15/15

1 = TREE #: MOSTLY CLOCKWISE FROM DUE NORTH

2 = TREE TYPE: COMMON NAME IE.W.O.= WHITE OAK

3= SCIENTIFIC NAME

4 = TRUNK DIAMETER @ 4'6"

5 = TREE CONDITION: 1 = POOR, 10 = EXCELLENT

6 = CONSTRUCTION STATUS: AVOIDED, IMPACTED, REMOVAL

7 = CRZ: PERCENT OF IMPACTED CRITICAL ROOT ZONE

8= CONSTRUCTION IMPACT TYPE: GRADING, COMPACTION, TRENCHING, FILL

9 = MITIGATION REQUIREMENTS: FENCING, MONITORING, ROOTPRUNING,

10 = ARBORIST MONITORING REQUIRED: YES/NO

11 = PERSCRIBED PRUNING: CLASS 1-4

12= AESTHETIC VALUE

13= FIELD NOTES

13= NORTH SOUTH/ EAST WEST CANOPY SPREAD

14= CANOPY SPREAD

15= LONG TERM SIGNIFICANT IMPACTS: HIGH, MEDIUM, LOW, NONE

16 = USEFUL LIFE EXPECTANCY

TREE PROTECTION SPREAD SHEET

15	16
LTSI	USEFUL
H-M-L-N	LIFE EXP.
?	60
?	50
low	25
none	60
none	25
none	25
none	75
none	75
none	75
none	75
none	40
none	35
none	75
none	60
none	70
none	0
none	0
none	45
none	55
none	65

TREE PROTECTION SPREAD SHEET

1	2	3	4	5	6	7	8	9	10	11	12	13	14
TREE #	TREE SPECIES	SCIENTIFIC NAME	TRUNK DBH	TREE COND.	CONST STATUS	CRZ % IMPACT	CONST IMPACT	MITIGATION PROPOSAL	MONT REQUIRED	PRUNING CLASS	AESTH. VALUE	FIELD NOTES	NS EW
21	BO	<i>Q. doug.</i>	15	4	A	0%	NONE	F	NO	II, IV	good		30/30
22	BO	<i>Q. doug.</i>	11	3	A	0%	NONE	F	NO	II, IV	good		15/15
23	BO	<i>Q. doug.</i>	21	4	A	0%	NONE	F	NO	II, IV	good		35/35
24	BO	<i>Q. doug.</i>	6	2	A	0%	NONE	F	NO	II, IV	fair	Suppressed	10/10
25	BO	<i>Q. doug.</i>	6	2	A	0%	NONE	F	NO	II, IV	fair	Suppressed	8/8
26	BO	<i>Q. doug.</i>	8	2	A	0%	NONE	F	NO	II, IV	fair	Suppressed	15/15
27	BO	<i>Q. doug.</i>	12	3	A	0%	NONE	F	NO	II, IV	fair		15/20
28	BO	<i>Q. doug.</i>	15	0	A	0%	NONE	NONE	NO		poor	DEAD	
29	BO	<i>Q. doug.</i>	8	2	A	0%	NONE	F	NO	II, IV	fair	Suppressed	15/10
30	BO	<i>Q. doug.</i>	11	3	A	0%	NONE	F	NO	II, IV	fair		15/15
31	BO	<i>Q. doug.</i>	18	4	A	0%	NONE	F	NO	II, IV	good		25/25
32	BO	<i>Q. doug.</i>	9	4	R	100%	FILL	NONE	NO		good		25/25
33	BO	<i>Q. doug.</i>	24	5	A	100%	NONE	F	NO	II, IV	excel.		35/35
34	BO	<i>Q. doug.</i>	26	4	I	10%	FILL	F,M	YES	II, IV	good	install tree well	40/40
35	BO	<i>Q. doug.</i>	24	4	R	100%	FILL	NONE	NO		good		30/30
36	BO	<i>Q. doug.</i>	21	5	A	0%	NONE	F	NO	II, IV	excel.		35/35
37	BO	<i>Q. doug.</i>	18	3	A	0%	NONE	F	NO	II, IV	fair	Decay	30/30
38	BO	<i>Q. doug.</i>	36	4	A	0%	NONE	F	NO	II, IV	excel.		45/45
39	BO	<i>Q. doug.</i>	21	2	A	0%	NONE	F	NO	II, IV	fair	In Decline	
40	BO	<i>Q. doug.</i>	32	1	R	100%	CUT	NONE	NO		good	Hollow	30/20

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5 = TREE CONDITION: 1 = POOR, 10 = EXCELLENT

6 = CONSTRUCTION STATUS: AVOIDED, IMPACTED, REMOVAL

7 = CRZ: PERCENT OF IMPACTED CRITICAL ROOT ZONE

8= CONSTRUCTION IMPACT TYPE: GRADING, COMPACTION, TRENCHING, FILL

9 = MITIGATION REQUIREMENTS: FENCING, MONITORING, ROOTPRUNING,

10 = ARBORIST MONITORING REQUIRED: YES/NO

11 = PERSCRIBED PRUNING: CLASS 1-4

12= AESTHETIC VALUE

13= FIELD NOTES

13= NORTH SOUTH/ EAST WEST CANOPY SPREAD

14= CANOPY SPREAD

15= LONG TERM SIGNIFICANT IMPACTS: HIGH, MEDIUM, LOW, NONE

16 = USEFUL LIFE EXPECTANCY

TREE PROTECTION SPREAD SHEET

15	16
LTSI	USEFUL
H-M-L-N	LIFE EXP.
none	60
none	55
none	60
none	40
none	40
none	40
none	45
none	0
none	20
none	55
none	65
	65
none	55
low	45
	45
none	45
none	55
none	35
none	35
	15

TREE PROTECTION SPREAD SHEET

1	2	3	4	5	6	7	8	9	10	11	12	13	14
TREE #	TREE SPECIES	SCIENTIFIC NAME	TRUNK DBH	TREE COND.	CONST STATUS	CRZ % IMPACT	CONST IMPACT	MITIGATION PROPOSAL	MONT REQUIRED	PRUNING CLASS	AESTH. VALUE	FIELD NOTES	NS EW
41	BO	<i>Q. doug.</i>	19	4	A	0%	NONE	F	NO	II, IV	Exel		35/35
42	BO	<i>Q. doug.</i>	36	2	A	0%	NONE	F	NO	II, IV	Fair	Hallow	35/35
43	BO	<i>Q. doug.</i>	25	4	A	0%	NONE	F	NO	II, IV	Exel		35/35
44	BO	<i>Q. doug.</i>	21	0	R	100%	GR	NONE	NO		Poor	Dead	
45	BO	<i>Q. doug.</i>	31	5	I	20%	FILL	F, M	YES	II, IV	Exel	Mistletoe	50/50
46	BO	<i>Q. doug.</i>	47	5	I	10%	GR	F,RP,M	YES	II, IV	Exel		65/65
47	BO	<i>Q. doug.</i>	32	2	R	100%	GR	NONE	NO		Good	Major Decay	45/545
48	BO	<i>Q. doug.</i>	36	3	I	5%	FILL	F, M	YES	II, IV	Good		50/40
49	BO	<i>Q. doug.</i>	15	4	I	20%	FILL	F, M	YES	II, IV	Good	tree well	25/25
50	BO	<i>Q. doug.</i>	26	3	R	100%	GR	NONE	NO		Good	2 Trunk	20/30
51	BO	<i>Q. doug.</i>	11	2	A	0%	NONE	F	NO	II, IV	Fair	Suppressed	10/15
52	BO	<i>Q. doug.</i>	12	4	A	0%	NONE	F	NO	II, IV	Good	Mistletoe	25/25
53	BO	<i>Q. doug.</i>	14	4	A	0%	NONE	F	NO	II, IV	Good	Mistletoe	25/25
54	BO	<i>Q. doug.</i>	14	4	A	0%	NONE	F	NO	II, IV	Good		25/25
55	BO	<i>Q. doug.</i>	22	3	A	0%	NONE	F	NO	II, IV	Good		25/25
56	BO	<i>Q. doug.</i>	18	4	A	0%	NONE	F	NO	II, IV	Fair		25/30
57	BO	<i>Q. doug.</i>	13	3	A	0%	NONE	F	NO	II, IV	Fair	Decay at Base	25/25
58	BO	<i>Q. doug.</i>	20	5	A	0%	NONE	F	NO	II, IV	Exel		25/25
59	BO	<i>Q. doug.</i>	30	3	R	100%	GR	NONE	NO		Good		25/30
60	BO	<i>Q. doug.</i>	28	4	A	0%	NONE	F	NO	II, IV	Exel		35/35

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9 = MITIGATION REQUIREMENTS: FENCING, MONITORING, ROOTPRUNING,

10 = ARBORIST MONITORING REQUIRED: YES/NO

11 = PERSCRIBED PRUNING: CLASS 1-4

12= AESTHETIC VALUE

13= FIELD NOTES

13= NORTH SOUTH/ EAST WEST CANOPY SPREAD

14= CANOPY SPREAD

15= LONG TERM SIGNIFICANT IMPACTS: HIGH, MEDIUM, LOW, NONE

16 = USEFUL LIFE EXPECTANCY

TREE PROTECTION SPREAD SHEET

15	16
LTSI	USEFUL
H-M-L-N	LIFE EXP.
none	60
none	30
none	50
	0
low	55
low	45
	35
low	45
low	65
	55
none	35
none	65
none	65
none	65
none	55
none	65
none	65
none	75
	35
none	45

TREE PROTECTION SPREAD SHEET

1	2	3	4	5	6	7	8	9	10	11	12	13	14
TREE #	TREE SPECIES	SCIENTIFIC NAME	TRUNK DBH	TREE COND.	CONST STATUS	CRZ % IMPACT	CONST IMPACT	MITIGATION PROPOSAL	MONT REQUIRED	PRUNING CLASS	AESTH. VALUE	FIELD NOTES	NS EW
61	BO	<i>Q. doug.</i>	36	5	I	25%	GR	F,RP,M	YES	II, IV	Exel	Mistletoe	70/60
62	BO	<i>Q. doug.</i>	37	2	R	100%	GR	NONE	NO		Fair	Bees, Major Decay	50/30
63	BO	<i>Q. doug.</i>	22	4	A	0%	NONE	F	NO	II, IV	Good		30/40
64	BO	<i>Q. doug.</i>	34	5	A	0%	NONE	F	NO	II, IV	Exel		45/45
65	BO	<i>Q. doug.</i>	20	4	I	20%	GR	F,RP,M	YES	II, IV	Good		30/30
66	BO	<i>Q. doug.</i>	27	4	A	0%	NONE	F	NO	II, IV	Good		45/50
67	BO	<i>Q. doug.</i>	37	1	A	0%	NONE	F	YES	II, IV	Fair	Bees & Decay	40/30
68	BO	<i>Q. doug.</i>	36	1	I	15%	GR	F,RP,M	NO	II, IV	Good	Major Cavity	25/25
69	BO	<i>Q. doug.</i>	40	2	R	100%	GR	NONE	NO		Fair	Major Decay	25/30
70	BO	<i>Q. doug.</i>	26	1	R	100%	GR	NONE	NO		Fair	Hollow	25/25
71	BO	<i>Q. doug.</i>	33	2	A	0%	NONE	F	NO	II, IV	Good	Decay	30/30
72	BO	<i>Q. doug.</i>	28	2	R	100%	GR	NONE	NO		Good	Cavity	35/30
73	BO	<i>Q. doug.</i>	33	2	A	0%	NONE	F	NO	II, IV	Exel	Bees Major Cavity	40/35
74	BO	<i>Q. doug.</i>	33	3	R	100%	GR	NONE	NO			Cavity	40/30
75	BO	<i>Q. doug.</i>	60	4	I	20%	GR	F,RP,M	YES	II, IV	Exel		50/50
76	BO	<i>Q. doug.</i>	38	5	A	0%	NONE	F	NO	II, IV	Exel		60/60
77	BO	<i>Q. doug.</i>	40	2	R	100%	GR	NONE	NO		Good		35/35
78	BO	<i>Q. doug.</i>	33	4	I	20%	GR	F,RP,M	YES	II, IV	Exel		40/40
79	BO	<i>Q. doug.</i>	28	3	A	0%	NONE	F	NO	II, IV	Good		30/30
80	BO	<i>Q. doug.</i>	32	4	A	0%	NONE	F	NO	II, IV	Exel		30/30

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10 = ARBORIST MONITORING REQUIRED: YES/NO

11 = PERSCRIBED PRUNING: CLASS 1-4

12= AESTHETIC VALUE

13= FIELD NOTES

13= NORTH SOUTH/ EAST WEST CANOPY SPREAD

14= CANOPY SPREAD

15= LONG TERM SIGNIFICANT IMPACTS: HIGH, MEDIUM, LOW, NONE

16 = USEFUL LIFE EXPECTANCY

TREE PROTECTION SPREAD SHEET

15	16
LTSI	USEFUL
H-M-L-N	LIFE EXP.
low	50
	15
none	55
none	55
low	65
none	65
none	15
low	15
	15
	15
none	35
	25
none	25
	35
low	40
none	45
	35
low	45
none	45
none	55

TREE PROTECTION SPREAD SHEET

1	2	3	4	5	6	7	8	9	10	11	12	13	14
TREE #	TREE SPECIES	SCIENTIFIC NAME	TRUNK DBH	TREE COND.	CONST STATUS	CRZ % IMPACT	CONST IMPACT	MITIGATION PROPOSAL	MONT REQUIRED	PRUNING CLASS	AESTH. VALUE	FIELD NOTES	NS EW
81	BO	<i>Q. doug.</i>	46	3	I	15%	GR	F,RP,M	YES	II, IV	Good		30/35
82	BO	<i>Q. doug.</i>	40	3	I	15%	GR	F,RP,M	YES	II, IV	Good		30/25
83	BO	<i>Q. doug.</i>	36	4	I	15%	GR	F,RP,M	YES	II, IV	Good		30/30
84	BO	<i>Q. doug.</i>	28	4	A	0%	NONE	F	NO	II, IV	Good		25/25
85	BO	<i>Q. doug.</i>	31	3	A	0%	NONE	F	NO	II, IV	Fair		30/25
86	BO	<i>Q. doug.</i>	34	4	I	15%	GR	F,RP,M	YES	II, IV	Good	Hybrid	30/30
87	BO	<i>Q. doug.</i>	34	4	A	0%	NONE	F	NO	II, IV	Good		40/30
88	BO	<i>Q. doug.</i>	32	2	I	15%	GR	F,RP,M	YES	II, IV	Fair	Bad Scale	30/25
89	BO	<i>Q. doug.</i>	32	5	A	0%	NONE	F	NO	II, IV	Excel		50/50
90	BO	<i>Q. doug.</i>	35	5	A	0%	NONE	F	NO	II, IV	Excel		60/60
91	BO	<i>Q. doug.</i>	40	4	I	15%	GR	F,RP,M	YES	II, IV	Excel		65/65
92	BO	<i>Q. doug.</i>	32	4	R	100%	GR	NONE	NO		Excel	should try to save	50/50
93	BO	<i>Q. doug.</i>	32	2	R	100%	GR	NONE	NO		Fair	Hazard	30/40
94	BO	<i>Q. doug.</i>	53	4	I	15%	R	F,RP,M	YES	II, IV	Good		45/45
95	BO	<i>Q. doug.</i>	28	3	A	0%	NONE	F	NO	II, IV	Fair	prev. impact	35/35
96	BO	<i>Q. doug.</i>	36	4	R	100%	GR	NONE	NO		Excel	Mistletoe	45/45
97	VO	<i>Q. doug.</i>	24	3	R	100%	GR	NONE	NO		Good	Cavities	30/35
98	BO	<i>Q. doug.</i>	40	5	R	100%	GR	NONE	NO		Excel		50/55
99	BO	<i>Q. doug.</i>	53	1	R	100%	GR	NONE	NO		Fair	Hollow	60/45
100	BO	<i>Q. doug.</i>	48	2	R	100%	GR	NONE	NO		Fair	Past Failures	50/55

1 = TREE #: MOSTLY CLOCKWISE FROM DUE NORTH

2 = TREE TYPE: COMMON NAME IE.W.O.= WHITE OAK

3= SCIENTIFIC NAME

4 = TRUNK DIAMETER @ 4'6"

5 = TREE CONDITION: 1 = POOR, 10 = EXCELLENT

6 = CONSTRUCTION STATUS: AVOIDED, IMPACTED, REMOVAL

7 = CRZ: PERCENT OF IMPACTED CRITICAL ROOT ZONE

8= CONSTRUCTION IMPACT TYPE: GRADING, COMPACTION, TRENCHING, FILL

9 = MITIGATION REQUIREMENTS: FENCING, MONITORING, ROOTPRUNING,

10 = ARBORIST MONITORING REQUIRED: YES/NO

11 = PERSCRIBED PRUNING: CLASS 1-4

12= AESTHETIC VALUE

13= FIELD NOTES

13= NORTH SOUTH/ EAST WEST CANOPY SPREAD

14= CANOPY SPREAD

15= LONG TERM SIGNIFICANT IMPACTS: HIGH, MEDIUM, LOW, NONE

16 = USEFUL LIFE EXPECTANCY

TREE PROTECTION SPREAD SHEET

15	16
LTSI	USEFUL
H-M-L-N	LIFE EXP.
low	55
low	55
low	60
none	65
none	665
low	60
none	60
low	40
none	60
none	60
low	60
	65
	35
low	45
none	55
	55
	65
	65
	15
	20

TREE PROTECTION SPREAD SHEET

[illegible]

1 = TREE #: MOSTLY CLOCKWISE FROM DUE NORTH

2 = TREE TYPE: COMMON NAME IE.W.O.= WHITE OAK

3= SCIENTIFIC NAME

4 = TRUNK DIAMETER @ 4'6"

5 = TREE CONDITION: 1 = POOR, 10 = EXCELLENT

6 = CONSTRUCTION STATUS: AVOIDED, IMPACTED, REMOVAL

7 = CRZ: PERCENT OF IMPACTED CRITICAL ROOT ZONE

8= CONSTRUCTION IMPACT TYPE: **GRADING, COMPACTION, TRENCHING, FILL**

9 = MITIGATION REQUIREMENTS: FENCING, MONITORING, ROOTPRUNING,

10 = ARBORIST MONITORING REQUIRED: YES/NO

11 = PERSCRIBED PRUNING: CLASS 1-4

12= AESTHETIC VALUE

13= FIELD NOTES

13= NORTH SOUTH/ EAST WEST CANOPY SPREAD

14= CANOPY SPREAD

15= LONG TERM SIGNIFICANT IMPACTS: HIGH, MEDIUM, LOW, NONE

16 = USEFUL LIFE EXPECTANCY

TREE PROTECTION SPREAD SHEET

15	16
LTSI	USEFUL
H-M-L-N	LIFE EXP.
	35
none	45
none	30
low	30
low	55

Special Status Invertebrate Wet Season Survey

NINETY-DAY REPORT

USFWS TAKE PERMIT # TE-102310-3

**SURVEY FOR THE BEECHWOOD RANCH AREA SPECIFIC PLAN
IN PASO ROBLES, SAN LUIS OBISPO COUNTY, CALIFORNIA**

USFWS # 08EVEN00-2012-B-0070

Prepared By:



MITCHELL C. DALLAS

Branchiopod Surveyor
USFWS Take Permit #TE-102310-3
(805) 459-2907



DATE

I certify that the information in this survey report and attached exhibits fully and accurately represents my work.

Introduction

This report is required under United States Fish and Wildlife Service ESA §10(a)(1)(A) permit # TE-102310-3. The current permit expires on 9/7/18.

This report is submitted in fulfillment of conditions in the Permit, the Special Terms and Conditions for Mitchell C. Dallas and the U.S. Fish and Wildlife Service Interim Survey Guidance to Permittees of 4/19/15 that is attached to that permit. A full WET SEASON protocol level survey was conducted. Wet season sampling was conducted to determine the presence or absence of federally listed fairy and tadpole shrimp either within the project footprint or that may be affected by the project as a follow up to dry season surveys occurring in 2014.

Permission to conduct the survey was granted by email from Chris Kofron and Juile Vanderwier of the U.S. Fish and Wildlife Service Ventura Office on 11/19/15. The following authorized surveyor conducted surveys during the wet season: Mitchell C. Dallas.

A Vernal Pool Branchiopod Habitat Assessment of the Beechwood Ranch Area Specific Plan was prepared in April 2014 and the habitat features identified in this report follow the habitat feature number in the habitat assessment. The action area was surveyed following rain events in order to determine if any features (pools) held water on 11/29/15, 12/18/15, 12/28/15, 1/10/16, 1/24/16, 2/5/16, 3/6/16, 3/18/1, 4/2/16 & 4/23/16. In total, three features held water for a short duration. Feature # 16 and two tire ruts within feature #18 were the features that held water for a short duration. The features were surveyed on 3/6/16 (#16 & 18) & 3/18/16 (#18) and were dry by 4/2/16. See attached photos and data sheets.

A reproduction of a U. S. Geological Survey topographic Templeton quadrangle map is attached showing the location surveyed. The coordinates for feature #16 & 18 are located in the Required Information Section of this report and on the attached survey field data sheets.

The information presented below is presented in the same order and with the same numbering system used in the guidance.

Project Description: The proposed project will build new homes and roads in the Paso Robles area.

Required Information

1. The project site can be located on the attached U. S. Geological Survey Templeton, California, 7.5 minute topographic quadrangle map (Appendix 1). The location of the specific sites sampled is Township M27S Range 12E Section 11 Feature # 16 35°35.05934'

-120° 38.478' and feature #18 at 16 35°35.03216' -120° 38.6699'. The Beechwood feature #16 is highly disturbed. The feature #18 site show characteristics of past tilling of the soil and light cattle grazing.

Beechwood Vernal Pool Location		
USGS Templeton Quadrangle M27S 12E 11		
Location #	Latitude	Longitude
16	35°35.05934'	-120°38.478'
18	35°35.03216'	-120°38.6699'

2. A color aerial photo of the project location is included in the attached Appendix 2.
3. The estimated number of crustaceans observed in Pool #1 is listed in the attached data sheets. Estimates for the pool are as follows:

Species	Feature#16	#18
<i>Branchinecta lynchi</i>	N	N
<i>Branchinecta conservatio</i>	N	N
<i>Branchinecta longiantenna</i>	N	N
<i>Lepidurus packardi</i>	N	N
<i>Streptocephalus Woottoni</i>	N	N

Estimates are as per the guidance: none (N), few (F) (< 50) and many (M) (>50). Details are available in the attached data sheets.

4. Federally listed fairy and tadpole shrimp were not found, none were preserved.
5. Qualitative description of the vernal pool community: The action area is located in San Luis Obispo County within the City of Paso Robles. The feature # 16 is adjacent to Meadowlark Road and feature 18 is also adjacent Medowlark Road but set back further from the existing fence. .
6. Data collected during the field visits can be found on the attached wet season data sheets in Appendix 3. Listed vernal pool branchiopods were not observed during the surveys.
7. Additional water quality data: none.
8. The survey methodology used was that described in guidance attached to Permit # TE-102310-3 in order to determine the presence or absence of federally listed fairy and tadpole shrimp either within the project footprint or that may be affected by the project.

Conclusion

Federally listed fairy and tadpole shrimp were not found in the potential habitat features within the project action area (footprint) during this Wet Season protocol level survey.

Contact: If you have any questions or require more information about this project or the invertebrate survey, please contact Mitchell Dallas, Authorized Surveyor, TE-102310-3 at (805) 459-2907 or email **mitchdallas@hotmail.com**.

Appendices

Appendix 1.

USGS original scale map showing the area surveyed.

Appendix 2.

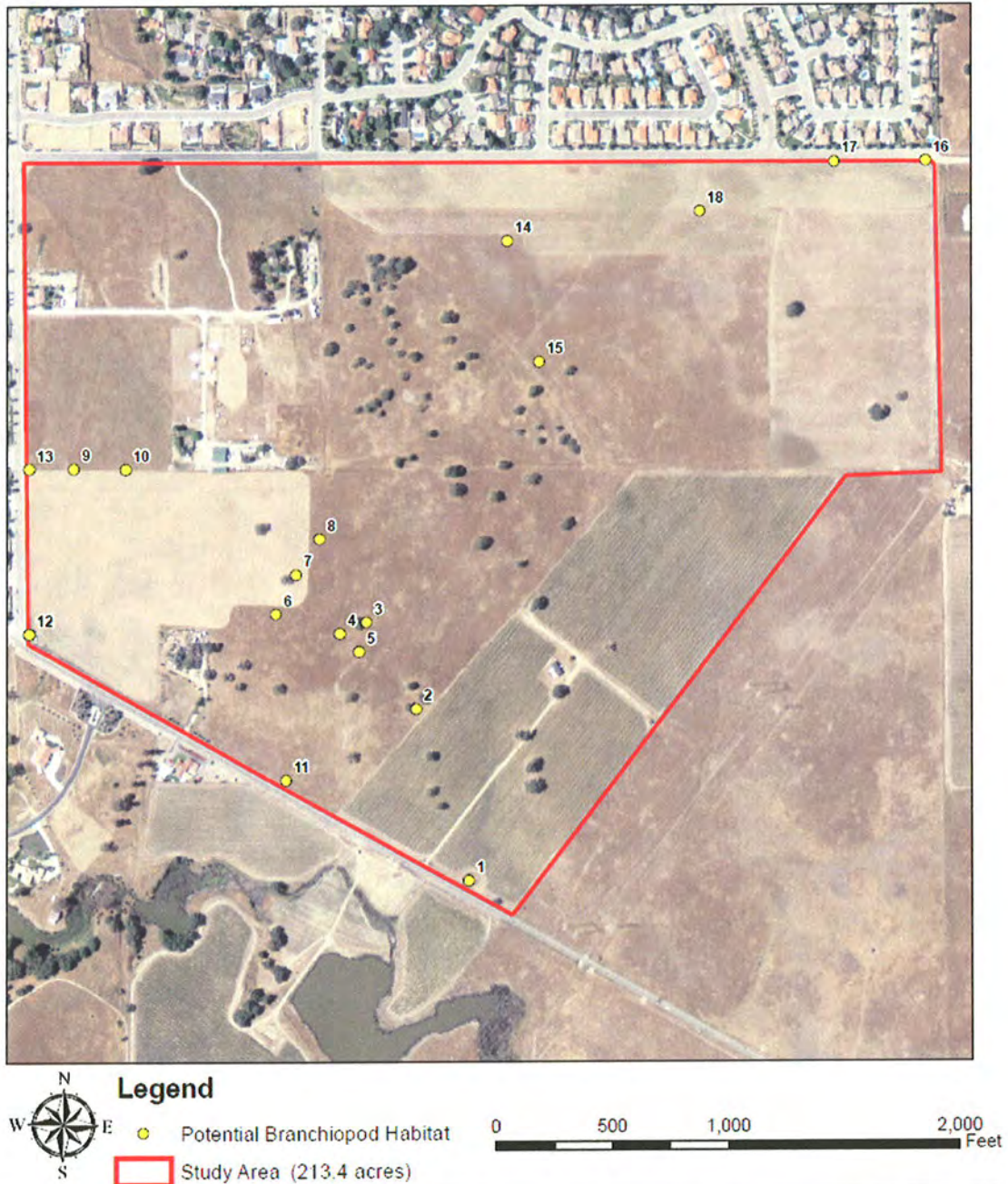
Aerial photo of the potential pool locations.

Appendix 3.

Wet Season Data Sheets and Photos

Appendix 2

Potential Branchiopod Habitat



Appendix 3

Wet Season Survey Data Sheets

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report: ___ no X yes

Required color slides and/or photographs for the project site are included: ___ no X yes

Date: 3/6/16 Time: 1230 County: CLO Quad: Templeton

Collector(s): M. Dallas Permit #: TE102310-

Site/Project Name: Beechwood Pool #: 16

Township: M27S Range: 12E Section: 11 35°35.05934' - 120°52.978 lat. long.

Temperature: Water: 58°F °C Air: 62°F °C

Pool Depth: at time of sampling: 3 1/2" cm Surface Area: 1 1/2' x 28'
estimated maximum: 8" cm at time of sampling: m x m
estimated maximum: m x m

Habitat Condition: (circle where appropriate)

- undisturbed disturbed: tire tracks garbage discing/plowing
- ungrazed grazed: cattle horses sheep other
light moderate heavy
- land use of habitat: Hay, cattle

(Optional) Water Chemistry Data None

Alkalinity (total): ppm or mg/l Conductivity: uMHO

Dissolved NH₄: ppt or ppm Dissolved Oxygen: ppm or mg/l

pH: Turbidity: (secchi disc depth) cm or: clear to bottom

Salinity: ppt or ppm Total Dissolved Solids (TDS): ppm

Notes:

37' 11"
28'

Pool just filled

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: *None*
(note reproductive status)

Notostracans: *None*
(note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no
Other (specify)		

Insects: (adult or larvae)

Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no
Other (specify)		

Voucher Specimens *None*

Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

<u>Species</u>	<u># Individuals</u>	<u>Accession/Catalog #</u>	<u>Pool #</u>
----------------	----------------------	----------------------------	---------------

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report: ___ no ☒ yes

Required color slides and/or photographs for the project site are included: ___ no ☒ yes

Date: 3/6/16 Time: 1:00 County: SLD Quad: Templeton

Collector(s): M. Dallas Permit #: TE102310-3

Site/Project Name: Beechwood Pool #: 18 rut #1

Township: N27S Range: 12E Section: 11 35°35.03216' -120°38.6699' lat. long.

Temperature: Water: 58.0 °C Air: 62 °C

Pool Depth: at time of sampling: 5" cm Surface Area: at time of sampling: 5' m x 5' m
estimated maximum: 12" cm estimated maximum: 30' x 2.5' m

Habitat Condition: (circle where appropriate)

- undisturbed disturbed: tire tracks garbage discing/plowing
- ungrazed grazed: cattle horses sheep other _____
 light moderate heavy
- land use of habitat: Hay cattle

(Optional) Water Chemistry Data None

Alkalinity (total): _____ ppm or mg/l Conductivity: _____ uMHO
Dissolved NH₄: _____ ppt or ppm Dissolved Oxygen: _____ ppm or mg/l
pH: _____ Turbidity: (secchi disc depth) _____ cm or: clear to bottom _____
Salinity: _____ ppt or ppm Total Dissolved Solids (TDS): _____ ppm

Notes:

2 sets of Time Ruts w/ rut #25
Due to Perk test? noted on left.
rut #1
rut #2
Brain

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans:
(note reproductive status) \emptyset

Notostracans:
(note reproductive status) \emptyset

(Optional) Species Observations:

Cladocerans: yes no

Conchostracans: yes no

Copepods: yes no

Ostracods yes no

Fish yes no

Frogs yes no

Salamanders yes no

Waterfowl yes no

Other (specify) _____

Insects: (adult or larvae)

Anisoptera: yes no

Zygoptera: yes no

Hydrophilidae: yes no

Dytiscidae: yes no

Corixidae: yes no

Notonectidae: yes no

Belostomatidae: yes no

Other (specify) _____

Voucher Specimens

Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

<u>Species</u>	<u># Individuals</u>	<u>Accession/Catalog #</u>	<u>Pool #</u>
----------------	----------------------	----------------------------	---------------

None

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report: ☐ no ☒ yes

Required color slides and/or photographs for the project site are included: no yes

Date: 3 / 18 / 16 Time: 5:20 County: SLO Quad: Templeton

Collector(s): M. Dallas Permit #: TE 102310-3

Site/Project Name: Beechwood Pool #: 18

Township: M27S Range: 12E Section: 16 lat. 44 long. 114

Temperature: Water: 66°F °C Air: 73°F °C

Pool Depth: _____ at time of sampling: 4.5 m

Surface Area: _____ at time of sampling: 12 m x 32 m

estimated maximum: 12 cm estimated maximum: _____ m x _____ m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed:	tire tracks	garbage	discing/plowing	
- ungrazed	grazed:	cattle	horses	sheep	other _____
		light	moderate	heavy	

- land use of habitat:

(Optional) Water Chemistry Data

Alkalinity (total): ppm or mg/l Conductivity: _____ uMHO

Dissolved NH_4 : _____ ppt or ppm Dissolved Oxygen: _____ ppm or mg/l

pH: _____ Turbidity: (secchi disc depth) _____ cm or: clear to bottom _____

Salinity : _____ ppt or ppm Total Dissolved Solids (TDS): _____ ppm

Notes:

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans:

(note reproductive status)

None

Notostracans:

(note reproductive status)

None

(Optional) Species Observations:

Cladocerans: yes no

Conchostracans: yes no

Copepods: yes no

Ostracods yes no

Fish yes no

Frogs yes no

Salamanders yes no

Waterfowl yes no

Other (specify) _____

Insects: (adult or larvae)

Anisoptera: yes no

Zygoptera: yes no

Hydrophilidae: yes no

Dytiscidae: yes no

Corixidae: yes no

Notonectidae: yes no

Belostomatidae: yes no

Other (specify) _____

Voucher Specimens

Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

<u>Species</u>	<u># Individuals</u>	<u>Accession/Catalog #</u>	<u>Pool #</u>
----------------	----------------------	----------------------------	---------------

**U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey**

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report: ___ no ☒ yes

Required color slides and/or photographs for the project site are included: ___ no ☒ yes

Date: 3/6/16 Time: 1:30 County: SLC Quad: Templeton

Collector(s): M. Dallas Permit #: TE 102310-3

Site/Project Name: Rockwood Pool #: 18 rt #2

Township: N27S Range: 12E Section: 11 35°51'03.216" N 120°38'00.99" W lat. ___ long.

Temperature: Water: 58°F oC Air: 62°F oC

Pool Depth: Surface Area:

at time of sampling: 3' cm at time of sampling: ___ m x ___ m

estimated maximum: 8' cm estimated maximum: ___ m x ___ m

Habitat Condition: (circle where appropriate)

- undisturbed	disturbed: <u>tire tracks</u>	garbage	<u>discing/plowing</u>	
- ungrazed	grazed: <u>cattle</u>	horses	sheep	other _____
		light	moderate	heavy
- land use of habitat:	<u>Hay cattle</u>			

(Optional) Water Chemistry Data None

Alkalinity (total): ___ ppm or mg/l

Dissolved NH₄: ___ ppt or ppm

pH: ___

Salinity : ___ ppt or ppm

Conductivity: ___ uMHO

Dissolved Oxygen: ___ ppm or mg/l

Turbidity: (secchi disc depth) ___ cm or: clear to bottom ___

Total Dissolved Solids (TDS): ___ ppm

Notes:

Pool # 2 u # 18

U.S. Fish and Wildlife Service Vernal Pool Data Sheet Wet Season Survey

Note: Please fill out the required information completely for each site visit.

1x2'

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans: (note reproductive status)

Notostracans: (note reproductive status)

(Optional) Species Observations:

Cladocerans:	yes	no
Conchostracans:	yes	no
Copepods:	yes	no
Ostracods	yes	no
Fish	yes	no
Frogs	yes	no
Salamanders	yes	no
Waterfowl	yes	no
Other (specify) _____		

Insects: (adult or larvae)

Anisoptera:	yes	no
Zygoptera:	yes	no
Hydrophilidae:	yes	no
Dytiscidae:	yes	no
Corixidae:	yes	no
Notonectidae:	yes	no
Belostomatidae:	yes	no
Other (specify) _____		

Voucher Specimens Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species

Individuals

Accession/Catalog #

Pool #

NONE

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

This form is being submitted to serve as part of the 90-day report: no ☒ yes

Required color slides and/or photographs for the project site are included: no ☒ yes

Date: 3/18/16 Time: 5:00 County: SLO Quad: Templeton

Collector(s): M. Dallas Permit #: TE 102210-3

Site/Project Name: Roachwood Pool #: 18 Rut#2

Township: N27S Range: 12E Section: 11 lat. 35°35.03216' long. 120°38.6494'

Temperature: Water: 16 °C Air: 73 °C

Pool Depth: at time of sampling: 2" cm Surface Area: 2' x 1.5'
estimated maximum: 8" - 10" cm estimated maximum: 6' x 3' m

Habitat Condition: (circle where appropriate)

- undisturbed ☒ disturbed: ☒ tire tracks ☐ garbage ☐ discing/plowing
- ungrazed ☐ grazed: ☒ cattle ☐ horses ☐ sheep ☐ other
☐ light ☐ moderate ☐ heavy
- land use of habitat: Hay

(Optional) Water Chemistry Data None

Alkalinity (total): ppm or mg/l

Conductivity: uMHO

Dissolved NH₄: ppt or ppm

Dissolved Oxygen: ppm or mg/l

pH: Turbidity: (secchi disc depth) cm or: clear to bottom

Salinity: ppt or ppm

Total Dissolved Solids (TDS): ppm

Notes: Pool smaller - still water

Ø

U.S. Fish and Wildlife Service Vernal Pool Data Sheet
Wet Season Survey

Note: Please fill out the required information completely for each site visit.

Species Observed: state none or estimate # of individuals present in terms of an order of magnitude (e.g., 10's, 100's, 1000's)

Anostracans:

(note reproductive status)

None

Notostracans:

(note reproductive status)

None

(Optional) Species Observations:

Cladocerans: yes no

Conchostracans: yes no

Copepods: yes no

Ostracods: yes no

Fish: yes no

Frogs: yes no

Salamanders: yes no

Waterfowl: yes no

Other (specify) _____

Insects: (adult or larvae)

Anisoptera: yes no

Zygoptera: yes no

Hydrophilidae: yes no

Dytiscidae: yes no

Corixidae: yes no

Notonectidae: yes no

Belostomatidae: yes no

Other (specify) _____

Voucher Specimens

Specimens shall be preserved according to the standards of the institution in which they will be accessioned.

Species

Individuals

Accession/Catalog #

Pool #



Beechwood feature # 16 on 3/6/16 looking east.



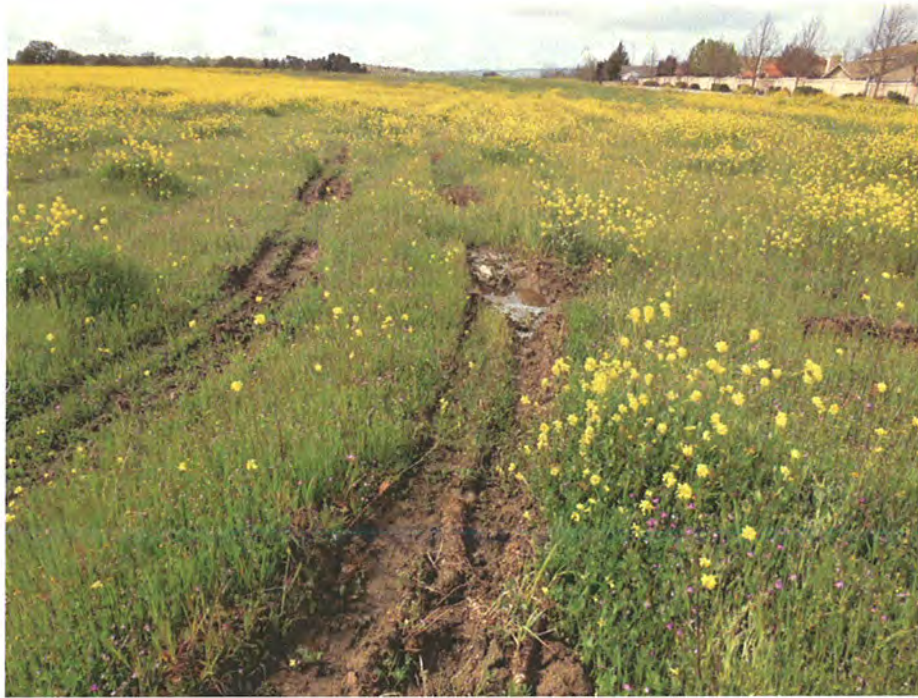
Beechwood feature #16 on 3/6/16 looking west



Beechwood feature #18 tire rut #1 on 3/6/16 looking west.



Beechwood feature #18 tire rut #1 on 3/6/16 looking east.



Beechwood feature #18 tire rut #2 on 3/6/16 looking west.



Beechwood feature #18 tire rut #2 on 3/6/16 looking east.



Beechwood feature #18 tire rut #1 on 3/18/16 looking west.



Beechwood feature #18 tire rut # 1 on 3/18/16 looking east.



Beechwood feature #18 tire rut #2 on 3/18/16 looking west.



Beechwood feature #18 tire rut #2 on 3/18/16 looking east.



United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ventura Fish and Wildlife Office
2493 Portola Road, Suite B
Ventura, California 93003



IN REPLY REFER TO:
08EVEN00-2016-CPA-0146

August 15, 2016

Beechwood Owner's Group
c/o Dan Lloyd
P.O. Box 378
Cayucos, California 93430

Subject: Beechwood Ranch Specific Plan, City of Paso Robles, County of San Luis
Obispo, California

Dear Mr. Lloyd:

This letter has been prepared to resolve a long-standing issue regarding possible presence of the federally listed threatened vernal pool fairy shrimp (*Branchinecta lynchi*) in seasonally inundated features found within the Beechwood Ranch Specific Plan Area (BRSPA).

The BRSPA is 236 acres comprised of 13 contiguous parcels located in the southeast corner of the City of El Paso de Robles. It is bordered by Meadowlark Road to the north, Beechwood Drive to the south, Creston Road to the south, and a PG&E transmission line easement to the east. The proposed plan includes predominantly residential development and the infrastructure to support it; a small amount of commercial use; and open space, parks, and multi-purpose trails. The property has been subject to limited residential use, viticulture and dry land farming, and grazing. When not farmed, required weed abatement has resulted in much of the property being shallowly disked. Existing surrounding land uses include residential development to the north and west and rural residential development and agriculture to the south and east.

An ongoing concern related to the development of this property has been the potential for vernal pool fairy shrimp to occur in seasonally inundated features onsite. Vernal pool fairy shrimp inhabit alkaline pools, ephemeral drainages, pools on rock outcrops, ditches, stream oxbows, stock ponds, vernal pools, vernal swales, and other seasonal wetlands. Such conditions are present onsite and the species is known from similar seasonally inundated features in this region of the County (Service files).

In August 2005, a vernal pool habitat assessment survey was conducted and 27 vernal pools¹ and 7 swales were identified; all were considered to be potential habitat for vernal pool fairy shrimp (Morro Group 2006). At this time, the proposed project was known as the Olsen Ranch

¹ The Ventura Fish and Wildlife Service considers those features identified on the Beechwood property to be seasonally inundated features rather than vernal pool as the latter are typically characterized by a unique suite of both plant and animals species not observed onsite.

Beechwood Specific Plan and comprised 484 acres. In February 2012, another habitat assessment survey was conducted, with 25 features being identified as having a potential hydroperiod sufficient for vernal pool branchiopods, in particular the vernal pool fairy shrimp, to complete a life cycle (Dallas 2012). The 2012 observations were made during relatively dry conditions.

In addition to the habitat assessment surveys, attempts to complete required wet season surveys were initiated by David Wolff in 2011 and Mitch Dallas in the 2011-2012 and 2012-2013; however, due to extended drought conditions, none were completed. When ponding was present, no branchiopods were observed by Mr. Dallas. Surveys were not attempted in the 2013-2014 season.

Another attempt to complete a wet season survey was made for the 2014-2015 season; however, ponding was not of a sufficient duration to complete the effort. A final habitat assessment survey was completed in 2014 to refine the 2005 and 2012 assessment results using observations made during a wet period combined with wet season ponding observations made during the 3 previous years (Dallas 2014). Mr. Dallas, the consulting biologist, and Service biologist Julie M. Vanderwier, further examined potential features in the field in June 2014 to confirm the need for surveys. Despite past disking activities, evidence of ponding in most features was discernable indicating their continued potential to function as habitat for branchiopod species. Based upon this field review, it was determined that 18 features should be the subject of dry season sampling and identification of any resting eggs present.

Service guidance in place in 2014 required the completion of either two wet season surveys within a 5-year period or one wet season survey and one dry season sampling effort for resting eggs within the same sampling year in order to address the question of species presence. Our current guidance requires the completion of both a wet season survey and dry season sampling effort within a 3-year period. In both cases, a wet season survey is considered part of the effort needed to comply with Service guidance.

Our 2015 survey guidance for listed large branchiopod species also provides for modifications or deviations if approved in writing by the Service prior to the commencement of the survey effort. Because climatological conditions have effectively precluded the landowners from addressing our concerns regarding the potential presence of the vernal pool fairy shrimp in one or more of the features on the BRSPA since 2005, we approved Mr. Dallas to go forward with the collection and identification of resting eggs as part of a dry season sampling effort that would otherwise follow this guidance. Mr. Dallas is currently permitted by special conditions 7(h)(i-iv) in recovery permit TE-102310-3 to process soil samples and identify resting eggs. The Service would then make a determination regarding species presence based upon the results of this work.

Mr. Dallas provided his survey results in a 90-day report submitted in March 2015. While information in the report indicates that no resting eggs of listed branchiopods were identified in any of the samples taken from the 18 features, in a conversation between Ms. Vanderwier and Mr. Dallas, he clarified that no resting eggs of any branchiopod species were detected. Despite any previous disturbance onsite and its potential to damage or destroy cysts, it is likely that resting eggs would still be detectable in these features if they had been occupied at some time in

the past. As such, it was Mr. Dallas' conclusion that these features are not suitable for occupation by vernal pool fairy shrimp or any other listed large branchiopod species.

As there were substantial, credible predictions that El Niño conditions for last winter would present conditions conducive to the completion of a wet season survey effort, we asked that a final attempt be made to complete a wet season survey and complete both wet and dry season surveys in accordance with our 2015 survey guidance. We did note that if rainfall amounts were again insufficient to complete a wet season survey, we would accept the results of the dry season sampling effort completed by Mr. Dallas and no further survey work would be required. The anticipated rainfall last winter did not materialize such that surveys sufficient to complete a full wet season protocol could be completed as documented in his 90-day report submitted on June 5, 2016. Based on these results we concur with Mr. Dallas' conclusion that onsite features are not likely to provide habitat for the vernal pool fairy shrimp or any other listed large branchiopod species. No further survey work is deemed necessary.

Please note that take, in any form, of listed large branchiopod species, or any other federally-listed species, is not authorized by this letter. If any listed species are detected onsite at any time, activities that could result in take should cease and the Service be contacted regarding how to proceed.

If you have any questions about the survey guidance or the contents of this letter, please contact Ms. Vanderwier of my staff at (805) 644-1766 or by email at julie_vanderwier@fws.gov.

Sincerely,



Glen W. Knowles
Assistant Field Supervisor

ecc:

Tom Erskine, Beechwood Owner's Group



DEPARTMENT OF THE ARMY
SAN FRANCISCO DISTRICT, U.S. ARMY CORPS OF ENGINEERS
1455 MARKET STREET, 16TH FLOOR
SAN FRANCISCO, CALIFORNIA 94103-1398

Regulatory Division

MAY 15 2018

Subject: File No. 2016-00384S

Dr. Daniel Meade
Althouse and Meade, Inc.
1602 Spring Street
Paso Robles, California 93446

Dear Dr. Meade:

This correspondence is in reference to your submittal of January 19, 2018, on behalf of Dan Lloyd, requesting a preliminary jurisdictional determination of the extent of navigable waters of the United States (U.S.) and waters of the U.S. occurring on a 213-acre property on Beechwood Drive, in the City of Paso Robles, San Luis Obispo County, California (lat. 35.597641°, long. -120.648316°).

All proposed discharges of dredged or fill material occurring below the plane of ordinary high water in non-tidal waters of the U.S.; or below the high tide line in tidal waters of the U.S.; or within the lateral extent of wetlands adjacent to these waters, typically require Department of the Army authorization and the issuance of a permit under Section 404 of the Clean Water Act of 1972, as amended (33 U.S.C. § 1344 *et seq.*). Waters of the U.S. generally include the territorial seas; all traditional navigable waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including waters subject to the ebb and flow of the tide; wetlands adjacent to traditional navigable waters; non-navigable tributaries of traditional navigable waters that are relatively permanent, where the tributaries typically flow year-round or have continuous flow at least seasonally; and wetlands directly abutting such tributaries. Where a case-specific analysis determines the existence of a "significant nexus" effect with a traditional navigable water, waters of the U.S. may also include non-navigable tributaries that are not relatively permanent; wetlands adjacent to non-navigable tributaries that are not relatively permanent; wetlands adjacent to but not directly abutting a relatively permanent non-navigable tributary; and certain ephemeral streams in the arid West.

The enclosed delineation map titled "SPN-2016-00384S Preliminary Jurisdictional Determination for Beechwood Estates, San Luis Obispo County, California," in one sheet and date certified May 4, 2018, depicts the extent and location of wetlands, and other waters of the U.S., within the boundary area of the site that **may be** subject to U.S. Army Corps of Engineers' regulatory authority under Section 404 of the Clean Water Act. This preliminary jurisdictional determination is based on the current conditions of the site, as verified during a field investigation of June 14, 2017, a review of available digital photographic imagery, and a review of other data included in your submittal. While this preliminary jurisdictional determination was

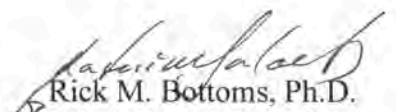
conducted pursuant to Regulatory Guidance Letter No. 16-01, *Jurisdictional Determinations*, it may be subject to future revision if new information or a change in field conditions becomes subsequently apparent. The basis for this preliminary jurisdictional determination is fully explained in the enclosed *Preliminary Jurisdictional Determination Form*. You are requested to sign and date this form and return it to this office within two weeks of receipt.

You are advised that the preliminary jurisdictional determination may **not** be appealed through the U.S. Army Corps of Engineers' *Administrative Appeal Process*, as described in 33 C.F.R. § 331 (65 Fed. Reg. 16,486; Mar. 28, 2000). Under the provisions of 33 C.F.R. § 331.5(b)(9), non-appealable actions include preliminary jurisdictional determinations since they are considered to be only advisory in nature and make no definitive conclusions on the jurisdictional status of the water bodies in question. However, you may request this office to provide an approved jurisdictional determination that precisely identifies the scope of jurisdictional waters on the site; an approved jurisdictional determination may be appealed through the *Administrative Appeal Process*. If you anticipate requesting an approved jurisdictional determination at some future date, you are advised not to engage in any on-site grading or other construction activity in the interim to avoid potential violations and penalties under Section 404 of the Clean Water Act. Finally, you may provide this office new information for further consideration and request a reevaluation of this preliminary jurisdictional determination.

You may refer any questions on this matter to Frances Malamud-Roam of my Regulatory staff by telephone at 415-503-6792 or by e-mail at frances.p.malamud-roam@usace.army.mil. All correspondence should be addressed to the Regulatory Division, South Branch, referencing the file number at the head of this letter.

The San Francisco District is committed to improving service to our customers. My Regulatory staff seeks to achieve the goals of the Regulatory Program in an efficient and cooperative manner while preserving and protecting our nation's aquatic resources. If you would like to provide comments on our Regulatory Program, please complete the Customer Service Survey Form available on our website:
<http://www.spn.usace.army.mil/Missions/Regulatory.aspx>.

Sincerely,


Rick M. Bottoms, Ph.D.
Chief, Regulatory Division

Enclosures

Copy Furnished (w/ encls):

Dan Lloyd, PO Box 378 Cayucos, CA 93430

Copy Furnished (w/ encl 1 only):

CA RWQCB, San Luis Obispo, CA

Exhibit A. Aquatic Resources Delineation Map



Delineation of Potentially Jurisdictional Wetlands and Waters

for

Beechwood Estates

Amendment 1

City of Paso Robles
San Luis Obispo County



Prepared for

Beechwood Ownership Group
Paso Robles, CA

by

ALTHOUSE AND MEADE, INC.
BIOLOGICAL AND ENVIRONMENTAL SERVICES
1602 Spring Street
Paso Robles, CA 93446
(805) 237-9626

November 2017

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EXHIBIT A. AQUATIC RESOURCES DELINEATION MAP

EXHIBIT B. WETLAND DETERMINATION DATA FORMS

Cover Page: Potential wetland in northern center of Study Area. April 14, 2017.

List of Acronyms and Abbreviations

Corps	U.S. Army Corps of Engineers
EPA	Environmental Protection Agency
GIS	Geographic Information System
GPS	Global Positioning System
NRCS	Natural Resource Conservation Service
OHWM	Ordinary High Water Mark
RWQCB	Regional Water Quality Control Board
TNW	Traditional Navigable Water
USACE	U.S. Army Corps of Engineers
WETS	Climate Analysis Tables for Wetlands

1.0 Introduction

This report provides a delineation of potentially jurisdictional wetlands and waters according to federal standards on Beechwood Estates, City of Paso Robles, San Luis Obispo County, California.

This document is an amendment to a previous delineation and reports current conditions at Beechwood Estates. The previous report was written by Althouse and Meade in 2016 and submitted to Katerina Galacatos at the United States Army Corps of Engineers (USACE) on October 20, 2016. The potentially jurisdictional areas in the 2016 report have been expanded and additional features have been added based on recent investigations that revealed more hydrology and hydrophytic plant communities than were observed in previous drought years.

The purpose of this delineation is to describe potentially jurisdictional waters and wetlands of the United States according to the Clean Water Act section 404. This document presents an inventory and mapping effort of jurisdictional wetland and aquatic resources within the Study Area. This wetland delineation provides information for owners, the United States Army Corps of Engineers (USACE), and the Lead Agency in decisions regarding activities in the Study Area. Table 1 lists the responsible parties. Wetland specialists Jacqueline Tilligkeit and LynneDee Althouse were the prime investigators.

TABLE 1. RESPONSIBLE PARTIES.

Applicant	Applicant Representative	Biological Consultant
Beechwood Owners Group	Dan Lloyd PO Box 378 Cayucos, CA 93430 (805) 441-2454 DanRLloyd@yahoo.com	Althouse and Meade, Inc. 1602 Spring Street Paso Robles, CA 93446 (805) 237-9626 LynneDee Althouse, M.S. LD@alt-me.com Jacqueline Tilligkeit, M.S. JT@alt-me.com

2.0 Climate

Rainfall data was collected at the Paso Robles Municipal Airport (35°40'19"N, 120°38'16"W WGS84; elevation approximately 810 feet) by the NOAA Regional Climate Centers. The site was visited periodically between May 2015 and May 2017. Site visits in Spring 2015 were during the fourth consecutive year of drought conditions with approximately 67 percent of average rainfall in 2014-15 (Chart 1). The 2013-14 rain year was approximately 38 percent of average and the 2012-13 rain year was approximately 36 percent of average. Additional site visits occurred in the 2015-16 rain year which was 79 percent of average (NOAA 2017). Finally, in April and May 2017, the site had received almost 120 percent of average rainfall.

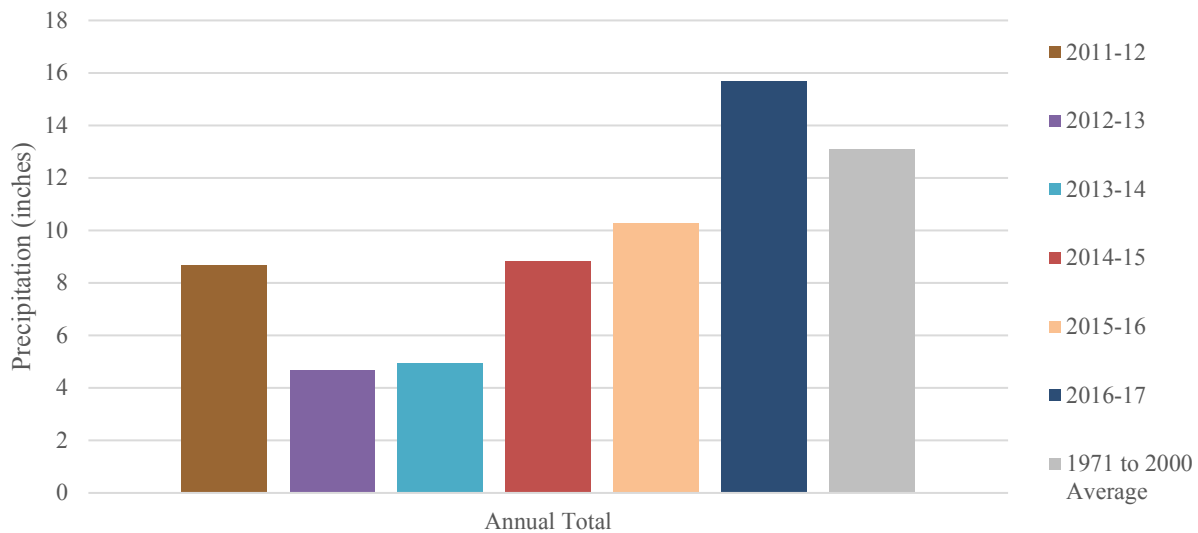


CHART 1. ANNUAL PRECIPITATION BY YEAR (INCHES).

WETS data provides thresholds for rainfall expectations. It estimates the amounts of rain in inches that the month has a 30 percent chance of receiving less and greater than. The 2016-2017 has thus far received 15.87 inches of rain, almost 3 inches more than average (121 percent). January received, by far, the most precipitation, more than 3 inches higher than the max end of the WETS range. February was also higher than the normal range, followed by a lower than normal March, and higher April. The monthly WETS data is provided in Chart 2.

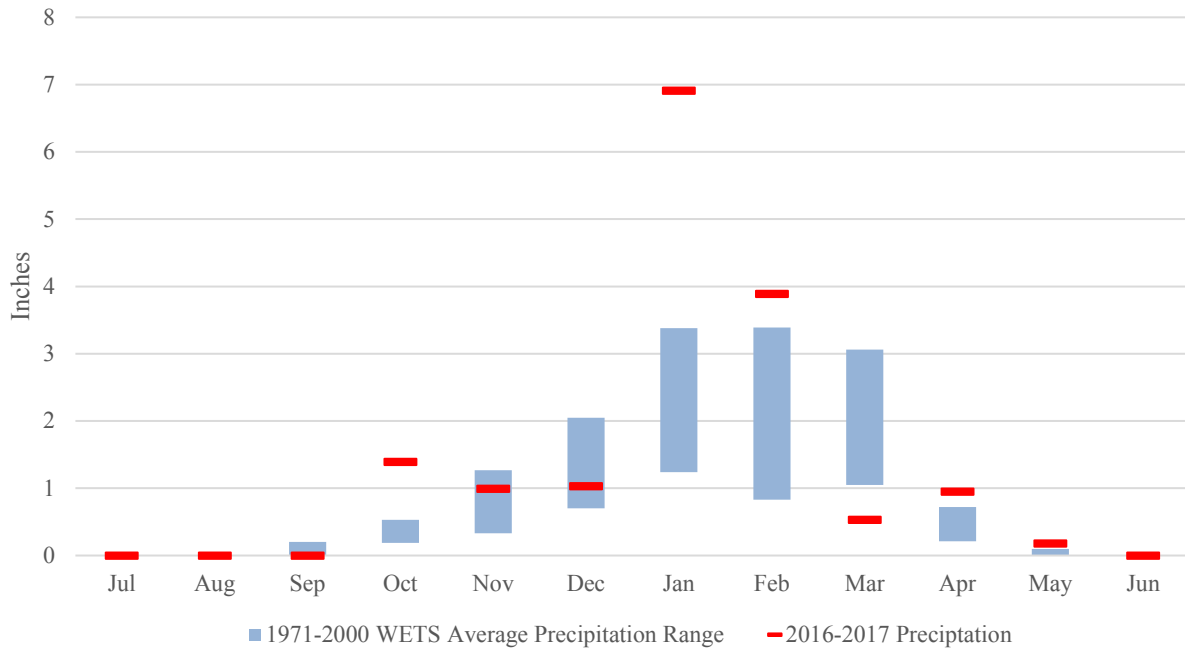


CHART 2. WETS PRECIPITATION AND 2016-2017 RAINFALL YEAR (INCHES).

The site was visited in an above average rainfall year (120% of the 1971 to 2000 average) after 5 years of below 80 percent of normal rainfall. Hydrophytic vegetation species emerged in 2017 that were not seen in 2014, 2015, or 2016 during previous surveys. Therefore, we are confident that all potentially jurisdictional wetlands were positively identified in 2017 due to clear hydrology indicators and the presence of facultative-wetland and obligate species.

3.0 Delineation Methods

3.1 Federal Wetlands

Potential jurisdictional wetlands and non-wetland waters were identified using the USACE routine onsite method with techniques described in the 1987 Manual and the 2008 Arid West Supplement (USACE 1987 and 2008b). This includes locating data points within different topographic zones and habitat types that are associated with wetlands and uplands, with the majority of the data points located within the potential wetland boundary.

Soil pits were dug by hand at ten intensively described data points, and field indicators for the three USACE parameters (hydrophytic vegetation, hydric soils, and wetland hydrology) were investigated and described. Data points were selected where presence of hydrophytic vegetation, wetland hydrology, or low relief indicated potential wetland, with descriptions of adjacent pits in upland locations to compare. Sufficient pits were dug in areas with hydrology indicators or a presence of facultative to obligate plant species. Vegetation in each stratum was identified to species and recorded. The indicator status of plants was confirmed by referring to the *National*

Wetland Plant List (USACE 2016). Soil profiles were described for selected soil morphological characteristics such as texture, Munsell color, moisture, horizonation, and presence/absence of redoximorphic features.

Locations of the all ten formally described sample sites are recorded on the Jurisdictional Delineation Map (Exhibit A). The Routine Wetland Determination Data Forms used for each formal sample site are included as Exhibit B. Photos of representative sites are included as part of Photo Collections in Section 8.0. Table 3 summarizes dates of field work and personnel attending each site visit.

TABLE 2. 2017 FIELD WORK LOG.

Survey Date	Activities	Personnel
April 14, 2017	Investigation of wetland locations	Jacqueline Tilligkeit
April 24, 2017	Sample site observations	Jacqueline Tilligkeit, Jeremy Pohlman
May 5, 2017	Sample site observations	Jeremy Pohlman
May 28, 2017	Site visit with Paula Richter of RWQCB to discuss jurisdictional features.	Jacqueline Tilligkeit, LynneDee Althouse
June 14, 2017	Site visit with Frances Malamud-Roam of USACE to confirm wetland locations	Jacqueline Tilligkeit, LynneDee Althouse

3.2 Federal Non-Wetland (Other) Waters

For features that do not contain vegetation suggestive of wetlands, evidence of channelized surface flow or hydrology indicators with a lack of hydrophytic vegetation was used to determine extent of jurisdiction over non-wetland waters per the 2010 USACE OHWM Manual (USACE 2010).

3.3 Mapping Methodology

Mapping efforts utilized Samsung Galaxy Tab 4 tablets in conjunction with Garmin GLO GPS receivers. Existing datasets such as the National Hydrography Dataset and the engineered topographic maps were considered during mapping. Our results vary somewhat from existing publications due to the finer scale and on-the-ground data collection techniques used in our work. GPS data, digitized notes, and photos were imported into ESRI ArcGIS, a Geographic Information Systems software suite, and interpreted into maps.

4.0 Technical Findings

4.1 Federal Wetlands

Wetlands are considered “special aquatic sites” under the USACE definition. Special aquatic sites are afforded protection under the Clean Water Act Sections 401 and 404. The following text refers

to wetlands displayed on Exhibit A and summarizes Wetland Determination Form findings in Exhibit B.

4.1.1 Wetland 1

Wetland 1 was previously delineated in 2015 due to a dominance of *Juncus bufonius* (FACW) and a redox depressions soil indicator. It is located at the top of a swale feature in the middle of the Study Area, just downslope of a vineyard. The *Hordeum marinum* (FAC) percent cover has increased in the higher rainfall year and the jurisdictional limit was extended further up the banks of the swale feature. This feature is likely able to support hydrophytic vegetation due to runoff and underground lateral transfer of water from irrigation of the vineyard just upslope.

4.1.2 Wetland 2

Wetland 2, also previously delineated in 2015, is a freshwater pond at the edge of the vineyard with strong wetland indicators. This pond receives water from runoff from the vineyard as well as from a drainage feature on the adjacent PG&E easement that enters the Study Area from the east and becomes Drainage A (discussed below). *Polypogon monspeliensis* (FACW) and 50 percent depletions were present in 2015, whereas the pond displayed 20 inches of standing water during the 2017 reassessment with *Baccharis salicifolia* (FAC) and *Salix lasiolepis* (FACW).

4.1.3 Wetland 3

In 2015, Wetland 3 displayed hydric soil and appeared to be a location where water would pool. Facultative-upland species dominated Wetland 3, and the site showed no evidence of hydrology. After 2017's high rainfall season, the dominant species in the area were *Hordeum marinum* and *Juncus bufonius* near the corner of the property and extending up the swale, source of stormwater sheetflow. There was also a non-dominant presence of obligate species *Callitriche* sp [likely *C. marginata*, not identified to species], *Downingia cuspidata*, *Mimulus guttatus*, and *Lythrum hyssopifolia*. No saturation nor inundation was seen in April 2017 but there was more bare ground, deep hoof prints from cattle grazing, and biotic crust near the bottom of the swale feature. Due to the abnormal circumstances caused by climate patterns, the topographic contours were utilized to determine the maximum elevation that the water would pool before sheetflowing into the road right-of-way. Furthermore, discussions onsite with Paula Richter of the RWQCB (May 2017) and the Corps' Frankie Malamud-Roam (June 2017) resulted in their concurrence that the wetland's jurisdictional boundary should be drawn closer to the Creston Road and Beechwood Drive intersection. Exhibit A displays the wetland extent based on the topographic contours.

4.1.4 Wetland 4

Wetland 4 is at the confluence of two swale features at the north end of the Study Area and displayed no wetland characteristics in the previous delineation. In April 2017, standing water and dominant species *Juncus mexicanus* (FACW) was observed. The soil appeared to be layers of sandier soil from upslope and in situ clay. This stratification as well as sediment deposits and biotic crust were strong hydrology indicators in areas adjacent to the standing water. The soil also contained sufficient redoximorphic features and low chroma and value to match the redox dark surface indicator. Downstream of the sample sites, is an area previously thought to be a federal non-wetland water (Drainage C) but exhibited saturation and a dominance of *Festuca perennis*

(FAC) and *Rumex crispus* (FAC) after the rains and therefore the jurisdiction was widened to the extent of the vegetation and changed to a wetland.

4.1.5 Wetland 5

The northeastern corner of the Study Area (Wetland 5) also looked to pond water in 2015 but only had evidence of hydric soil through the redox depressions indicator. Upland species dominated the feature and there was no sign of hydrology. In 2017, facultative species *Hordeum marinum* (FAC) and *Festuca perennis* (FAC) dominate Wetland 5 with a presence of oxidized rhizospheres.

TABLE 3. FEDERAL JURISDICTIONAL WETLAND CHARACTERISTICS.

Feature	Sample Site	Wetland Vegetation?	Dominant Species	Wetland Soil?	Soil Indicator	Wetland Hydrology?	Hydrology Indicator	Wetland Criteria Met?	Acreage
1	A	✓	FAC, FACU, FACW	✓	F6, F8	✓	C3	Yes	0.26
	B		UPL, UPL		None	✓	C3	No	
2	A	✓	FAC, FAC, FAC, FACW, UPL	✓	A4, POND	✓	A1, B12, C1	Yes	0.04
	B		UPL, FACU		None	✓	C3	No	
3	A	✓	FAC, FACW	✓	F6, F8	✓	B12, C3	Yes	1.21
	B		UPL, FACU		None		None	No	
4	A	✓	OBL, FACW, FAC	✓	F6	✓	B2, B12, C3	Yes	0.75
	B		UPL, FACU		None		None	No	
5	A	✓	FAC, FAC	✓	F6, F8	✓	C3	Yes	0.07
	B		UPL, FACU		None		None	No	
		UPL: FACU: FAC: FACW: OBL:	1% occurrence in wetlands 1-33% in wetlands 34-66% in wetlands 67-99% in wetlands 99% in wetlands	A4: F6: F8: POND:	Hydrogen Sulfide Redox Dark Surface Redox Depressions Standing water present	A1: B2: B12: C1: C3:	Surface Water Sediment Deposits Biotic Crust Hydrogen Sulfide Odor Oxidized Rhizospheres along Living Roots		

4.2 Federal Non-Wetland Waters

Two potentially federal other waters (Drainages A and B) occur in the Study Area. These features exhibit an OHWM and are associated with upland or facultative upland plant species. Their jurisdictional widths have not changed from the 2016 delineation.

4.2.1 Drainage A

Drainage A exhibits a clear OHWM upstream and offsite. It is a manipulated continuation of the flow path from a drainage on the PG&E easement to the east of the property. The water enters the property from the eastern boundary, flows across a farmed swale, and enters Wetland 2. For Drainage A, an offsite representative area exhibited an OHWM width of approximately 3 feet.

4.2.2 Drainage B

Drainage B has a clear bed and bank and occurs at the northern edge of the Study Area. Water from the hills east of the Study Area drain onsite through the northeast corner and along the northern boundary and exit through a caged culvert approximately 990 feet west along Meadowlark Road. The width and depth of Drainage B is fairly consistent throughout the entire length. The average OHWM width in this drainage was approximately 18 inches.

4.2.3 Drainage C

As discussed in Section 4.1, Drainage C from the 2016 Delineation was added to Wetland 4 and expanded to the edge of hydrophytic vegetation.

5.0 Jurisdictional Delineation

Jurisdictional areas (Table 5) are based on the location of wetlands mapped as described in Section 3.0 for the Jurisdictional Delineation Study Area.

5.1 Federal Wetlands

Wetlands that showed signs of hydrology, hydrophytic vegetation, and hydric soils were mapped as federal wetlands.

Five federal wetlands occur onsite. Wetland 1 is in the center of the property and fed by irrigation water from the vineyard. Wetland 2 is an anthropogenic pool with wetland shrubs and receives water from Drainage A and vineyard runoff before the water exits the Study Area through a culvert under Creston Road. At the corner of Creston Road and Beechwood Drive exists Wetland 3, a site where water collects from a swale feature draining water towards the intersection. Wetland 4 is near Meadowlark Road at the confluence of two swale features. This is the only wetland that was inundated with water in April 2017. Wetland 5, in the northeast corner, continues a water feature from the property to the east as indicated by hydrophytic vegetation.

TABLE 4. FEDERAL JURISDICTIONAL WETLAND MEASUREMENTS.

Wetland ID	Area (sq ft)	Area (ac)
1	11,196	0.26
2	1,742	0.04
3	52,591	1.21
4	32,687	0.75
5	3,216	0.07
Total	101,432	2.33

5.2 Federal Non-Wetland Waters

A federal other water (Drainage B) at the northeast corner of the Study Area carries water from the adjacent hills, across the Study Area, to a culvert approximately 990 feet west of the northeastern corner. This flow-path has a clear bed and bank and therefore is potentially a State Water. A second potential federal water (Drainage A) begins offsite with a clear bed and bank and flows through a highly manipulated vineyard into a wetland along Creston Road.

TABLE 5. FEDERAL JURISDICTIONAL NON-WETLAND WATER MEASUREMENTS.

Drainage ID	Width (ft)	Length (ft)	Area (sq ft)	Area (ac)
A	3	201	603	0.01
B	1.5	993	1,490	0.03
Total	-	1,194	2,093	0.05

This report is subject to verification by the United States Army Corps of Engineers.

6.0 References

- Althouse and Meade, Inc. 2016. Delineation of Potentially Jurisdictional Wetlands and Waters for Beechwood Estates. Prepared for Beechwood Ownership Group.
- Munsell Soil-Color Charts. 2009 (Revised Edition). Munsell Color. Grand Rapids, MI.
- NOAA. 2017. USDA Field Office Climate Data. Paso Robles Municipal Airport (93209). Product generated by ACIS – NOAA Regional Climate Centers. Accessed 2017.
- U.S Army Corps of Engineers (USACE). 1987. Corps of Engineers Wetlands Delineation Manual. Technical Report Y-87-1. Environmental Laboratory. Vicksburg, MS: U.S. Army Engineer Waterways Experiment Station.
- _____. 2008a. A Field Guide to the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the Western United States. Ed. R.W. Lichvar and S.M. McColley. ERDC/CRREL TR-08-12. Hanover, NH: U.S. Army Engineer Research and Development Center.
- _____. 2008b. A Regional supplement to the Corps of Engineers Wetland Delineation Manual: Arid West Region (Version 2.0). Ed. J.S. Wakeley, R.W. Lichvar, and C.V. Noble. ERDC/EL TR-08-28. Vicksburg, MS: U.S. Army Engineer Research and Development Center.
- _____. 2010. Updated Datasheet for the Identification of the Ordinary High Water Mark (OHWM) in the Arid West Region of the United States. Ed. K.E. Curtis and R.W. Lichvar. ERDC/CRREL TN-10-1. Hanover, NH: U.S. Army Engineer Research and Development Center.

7.0 Photographs



Photo 1. Potential Federal Wetland 1. View downslope to the north. Photo taken April 14, 2017.



Photo 2. Substrate of Wetland 1 consisting of hoof prints indicating saturation and a dominance of *Juncus bufonius* and *Hordeum marinum*. Photo taken April 14, 2017.



Photo 3. Potential Federal Wetland 2 at the south end of the property along Creston road looking north. Photo of hydric soil indicators below. Photo taken June 24, 2015.



Photo 4. Potential Federal Wetland 2 with standing water and floating algae on May 5, 2017.



Photo 5. Wetland 3 from near the edge of the pooling area. View southwest towards intersection of Creston Road and Beechwood Drive.

April 24, 2017.



Photo 6. Wetland 3 near the area of lowest elevation (bottom of ponding area).

April 14, 2017.



Photo 7. Finger of Wetland 4 in a swale feature supporting *Mimulus guttatus*, *Hordeum marinum*, *Rumex crispus*, and *Juncus bufonius*.

April 24, 2017.



Photo 8. Inundation present at Wetland 4 on April 14, 2017. *Juncus mexicanus* is present at the time of photo.



Photo 9. Continuation of Wetland 4 to the double barrel culverts on April 24, 2017. Vegetation consists of *Festuca perennis* and *Rumex crispus*. This was previously Drainage C but it was expanded and delineated as a wetland.



Photo 10. Wetland 5 looking north towards Meadowlark Drive. Drainage B flows adjacent to the barbed wire fence in the picture.

May 5, 2017



Photo 11. Wetland 5 looking south into property. Water originates from the east (left). Vegetation is *Hordeum marinum* and *Festuca perennis*.

April 14, 2017



Photo 13. Drainage A flows into property from PG&E easement (red arrow displays flowpath), flows through vineyard with little evidence of hydrology, and enters Wetland 2.

August 24, 2016

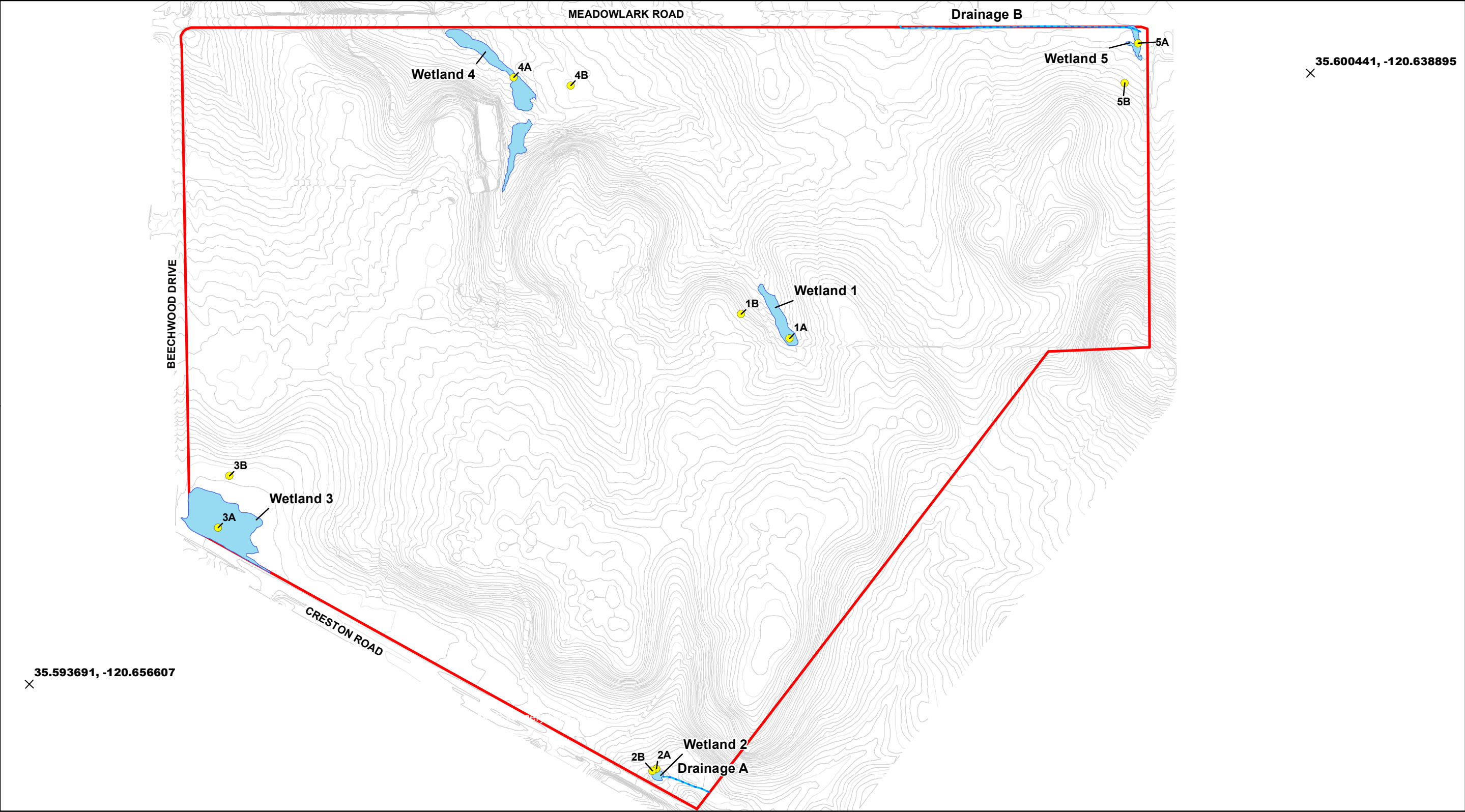


Photo 12. Drainage B along the northern edge of the property flowing to the west.

April 14, 2017

Exhibit A – Aquatic Resources Delineation Map

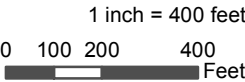
Exhibit A. Aquatic Resources Delineation Map



- ×

Map Control Point
- Federal Non-Wetland Waters (1,194 feet)
- Study Area
- Sample Sites
- Federal Wetlands (3.3 acres)

Site Name: Beechwood Estates
Investigator: Jacqueline Tilligkeit



Map Updated November 22, 2017 11:54 AM by JBB

Exhibit B –Wetland Determination Data Forms

A United States Army Corps of Engineers, Routine Wetland Determination data form (2008 Arid West Supplement Version) was completed in the field for ten sampling sites. The forms included here are copies of forms written in the field. The original forms are on file in the Althouse and Meade office.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Beechwood City/County: Paso Robles Sampling Date: 4-29-17
 Applicant/Owner: Dan Lloyd State: CA Sampling Point: 1A
 Investigator(s): Jo Tilligke & Jo Pohlman Section, Township, Range: 27S 13E
 Landform (hillslope, terrace, etc.): hillslope/swale Local relief (concave, convex, none): concave Slope (%): 3
 Subregion (LRR): LRR Lat: 35.597509 Long: -120.6461 Datum: WGS84
 Soil Map Unit Name: Arbuckle - Positas complex NWI classification: Riverine
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☐ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☒, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input type="checkbox"/>
Hydric Soil Present? Yes <input type="checkbox"/> No <input type="checkbox"/>	
Wetland Hydrology Present? Yes <input type="checkbox"/> No <input type="checkbox"/>	
Remarks:	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>none</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>66</u> (A/B)
1. <u>/</u>				
2. <u>/</u>				
3. <u>/</u>				
4. <u>/</u>				
= Total Cover				
Sapling/Shrub Stratum (Plot size: <u>none</u>)				
1. <u>/</u>				Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain)
2. <u>/</u>				
3. <u>/</u>				
4. <u>/</u>				
= Total Cover				
Herb Stratum (Plot size: <u>5x5</u>)				
1. <u>Hordeum maritimum</u>	<u>50</u>	<u>Y</u>	<u>FAC</u>	Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
2. <u>Bromus hordeaceus</u>	<u>45</u>	<u>Y</u>	<u>FACU</u>	
3. <u>Festuca myuros</u>	<u>25</u>	<u>N</u>	<u>OPL</u>	
4. <u>Juncus bitorius</u>	<u>35</u>	<u>Y</u>	<u>FACW</u>	
5. <u>Rumex crispus</u>	<u>1</u>	<u>N</u>	<u>EAC</u>	
6. <u>Fritolium clepauperatom</u>	<u>1</u>	<u>N</u>	<u>FAC</u>	
7. <u>Avena fatua</u>	<u>1</u>	<u>N</u>	<u>OPL</u>	
8. <u>Bromus diandrus</u>	<u>1</u>	<u>N</u>	<u>OPL</u>	
= Total Cover <u>134</u>				
Woody Vine Stratum (Plot size: <u>none</u>)				
1. <u>/</u>				
2. <u>/</u>				
= Total Cover				
% Bare Ground in Herb Stratum <u>0</u> % Cover of Biotic Crust <u>0</u>				
Remarks: <u>Vegetation has been grazed</u>				

SOIL

Sampling Point: 1A

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-6	10YR 3/2	90	10YR 3/6	10	C	M	SL	
6-18	10YR 3/2	85	10YR 3/6	15	C	M	SL	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

Indicators for Problematic Hydric Soils³:

- ☐ Histosol (A1)
☐ Histic Epipedon (A2)
☐ Black Histic (A3)
☐ Hydrogen Sulfide (A4)
☐ Stratified Layers (A5) (LRR C)
☐ 1 cm Muck (A9) (LRR D)
☐ Depleted Below Dark Surface (A11)
☐ Thick Dark Surface (A12)
☐ Sandy Mucky Mineral (S1)
☐ Sandy Gleyed Matrix (S4)

- ☐ Sandy Redox (S5)
☐ Stripped Matrix (S6)
☐ Loamy Mucky Mineral (F1)
☐ Loamy Gleyed Matrix (F2)
☐ Depleted Matrix (F3)
☒ Redox Dark Surface (F6)
☒ Depleted Dark Surface (F7)
☒ Redox Depressions (F8)
☐ Vernal Pools (F9)

- ☐ 1 cm Muck (A9) (LRR C)
☐ 2 cm Muck (A10) (LRR B)
☐ Reduced Vertic (F18)
☐ Red Parent Material (TF2)
☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: none
 Depth (inches): >18

Hydric Soil Present? Yes ☒ No ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
☐ High Water Table (A2)
☐ Saturation (A3)
☐ Water Marks (B1) (Nonriverine)
☐ Sediment Deposits (B2) (Nonriverine)
☐ Drift Deposits (B3) (Nonriverine)
☐ Surface Soil Cracks (B6)
☐ Inundation Visible on Aerial Imagery (B7)
☐ Water-Stained Leaves (B9)

- ☐ Salt Crust (B11)
☐ Biotic Crust (B12)
☐ Aquatic Invertebrates (B13)
☐ Hydrogen Sulfide Odor (C1)
☒ Oxidized Rhizospheres along Living Roots (C3)
☐ Presence of Reduced Iron (C4)
☐ Recent Iron Reduction in Tilled Soils (C6)
☐ Thin Muck Surface (C7)
☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (Riverine)
☐ Sediment Deposits (B2) (Riverine)
☐ Drift Deposits (B3) (Riverine)
☐ Drainage Patterns (B10)
☐ Dry-Season Water Table (C2)
☐ Crayfish Burrows (C8)
☐ Saturation Visible on Aerial Imagery (C9)
☐ Shallow Aquitard (D3)
☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches): >18
 Water Table Present? Yes ☐ No ☒ Depth (inches): >18
 Saturation Present? (includes capillary fringe) Yes ☐ No ☒ Depth (inches): >18

Wetland Hydrology Present? Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

cow hoof prints 2-3" deep - sign of saturation

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Beechwood City/County: Paso Robles Sampling Date: 5-5-17
 Applicant/Owner: Dan Lloyd State: CA Sampling Point: 113
 Investigator(s): Jo Pohlman Section, Township, Range: 27S 13E
 Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): convex Slope (%): 3
 Subregion (LRR): LRBC Lat: 35.597785 Long: -120.616769 Datum: WGS84
 Soil Map Unit Name: Arbuckle-Positas complex NWI classification: none
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☐ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Remarks:	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>none</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B)
1. <u>/</u>				
2. <u>/</u>				
3. <u>/</u>				
4. <u>/</u>				
<u>0</u> = Total Cover				
Sapling/Shrub Stratum (Plot size: <u>none</u>)				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
1. <u>/</u>				
2. <u>/</u>				
3. <u>/</u>				
4. <u>/</u>				
<u>0</u> = Total Cover				
Herb Stratum (Plot size: _____)				Hydrophytic Vegetation Indicators: <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Erodium cicutarium</u>	<u>70</u>	<u>Y</u>	<u>UPL</u>	
2. <u>Avena fatua</u>	<u>30</u>	<u>Y</u>	<u>UPL</u>	
3. <u>Trifolium hirtum</u>	<u>10</u>	<u>N</u>	<u>UPL</u>	
4. <u>/</u>				
5. <u>/</u>				
6. <u>/</u>				
7. <u>/</u>				
8. <u>/</u>				
<u>110</u> = Total Cover				
Woody Vine Stratum (Plot size: <u>none</u>)				Hydrophytic Vegetation Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
1. <u>/</u>				
2. <u>/</u>				
<u>0</u> = Total Cover				
% Bare Ground in Herb Stratum <u>5</u>		% Cover of Biotic Crust <u>0</u>		
Remarks:				

SOIL

Sampling Point: 1B

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-4	10YR 3/3	98	10YR 4/6	2	C	PL	SL	oxidized rhizospheres
4-20 ⁺	10YR 3/2	100					SL	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

Indicators for Problematic Hydric Soils³:

- ☐ Histosol (A1)
☐ Histic Epipedon (A2)
☐ Black Histic (A3)
☐ Hydrogen Sulfide (A4)
☐ Stratified Layers (A5) (LRR C)
☐ 1 cm Muck (A9) (LRR D)
☐ Depleted Below Dark Surface (A11)
☐ Thick Dark Surface (A12)
☐ Sandy Mucky Mineral (S1)
☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
☐ Stripped Matrix (S6)
☐ Loamy Mucky Mineral (F1)
☐ Loamy Gleyed Matrix (F2)
☐ Depleted Matrix (F3)
☐ Redox Dark Surface (F6)
☐ Depleted Dark Surface (F7)
☐ Redox Depressions (F8)
☐ Vernal Pools (F9)

- ☐ 1 cm Muck (A9) (LRR C)
☐ 2 cm Muck (A10) (LRR B)
☐ Reduced Vertic (F18)
☐ Red Parent Material (TF2)
☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: noneDepth (inches): > 20Hydric Soil Present? Yes ☐ No ☒

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

Secondary Indicators (2 or more required)

- ☐ Surface Water (A1)
☐ High Water Table (A2)
☐ Saturation (A3)
☐ Water Marks (B1) (Nonriverine)
☐ Sediment Deposits (B2) (Nonriverine)
☐ Drift Deposits (B3) (Nonriverine)
☐ Surface Soil Cracks (B6)
☐ Inundation Visible on Aerial Imagery (B7)
☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
☐ Biotic Crust (B12)
☐ Aquatic Invertebrates (B13)
☒ Hydrogen Sulfide Odor (C1)
☒ Oxidized Rhizospheres along Living Roots (C3)
☐ Presence of Reduced Iron (C4)
☐ Recent Iron Reduction in Tilled Soils (C6)
☐ Thin Muck Surface (C7)
☐ Other (Explain in Remarks)
- ☐ Water Marks (B1) (Riverine)
☐ Sediment Deposits (B2) (Riverine)
☐ Drift Deposits (B3) (Riverine)
☐ Drainage Patterns (B10)
☐ Dry-Season Water Table (C2)
☐ Crayfish Burrows (C8)
☐ Saturation Visible on Aerial Imagery (C9)
☐ Shallow Aquitard (D3)
☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches): Water Table Present? Yes ☐ No ☒ Depth (inches): Saturation Present? Yes ☐ No ☒ Depth (inches):
(includes capillary fringe)Wetland Hydrology Present? Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Beechwood City/County: Paso Robles Sampling Date: 5-5-17
 Applicant/Owner: Dan Lloyd State: CA Sampling Point: 2A
 Investigator(s): J. Pohlman Section, Township, Range: 27S 13E
 Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): concave Slope (%): _____
 Subregion (LRR): LRBC Lat: 35.592681 Long: -120.697987 Datum: _____
 Soil Map Unit Name: Arbuckle - San Ysidro complex NWI classification: Freshwater Pond
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No ✓
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes <u>✓</u> No _____	Is the Sampled Area within a Wetland? Yes _____ No _____
Hydric Soil Present? Yes <u>✓</u> No _____	
Wetland Hydrology Present? Yes <u>✓</u> No _____	
Remarks: <u>Pool at culvert</u>	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>none</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A) Total Number of Dominant Species Across All Strata: <u>5</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>80</u> (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
Sapling/Shrub Stratum (Plot size: <u>5x5m</u>)				Prevalence Index = B/A = _____
1. <u>Baccharis salicifolia</u>	<u>25</u>	<u>Y</u>	<u>FAC</u>	
2. <u>Salix lasiolepis</u>	<u>10</u>	<u>Y</u>	<u>FACW</u>	
3. <u>Tamarix sp.</u>	<u>10</u>	<u>Y</u>	<u>FAC</u>	
Herb Stratum (Plot size: <u>5x5m</u>)				Hydrophytic Vegetation Indicators: <u>X</u> Dominance Test is >50% ____ Prevalence Index is ≤3.0 ¹ ____ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ____ Problematic Hydrophytic Vegetation ¹ (Explain)
1. <u>Festuca perennis</u>	<u>25</u>	<u>Y</u>	<u>FAC</u>	
2. <u>Rumex crispus</u>	<u>10</u>	<u>N</u>	<u>FAC</u>	
3. <u>Avena fatua</u>	<u>25</u>	<u>Y</u>	<u>UPL</u>	
Woody Vine Stratum (Plot size: <u>none</u>)				Hydrophytic Vegetation Present? Yes <u>✓</u> No _____
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
Remarks:				

Sampling Point: 2A

HYDROLOGY

Primary Indicators (minimum of one required; check all that apply)

Field Observations:

Wetland Hydrology Present? Yes ✓ No

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Beechwood City/County: Paso Robles Sampling Date: 5-5-17
 Applicant/Owner: Dan Lloyd State: CA Sampling Point: 2B
 Investigator(s): J. Pohlman Section, Township, Range: 27S 13E
 Landform (hillslope, terrace, etc.): toeslope Local relief (concave, convex, none): convex Slope (%): 2
 Subregion (LRR): CRRC Lat: 35.542658 Long: -120.698038 Datum:
 Soil Map Unit Name: Arbuckle-San Ysidro complex NWI classification: Freshwater Pond
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes No (If no, explain in Remarks.)
 Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No ✓
 Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <u></u> No <u></u>	Is the Sampled Area within a Wetland? Yes <u></u> No <u></u>
Hydric Soil Present?	Yes <u></u> No <u></u>	
Wetland Hydrology Present?	Yes <u></u> No <u></u>	
Remarks:		

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>none</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B)
1. <u>/</u>				
2. <u>/</u>				
3. <u>/</u>				
4. <u>/</u>				
<u>0</u> = Total Cover				
Sapling/Shrub Stratum (Plot size: <u>none</u>)				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
1. <u>/</u>				
2. <u>/</u>				
3. <u>/</u>				
4. <u>/</u>				
<u>0</u> = Total Cover				
Herb Stratum (Plot size: <u>3x3m</u>)				Hydrophytic Vegetation Indicators: ___ Dominance Test is >50% ___ Prevalence Index is ≤3.0 ¹ ___ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ___ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Avena fatua</u>	<u>50</u>	<u>Y</u>	<u>OPL</u>	
2. <u>Bromus hordeaceus</u>	<u>30</u>	<u>Y</u>	<u>FACU</u>	
3. <u>Festuca perennis</u>	<u>20</u>	<u>N</u>	<u>FAC</u>	
4. <u>Bromus diandrus</u>	<u>1</u>	<u>N</u>	<u>OPL</u>	
5. <u>Medicago polymorpha</u>	<u>1</u>	<u>N</u>	<u>FACU</u>	
6. <u></u>				
7. <u></u>				
8. <u></u>				
<u>102</u> = Total Cover				
Woody Vine Stratum (Plot size: <u>none</u>)				Hydrophytic Vegetation Present? Yes <u></u> No <u>✓</u>
1. <u>/</u>				
2. <u>/</u>				
<u>0</u> = Total Cover				
% Bare Ground in Herb Stratum <u>3</u>	% Cover of Biotic Crust <u>0</u>			
Remarks:				

Sampling Point: ZB

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Type: clay percentage increase
Depth (inches): 5

Remarks: Below 5" shows a mixture of soil types likely from historic tilling of the vineyard. Oxidized rhizospheres from a poorly drained soil and irrigation practices

Wetland Hydrology Indicators:			Secondary Indicators (2 or more required)	
Primary Indicators (minimum of one required; check all that apply)				
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Salt Crust (B11)	<input type="checkbox"/> Water Marks (B1) (Riverine)		
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Biotic Crust (B12)	<input type="checkbox"/> Sediment Deposits (B2) (Riverine)		
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Aquatic Invertebrates (B13)	<input type="checkbox"/> Drift Deposits (B3) (Riverine)		
<input type="checkbox"/> Water Marks (B1) (Nonriverine)	<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	<input type="checkbox"/> Drainage Patterns (B10)		
<input type="checkbox"/> Sediment Deposits (B2) (Nonriverine)	<input checked="" type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3)	<input type="checkbox"/> Dry-Season Water Table (C2)		
<input type="checkbox"/> Drift Deposits (B3) (Nonriverine)	<input type="checkbox"/> Presence of Reduced Iron (C4)	<input type="checkbox"/> Crayfish Burrows (C8)		
<input type="checkbox"/> Surface Soil Cracks (B6)	<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)		
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	<input type="checkbox"/> Thin Muck Surface (C7)	<input type="checkbox"/> Shallow Aquitard (D3)		
<input type="checkbox"/> Water-Stained Leaves (B9)	<input type="checkbox"/> Other (Explain in Remarks)	<input type="checkbox"/> FAC-Neutral Test (D5)		
Field Observations:				
Surface Water Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches):		
Water Table Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches):		
Saturation Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Depth (inches):		
(includes capillary fringe)			Wetland Hydrology Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:				
Remarks:				
Irrigated				

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Beechwood City/County: Paso Robles Sampling Date: 4-24-17
 Applicant/Owner: Dan Lloyd State: CA Sampling Point: 3A
 Investigator(s): J. Tilligkeith & J. Pohlman Section, Township, Range: 27S 13E
 Landform (hillslope, terrace, etc.): toeslope Local relief (concave, convex, none): concave Slope (%): 0-1
 Subregion (LRR): LRRC Lat: 35.59543 Long: -120.65399 Datum: WGS84
 Soil Map Unit Name: Rincon clay loam NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☐ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input type="checkbox"/>
Hydric Soil Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Remarks:		

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>none</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
1. <u>/</u>				
2. <u>/</u>				
3. <u>/</u>				
4. <u>/</u>				
<u>0</u> = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: <u>none</u>)				
1. <u>/</u>				
2. <u>/</u>				
3. <u>/</u>				
4. <u>/</u>				
5. <u>/</u>				
<u>0</u> = Total Cover				
Herb Stratum (Plot size: <u>10x10'</u>)				Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Hordeum maritimum</u>	<u>50</u>	<u>Y</u>	<u>FAC</u>	
2. <u>Juncus bufonius</u>	<u>20</u>	<u>Y</u>	<u>FACW</u>	
3. <u>Festuca perennis</u>	<u>15</u>	<u>N</u>	<u>FAC</u>	
4. <u>Capsella bursa-pastoris</u>	<u>5</u>	<u>N</u>	<u>FACU</u>	
5. <u>Echinochloa crus-galli</u>	<u>5</u>	<u>N</u>	<u>FACU</u>	
6. <u>Callitriche sp.</u>	<u>5</u>	<u>N</u>	<u>OBL</u>	
7. <u>Douglasia cuspidata</u>	<u>1</u>	<u>N</u>	<u>OBL</u>	
8. <u>/</u>				
<u>101</u> = Total Cover				
Woody Vine Stratum (Plot size: <u>none</u>)				Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
1. <u>/</u>				
2. <u>/</u>				
<u>0</u> = Total Cover				
% Bare Ground in Herb Stratum <u>40</u>	% Cover of Biotic Crust <u>5</u>			
Remarks:				

SOIL

Sampling Point: 3A

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-3	10YR 3/2	100					L	
3-18+	10YR 4/2	95	10YR 4/6	5	C	PL	CL	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ☐ Histosol (A1)
☐ Histic Epipedon (A2)
☐ Black Histic (A3)
☐ Hydrogen Sulfide (A4)
☐ Stratified Layers (A5) (LRR C)
☐ 1 cm Muck (A9) (LRR D)
☐ Depleted Below Dark Surface (A11)
☐ Thick Dark Surface (A12)
☐ Sandy Mucky Mineral (S1)
☐ Sandy Gleyed Matrix (S4)

- ☐ Sandy Redox (S5)
☐ Stripped Matrix (S6)
☐ Loamy Mucky Mineral (F1)
☐ Loamy Gleyed Matrix (F2)
☐ Depleted Matrix (F3)
☒ Redox Dark Surface (F6)
☐ Depleted Dark Surface (F7)
☒ Redox Depressions (F8)
☐ Vernal Pools (F9)

Indicators for Problematic Hydric Soils³:

- ☐ 1 cm Muck (A9) (LRR C)
☐ 2 cm Muck (A10) (LRR B)
☐ Reduced Vertic (F18)
☐ Red Parent Material (TF2)
☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (If present):

Type: none
 Depth (inches): 218"

Hydric Soil Present? Yes ☒ No ☐

Remarks:

Moist at 8"

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
☐ High Water Table (A2)
☐ Saturation (A3)
☐ Water Marks (B1) (Nonriverine)
☐ Sediment Deposits (B2) (Nonriverine)
☐ Drift Deposits (B3) (Nonriverine)
☐ Surface Soil Cracks (B6)
☐ Inundation Visible on Aerial Imagery (B7)
☐ Water-Stained Leaves (B9)
☒ Salt Crust (B11)
☒ Biotic Crust (B12)
☐ Aquatic Invertebrates (B13)
☐ Hydrogen Sulfide Odor (C1)
☒ Oxidized Rhizospheres along Living Roots (C3)
☐ Presence of Reduced Iron (C4)
☐ Recent Iron Reduction in Tilled Soils (C6)
☐ Thin Muck Surface (C7)
☒ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (Riverine)
☐ Sediment Deposits (B2) (Riverine)
☐ Drift Deposits (B3) (Riverine)
☐ Drainage Patterns (B10)
☐ Dry-Season Water Table (C2)
☐ Crayfish Burrows (C8)
☐ Saturation Visible on Aerial Imagery (C9)
☐ Shallow Aquitard (D3)
☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches):
 Water Table Present? Yes ☐ No ☒ Depth (inches): 218
 Saturation Present? Yes ☐ No ☒ Depth (inches): 218
 (includes capillary fringe)

Wetland Hydrology Present? Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Cow hoof prints 4-5" deep indicating saturation.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Beechwood City/County: Paso Robles Sampling Date: 5-5-17
 Applicant/Owner: Dan Lloyd State: CA Sampling Point: 3B
 Investigator(s): J. Pohlman Section, Township, Range: 27S 13E
 Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): convex Slope (%): 3
 Subregion (LRR): LRRC Lat: 35.59602 Long: -120.65383 Datum: WGS 84
 Soil Map Unit Name: Pinon clay loam NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☐ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input type="checkbox"/>
Hydric Soil Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Wetland Hydrology Present?	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	
Remarks:		

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>none</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B)
1. <u>/</u>				
2. <u>/</u>				
3. <u>/</u>				
4. <u>/</u>				
<u>0</u> = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: <u>none</u>)				
1. <u>/</u>				
2. <u>/</u>				
3. <u>/</u>				
4. <u>/</u>				
5. <u>/</u>				
<u>0</u> = Total Cover				
Herb Stratum (Plot size: <u>3x3m</u>)				Hydrophytic Vegetation Indicators: <input type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. <u>Erodium cicutarium</u>	<u>60</u>	<u>Y</u>	<u>UPL</u>	
2. <u>Eragrostis myuros</u>	<u>60</u>	<u>Y</u>	<u>FACW</u>	
3. <u>Bromus diandrus</u>	<u>10</u>	<u>N</u>	<u>UPL</u>	
4. <u>Avena fatua</u>	<u>5</u>	<u>N</u>	<u>UPL</u>	
5. <u>Trifolium hirtum</u>	<u>5</u>	<u>N</u>	<u>UPL</u>	
6. <u>Vicia villosa</u>	<u>+</u>			
7. <u>Desmodium illinoense</u>	<u>+</u>			
8. <u>/</u>				
<u>140</u> = Total Cover				
Woody Vine Stratum (Plot size: <u>none</u>)				
1. <u>/</u>				
2. <u>/</u>				
<u>0</u> = Total Cover				
% Bare Ground in Herb Stratum <u>5</u>	% Cover of Biotic Crust <u>0</u>			
Remarks:				

SOIL

Sampling Point: 3B

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-19	10YR 4/3	80					SL	
	10YR 3/3	20						

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

Indicators for Problematic Hydric Soils³:

- ☐ Histosol (A1)
☐ Histic Epipedon (A2)
☐ Black Histic (A3)
☐ Hydrogen Sulfide (A4)
☐ Stratified Layers (A5) (LRR C)
☐ 1 cm Muck (A9) (LRR D)
☐ Depleted Below Dark Surface (A11)
☐ Thick Dark Surface (A12)
☐ Sandy Mucky Mineral (S1)
☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
☐ Stripped Matrix (S6)
☐ Loamy Mucky Mineral (F1)
☐ Loamy Gleyed Matrix (F2)
☐ Depleted Matrix (F3)
☐ Redox Dark Surface (F6)
☐ Depleted Dark Surface (F7)
☐ Redox Depressions (F8)
☐ Vernal Pools (F9)

- ☐ 1 cm Muck (A9) (LRR C)
☐ 2 cm Muck (A10) (LRR B)
☐ Reduced Vertic (F18)
☐ Red Parent Material (TF2)
☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No ☒

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
☐ High Water Table (A2)
☐ Saturation (A3)
☐ Water Marks (B1) (Nonriverine)
☐ Sediment Deposits (B2) (Nonriverine)
☐ Drift Deposits (B3) (Nonriverine)
☐ Surface Soil Cracks (B6)
☐ Inundation Visible on Aerial Imagery (B7)
☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
☐ Biotic Crust (B12)
☐ Aquatic Invertebrates (B13)
☐ Hydrogen Sulfide Odor (C1)
☐ Oxidized Rhizospheres along Living Roots (C3)
☐ Presence of Reduced Iron (C4)
☐ Recent Iron Reduction in Tilled Soils (C6)
☐ Thin Muck Surface (C7)
☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (Riverine)
☐ Sediment Deposits (B2) (Riverine)
☐ Drift Deposits (B3) (Riverine)
☐ Drainage Patterns (B10)
☐ Dry-Season Water Table (C2)
☐ Crayfish Burrows (C8)
☐ Saturation Visible on Aerial Imagery (C9)
☐ Shallow Aquitard (D3)
☐ FAC-Neutral Test (D5)

Field Observations:

- Surface Water Present? Yes _____ No ☒ Depth (inches): _____
 Water Table Present? Yes _____ No ☒ Depth (inches): >19
 Saturation Present? Yes _____ No ☒ Depth (inches): >19
 (includes capillary fringe)

Wetland Hydrology Present? Yes _____ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Beechwood City/County: Paso Robles Sampling Date: 4-29-17
 Applicant/Owner: Dan Lloyd State: CA Sampling Point: 9A
 Investigator(s): Jo Tilligkeit & Jo Pohlman Section, Township, Range: 27S 13E
 Landform (hillslope, terrace, etc.): footslope Local relief (concave, convex, none): concave Slope (%): 3
 Subregion (LRR): LPRC Lat: 35.600473 Long: -120.699869 Datum: WGS84
 Soil Map Unit Name: Cropley clay NWI classification: Riverine
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☐ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
Hydric Soil Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>		
Remarks:			

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>none</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
1. <u>/</u>				
2. <u>/</u>				
3. <u>/</u>				
4. <u>/</u>				
Sapling/Shrub Stratum (Plot size: <u>none</u>) 1. <u>/</u> 2. <u>/</u> 3. <u>/</u> 4. <u>/</u> 5. <u>/</u>				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Herb Stratum (Plot size: <u>3x3m</u>) 1. <u>Bromus diandrus</u> 15 N UPL 2. <u>Festuca perennis</u> 20 Y FAC 3. <u>Juncus batorius</u> 20 Y FACW 4. <u>Juncus mexicanus</u> 20 Y FACW 5. <u>Avena fatua</u> 10 N UPL 6. <u>Hordeum murinum</u> 10 N FACU 7. <u>Mimulus guttatus</u> 3 N OBL 8. <u>Pseudognaphalium</u> 5 N FAC <u>Intercalum</u> 103 = Total Cover				
Woody Vine Stratum (Plot size: <u>none</u>) 1. <u>/</u> 2. <u>/</u>				
% Bare Ground in Herb Stratum <u>0</u> % Cover of Biotic Crust <u>10</u>				
Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>				
Remarks:				

SOIL

Sampling Point: 4A

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-3	10YR 2/1	100					CL	
3-12	10YR 2/1	95	10YR 3/6	5	C	PL	CL	
12-18 ⁺	10YR 2/1	90	10YR 5/1	10	D	M	CL	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

Indicators for Problematic Hydric Soils³:

- | | | |
|------------------------------------------------------------|-------------------------------------------------------------|-----------------------------------------------------|
| <input type="checkbox"/> Histosol (A1) | <input type="checkbox"/> Sandy Redox (S5) | <input type="checkbox"/> 1 cm Muck (A9) (LRR C) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Stripped Matrix (S6) | <input type="checkbox"/> 2 cm Muck (A10) (LRR B) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Loamy Mucky Mineral (F1) | <input type="checkbox"/> Reduced Vertic (F18) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) | <input type="checkbox"/> Red Parent Material (TF2) |
| <input type="checkbox"/> Stratified Layers (A5) (LRR C) | <input type="checkbox"/> Depleted Matrix (F3) | <input type="checkbox"/> Other (Explain in Remarks) |
| <input type="checkbox"/> 1 cm Muck (A9) (LRR D) | <input checked="" type="checkbox"/> Redox Dark Surface (F6) | |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Dark Surface (F7) | |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Redox Depressions (F8) | |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) | <input type="checkbox"/> Vernal Pools (F9) | |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | | |

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

 Type: none
 Depth (inches): >18
Hydric Soil Present? Yes ☒ No ☐

Remarks:

Intermittent bands of 10YR 3/3 sandy loam washed down from upslope.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

Secondary Indicators (2 or more required)

- | | | |
|--------------------------------------------------------------------------|-----------------------------------------------------------------------------------|--------------------------------------------------------------------|
| <input type="checkbox"/> Surface Water (A1) | <input type="checkbox"/> Salt Crust (B11) | <input type="checkbox"/> Water Marks (B1) (Riverine) |
| <input type="checkbox"/> High Water Table (A2) | <input checked="" type="checkbox"/> Biotic Crust (B12) | <input type="checkbox"/> Sediment Deposits (B2) (Riverine) |
| <input type="checkbox"/> Saturation (A3) | <input type="checkbox"/> Aquatic Invertebrates (B13) | <input type="checkbox"/> Drift Deposits (B3) (Riverine) |
| <input type="checkbox"/> Water Marks (B1) (Nonriverine) | <input type="checkbox"/> Hydrogen Sulfide Odor (C1) | <input type="checkbox"/> Drainage Patterns (B10) |
| <input checked="" type="checkbox"/> Sediment Deposits (B2) (Nonriverine) | <input checked="" type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) | <input type="checkbox"/> Dry-Season Water Table (C2) |
| <input type="checkbox"/> Drift Deposits (B3) (Nonriverine) | <input type="checkbox"/> Presence of Reduced Iron (C4) | <input type="checkbox"/> Crayfish Burrows (C8) |
| <input type="checkbox"/> Surface Soil Cracks (B6) | <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) | <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | <input type="checkbox"/> Thin Muck Surface (C7) | <input type="checkbox"/> Shallow Aquitard (D3) |
| <input type="checkbox"/> Water-Stained Leaves (B9) | <input type="checkbox"/> Other (Explain in Remarks) | <input type="checkbox"/> FAC-Neutral Test (D5) |

Field Observations:

 Surface Water Present? Yes ☐ No ☒ Depth (inches):
 Water Table Present? Yes ☐ No ☒ Depth (inches):
 Saturation Present? Yes ☐ No ☒ Depth (inches):
 (includes capillary fringe)
Wetland Hydrology Present? Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

sediment transport clear in bands of soil types.
 standing water nearby. cow hoof prints.

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Beerwood City/County: Paso Robles Sampling Date: 5-5-17
 Applicant/Owner: Dan Lloyd State: CA Sampling Point: 1B
 Investigator(s): J. Pehlman Section, Township, Range: 27S 13E
 Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): convex Slope (%): 2
 Subregion (LRR): LRRC Lat: 35.600376 Long: -120.649086 Datum: WGS 84
 Soil Map Unit Name: Cropley clay NWI classification: _____
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes _____ No _____	Hydric Soil Present? Yes _____ No _____	Wetland Hydrology Present? Yes _____ No _____	Is the Sampled Area within a Wetland? Yes _____ No _____
Remarks:			

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>none</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
Sapling/Shrub Stratum (Plot size: <u>none</u>) 1. _____ 2. _____ 3. _____ 4. _____ 5. _____ <u>0</u> = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Herb Stratum (Plot size: <u>3x3m</u>) 1. <u>Erodium cicutarium</u> <u>70</u> <u>Y</u> <u>UPL</u> 2. <u>Festuca myuros</u> <u>40</u> <u>Y</u> <u>FACU</u> 3. <u>Avena fatua</u> <u>15</u> <u>N</u> <u>UPL</u> 4. <u>Trifolium hirtum</u> <u>15</u> <u>N</u> <u>UPL</u> 5. <u>Bromus diandrus</u> <u>5</u> <u>N</u> <u>UPL</u> 6. <u>Festuca perennis</u> <u>5</u> <u>N</u> <u>FAC</u> 7. _____ 8. _____ <u>160</u> = Total Cover				
Woody Vine Stratum (Plot size: <u>none</u>) 1. _____ 2. _____ <u>0</u> = Total Cover				
% Bare Ground in Herb Stratum <u>0</u> % Cover of Biotic Crust <u>0</u>				
Remarks:				

¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes _____ No ☒

SOIL

Sampling Point: F3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-3	10YR 3/3	100					SL	
3-12+	10YR 3/4	100					SL	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

Indicators for Problematic Hydric Soils³:

- | | | |
|------------------------------------------------------------|-----------------------------------------------------|-----------------------------------------------------|
| <input type="checkbox"/> Histosol (A1) | <input type="checkbox"/> Sandy Redox (S5) | <input type="checkbox"/> 1 cm Muck (A9) (LRR C) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Stripped Matrix (S6) | <input type="checkbox"/> 2 cm Muck (A10) (LRR B) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Loamy Mucky Mineral (F1) | <input type="checkbox"/> Reduced Vertic (F18) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) | <input type="checkbox"/> Red Parent Material (TF2) |
| <input type="checkbox"/> Stratified Layers (A5) (LRR C) | <input type="checkbox"/> Depleted Matrix (F3) | <input type="checkbox"/> Other (Explain in Remarks) |
| <input type="checkbox"/> 1 cm Muck (A9) (LRR D) | <input type="checkbox"/> Redox Dark Surface (F6) | |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Dark Surface (F7) | |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Redox Depressions (F8) | |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) | <input type="checkbox"/> Vernal Pools (F9) | |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | | |

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: noneDepth (inches): >12Hydric Soil Present? Yes ☐ No ☒

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

Secondary Indicators (2 or more required)

- | | | |
|--------------------------------------------------------------------|------------------------------------------------------------------------|--------------------------------------------------------------------|
| <input type="checkbox"/> Surface Water (A1) | <input type="checkbox"/> Salt Crust (B11) | <input type="checkbox"/> Water Marks (B1) (Riverine) |
| <input type="checkbox"/> High Water Table (A2) | <input type="checkbox"/> Biotic Crust (B12) | <input type="checkbox"/> Sediment Deposits (B2) (Riverine) |
| <input type="checkbox"/> Saturation (A3) | <input type="checkbox"/> Aquatic Invertebrates (B13) | <input type="checkbox"/> Drift Deposits (B3) (Riverine) |
| <input type="checkbox"/> Water Marks (B1) (Nonriverine) | <input type="checkbox"/> Hydrogen Sulfide Odor (C1) | <input type="checkbox"/> Drainage Patterns (B10) |
| <input type="checkbox"/> Sediment Deposits (B2) (Nonriverine) | <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) | <input type="checkbox"/> Dry-Season Water Table (C2) |
| <input type="checkbox"/> Drift Deposits (B3) (Nonriverine) | <input type="checkbox"/> Presence of Reduced Iron (C4) | <input type="checkbox"/> Crayfish Burrows (C8) |
| <input type="checkbox"/> Surface Soil Cracks (B6) | <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) | <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | <input type="checkbox"/> Thin Muck Surface (C7) | <input type="checkbox"/> Shallow Aquitard (D3) |
| <input type="checkbox"/> Water-Stained Leaves (B9) | <input type="checkbox"/> Other (Explain in Remarks) | <input type="checkbox"/> FAC-Neutral Test (D5) |

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches): >12Water Table Present? Yes ☐ No ☒ Depth (inches): >12Saturation Present? Yes ☐ No ☒ Depth (inches): >12

(includes capillary fringe)

Wetland Hydrology Present? Yes ☐ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Beechwood City/County: Paso Robles Sampling Date: 5-5-17
 Applicant/Owner: Dan Lloyd State: CA Sampling Point: 5A
 Investigator(s): J. Pohlman Section, Township, Range: 27S 13E
 Landform (hillslope, terrace, etc.): toeslope Local relief (concave, convex, none): concave Slope (%): 0-1
 Subregion (LRR): CRRC Lat: 35.600794 Long: -120.64127 Datum: WGS84
 Soil Map Unit Name: Cropley clay NWI classification: none

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ☐ No ☐ (If no, explain in Remarks.)
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No ☐
 Are Vegetation ☐, Soil ☐, or Hydrology ☐ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input type="checkbox"/>
Hydric Soil Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Wetland Hydrology Present?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	
Remarks:		

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>none</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100</u> (A/B)
1. <u>/</u>				
2. <u>/</u>				
3. <u>/</u>				
4. <u>/</u>				
Sapling/Shrub Stratum (Plot size: <u>none</u>)				
1. <u>/</u>				Hydrophytic Vegetation Indicators: <input checked="" type="checkbox"/> Dominance Test is >50% <input type="checkbox"/> Prevalence Index is ≤3.0 ¹ <input type="checkbox"/> Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) <input type="checkbox"/> Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
2. <u>/</u>				
3. <u>/</u>				
4. <u>/</u>				
5. <u>/</u>				
Herb Stratum (Plot size: <u>3x3m</u>)				
1. <u>Hordeum var. arvense</u>	<u>60</u>	<u>Y</u>	<u>FAC</u>	Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
2. <u>Festuca perennis</u>	<u>10</u>	<u>Y</u>	<u>FAC</u>	
3. <u>Festuca myuros</u>	<u>15</u>	<u>N</u>	<u>UPL</u>	
4. <u>Erodium cicutarium</u>	<u>5</u>	<u>N</u>	<u>UPL</u>	
5. <u>/</u>				
Woody Vine Stratum (Plot size: <u>none</u>)				
1. <u>/</u>				Remarks:
2. <u>/</u>				
% Bare Ground in Herb Stratum <u>20</u> % Cover of Biotic Crust <u>0</u>				

SOIL

Sampling Point: 5A

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-6"	10YR 3/2	95	10YR 3/6	5	C	PL		
6-16	10YR 3/1	80	10YR 3/4	20	C	PL		

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

Indicators for Problematic Hydric Soils³:

- ☐ Histosol (A1)
☐ Histic Epipedon (A2)
☐ Black Histic (A3)
☐ Hydrogen Sulfide (A4)
☐ Stratified Layers (A5) (LRR C)
☐ 1 cm Muck (A9) (LRR D)
☐ Depleted Below Dark Surface (A11)
☐ Thick Dark Surface (A12)
☐ Sandy Mucky Mineral (S1)
☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
☐ Stripped Matrix (S6)
☐ Loamy Mucky Mineral (F1)
☐ Loamy Gleyed Matrix (F2)
☒ Depleted Matrix (F3)
☒ Redox Dark Surface (F6)
☒ Depleted Dark Surface (F7)
☒ Redox Depressions (F8)
☐ Vernal Pools (F9)

- ☐ 1 cm Muck (A9) (LRR C)
☐ 2 cm Muck (A10) (LRR B)
☐ Reduced Vertic (F18)
☐ Red Parent Material (TF2)
☐ Other (Explain in Remarks)

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: Increase of clay %
 Depth (inches): 16

Hydric Soil Present? Yes ☒ No ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ☐ Surface Water (A1)
☐ High Water Table (A2)
☐ Saturation (A3)
☐ Water Marks (B1) (Nonriverine)
☐ Sediment Deposits (B2) (Nonriverine)
☐ Drift Deposits (B3) (Nonriverine)
☐ Surface Soil Cracks (B6)
☐ Inundation Visible on Aerial Imagery (B7)
☐ Water-Stained Leaves (B9)
- ☐ Salt Crust (B11)
☐ Biotic Crust (B12)
☐ Aquatic Invertebrates (B13)
☐ Hydrogen Sulfide Odor (C1)
☒ Oxidized Rhizospheres along Living Roots (C3)
☐ Presence of Reduced Iron (C4)
☐ Recent Iron Reduction in Tilled Soils (C6)
☐ Thin Muck Surface (C7)
☐ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ☐ Water Marks (B1) (Riverine)
☐ Sediment Deposits (B2) (Riverine)
☐ Drift Deposits (B3) (Riverine)
☐ Drainage Patterns (B10)
☐ Dry-Season Water Table (C2)
☐ Crayfish Burrows (C8)
☐ Saturation Visible on Aerial Imagery (C9)
☐ Shallow Aquitard (D3)
☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches):
 Water Table Present? Yes ☐ No ☒ Depth (inches): 216
 Saturation Present? Yes ☐ No ☒ Depth (inches): 216
 (includes capillary fringe)

Wetland Hydrology Present? Yes ☒ No ☐

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Arid West Region

Project/Site: Beechwood City/County: Paso Robles Sampling Date: 5-5-17
 Applicant/Owner: Dan Lloyd State: CA Sampling Point: 5B
 Investigator(s): Jo Pohlman Section, Township, Range: 27S 13E
 Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): convex Slope (%):
 Subregion (LRR): LRRC Lat: 35.600352 Long: -120.641454 Datum: WGS84
 Soil Map Unit Name: Arbuckle-San Ysidro Complex NWI classification: None
 Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No _____ (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes ☒ No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes _____ No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes _____ No <input checked="" type="checkbox"/>
Hydric Soil Present?	Yes _____ No <input checked="" type="checkbox"/>	
Wetland Hydrology Present?	Yes _____ No <input checked="" type="checkbox"/>	
Remarks:		

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>none</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: OBL species _____ x 1 = _____ FACW species _____ x 2 = _____ FAC species _____ x 3 = _____ FACU species _____ x 4 = _____ UPL species _____ x 5 = _____ Column Totals: _____ (A) _____ (B) Prevalence Index = B/A = _____
Sapling/Shrub Stratum (Plot size: <u>none</u>) 1. _____ 2. _____ 3. _____ 4. _____ 5. _____ _____ = Total Cover				
Herb Stratum (Plot size: <u>3x3m</u>) 1. <u>Erodium cicutarium</u> <u>70</u> <u>Y</u> <u>UPL</u> 2. <u>Festuca myuros</u> <u>50</u> <u>Y</u> <u>FACU</u> 3. <u>Avena fatua</u> <u>5</u> <u>N</u> <u>UPL</u> 4. <u>Bromus diandrus</u> <u>+</u> <u>N</u> <u>_____</u> 5. <u>Vicia villosa</u> <u>+</u> <u>N</u> <u>_____</u> 6. <u>Trifolium hirtum</u> <u>+</u> <u>N</u> <u>_____</u> 7. _____ 8. _____ _____ = Total Cover				
Woody Vine Stratum (Plot size: <u>none</u>) 1. _____ 2. _____ _____ = Total Cover				
% Bare Ground in Herb Stratum <u>10</u> % Cover of Biotic Crust <u>0</u>				
Remarks:				Hydrophytic Vegetation Indicators: _____ Dominance Test is >50% _____ Prevalence Index is ≤3.0 ¹ _____ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) _____ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Hydrophytic Vegetation Present? Yes _____ No <input checked="" type="checkbox"/>

SOIL

Sampling Point: 5B

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-20*	10YR3/3	100					LS	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

Indicators for Problematic Hydric Soils³:

- | | | |
|------------------------------------------------------------|-----------------------------------------------------|-----------------------------------------------------|
| <input type="checkbox"/> Histosol (A1) | <input type="checkbox"/> Sandy Redox (S5) | <input type="checkbox"/> 1 cm Muck (A9) (LRR C) |
| <input type="checkbox"/> Histic Epipedon (A2) | <input type="checkbox"/> Stripped Matrix (S6) | <input type="checkbox"/> 2 cm Muck (A10) (LRR B) |
| <input type="checkbox"/> Black Histic (A3) | <input type="checkbox"/> Loamy Mucky Mineral (F1) | <input type="checkbox"/> Reduced Vertic (F18) |
| <input type="checkbox"/> Hydrogen Sulfide (A4) | <input type="checkbox"/> Loamy Gleyed Matrix (F2) | <input type="checkbox"/> Red Parent Material (TF2) |
| <input type="checkbox"/> Stratified Layers (A5) (LRR C) | <input type="checkbox"/> Depleted Matrix (F3) | <input type="checkbox"/> Other (Explain in Remarks) |
| <input type="checkbox"/> 1 cm Muck (A9) (LRR D) | <input type="checkbox"/> Redox Dark Surface (F6) | |
| <input type="checkbox"/> Depleted Below Dark Surface (A11) | <input type="checkbox"/> Depleted Dark Surface (F7) | |
| <input type="checkbox"/> Thick Dark Surface (A12) | <input type="checkbox"/> Redox Depressions (F8) | |
| <input type="checkbox"/> Sandy Mucky Mineral (S1) | <input type="checkbox"/> Vernal Pools (F9) | |
| <input type="checkbox"/> Sandy Gleyed Matrix (S4) | | |

³Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if present):

Type: noneDepth (inches): >20Hydric Soil Present? Yes ☐ No ☒

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

Secondary Indicators (2 or more required)

- | | | |
|--------------------------------------------------------------------|------------------------------------------------------------------------|--------------------------------------------------------------------|
| <input type="checkbox"/> Surface Water (A1) | <input type="checkbox"/> Salt Crust (B11) | <input type="checkbox"/> Water Marks (B1) (Riverine) |
| <input type="checkbox"/> High Water Table (A2) | <input type="checkbox"/> Biotic Crust (B12) | <input type="checkbox"/> Sediment Deposits (B2) (Riverine) |
| <input type="checkbox"/> Saturation (A3) | <input type="checkbox"/> Aquatic Invertebrates (B13) | <input type="checkbox"/> Drift Deposits (B3) (Riverine) |
| <input type="checkbox"/> Water Marks (B1) (Nonriverine) | <input type="checkbox"/> Hydrogen Sulfide Odor (C1) | <input type="checkbox"/> Drainage Patterns (B10) |
| <input type="checkbox"/> Sediment Deposits (B2) (Nonriverine) | <input type="checkbox"/> Oxidized Rhizospheres along Living Roots (C3) | <input type="checkbox"/> Dry-Season Water Table (C2) |
| <input type="checkbox"/> Drift Deposits (B3) (Nonriverine) | <input type="checkbox"/> Presence of Reduced Iron (C4) | <input type="checkbox"/> Crayfish Burrows (C8) |
| <input type="checkbox"/> Surface Soil Cracks (B6) | <input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6) | <input type="checkbox"/> Saturation Visible on Aerial Imagery (C9) |
| <input type="checkbox"/> Inundation Visible on Aerial Imagery (B7) | <input type="checkbox"/> Thin Muck Surface (C7) | <input type="checkbox"/> Shallow Aquitard (D3) |
| <input type="checkbox"/> Water-Stained Leaves (B9) | <input type="checkbox"/> Other (Explain in Remarks) | <input type="checkbox"/> FAC-Neutral Test (D5) |

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches): Water Table Present? Yes ☐ No ☒ Depth (inches): >20Saturation Present? Yes ☐ No ☒ Depth (inches): >20

(includes capillary fringe)

Wetland Hydrology Present? Yes ☐ No ☒

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:



DEPARTMENT OF THE ARMY
SAN FRANCISCO DISTRICT, U.S. ARMY CORPS OF ENGINEERS
1455 MARKET STREET, 16TH FLOOR
SAN FRANCISCO, CALIFORNIA 94103-1398

Regulatory Division

MAY 15 2018

Subject: File No. 2016-00384S

Dr. Daniel Meade
Althouse and Meade, Inc.
1602 Spring Street
Paso Robles, California 93446

Dear Dr. Meade:

This correspondence is in reference to your submittal of January 19, 2018, on behalf of Dan Lloyd, requesting a preliminary jurisdictional determination of the extent of navigable waters of the United States (U.S.) and waters of the U.S. occurring on a 213-acre property on Beechwood Drive, in the City of Paso Robles, San Luis Obispo County, California (lat. 35.597641°, long. -120.648316°).

All proposed discharges of dredged or fill material occurring below the plane of ordinary high water in non-tidal waters of the U.S.; or below the high tide line in tidal waters of the U.S.; or within the lateral extent of wetlands adjacent to these waters, typically require Department of the Army authorization and the issuance of a permit under Section 404 of the Clean Water Act of 1972, as amended (33 U.S.C. § 1344 *et seq.*). Waters of the U.S. generally include the territorial seas; all traditional navigable waters which are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including waters subject to the ebb and flow of the tide; wetlands adjacent to traditional navigable waters; non-navigable tributaries of traditional navigable waters that are relatively permanent, where the tributaries typically flow year-round or have continuous flow at least seasonally; and wetlands directly abutting such tributaries. Where a case-specific analysis determines the existence of a "significant nexus" effect with a traditional navigable water, waters of the U.S. may also include non-navigable tributaries that are not relatively permanent; wetlands adjacent to non-navigable tributaries that are not relatively permanent; wetlands adjacent to but not directly abutting a relatively permanent non-navigable tributary; and certain ephemeral streams in the arid West.

The enclosed delineation map titled "SPN-2016-00384S Preliminary Jurisdictional Determination for Beechwood Estates, San Luis Obispo County, California," in one sheet and date certified May 4, 2018, depicts the extent and location of wetlands, and other waters of the U.S., within the boundary area of the site that **may be** subject to U.S. Army Corps of Engineers' regulatory authority under Section 404 of the Clean Water Act. This preliminary jurisdictional determination is based on the current conditions of the site, as verified during a field investigation of June 14, 2017, a review of available digital photographic imagery, and a review of other data included in your submittal. While this preliminary jurisdictional determination was

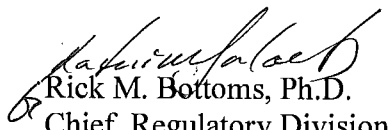
conducted pursuant to Regulatory Guidance Letter No. 16-01, *Jurisdictional Determinations*, it may be subject to future revision if new information or a change in field conditions becomes subsequently apparent. The basis for this preliminary jurisdictional determination is fully explained in the enclosed *Preliminary Jurisdictional Determination Form*. You are requested to sign and date this form and return it to this office within two weeks of receipt.

You are advised that the preliminary jurisdictional determination may **not** be appealed through the U.S. Army Corps of Engineers' *Administrative Appeal Process*, as described in 33 C.F.R. § 331 (65 Fed. Reg. 16,486; Mar. 28, 2000). Under the provisions of 33 C.F.R. § 331.5(b)(9), non-appealable actions include preliminary jurisdictional determinations since they are considered to be only advisory in nature and make no definitive conclusions on the jurisdictional status of the water bodies in question. However, you may request this office to provide an approved jurisdictional determination that precisely identifies the scope of jurisdictional waters on the site; an approved jurisdictional determination may be appealed through the *Administrative Appeal Process*. If you anticipate requesting an approved jurisdictional determination at some future date, you are advised not to engage in any on-site grading or other construction activity in the interim to avoid potential violations and penalties under Section 404 of the Clean Water Act. Finally, you may provide this office new information for further consideration and request a reevaluation of this preliminary jurisdictional determination.

You may refer any questions on this matter to Frances Malamud-Roam of my Regulatory staff by telephone at 415-503-6792 or by e-mail at frances.p.malamud-roam@usace.army.mil. All correspondence should be addressed to the Regulatory Division, South Branch, referencing the file number at the head of this letter.

The San Francisco District is committed to improving service to our customers. My Regulatory staff seeks to achieve the goals of the Regulatory Program in an efficient and cooperative manner while preserving and protecting our nation's aquatic resources. If you would like to provide comments on our Regulatory Program, please complete the Customer Service Survey Form available on our website:
<http://www.spn.usace.army.mil/Missions/Regulatory.aspx>.

Sincerely,


Rick M. Bottoms, Ph.D.
Chief, Regulatory Division

Enclosures

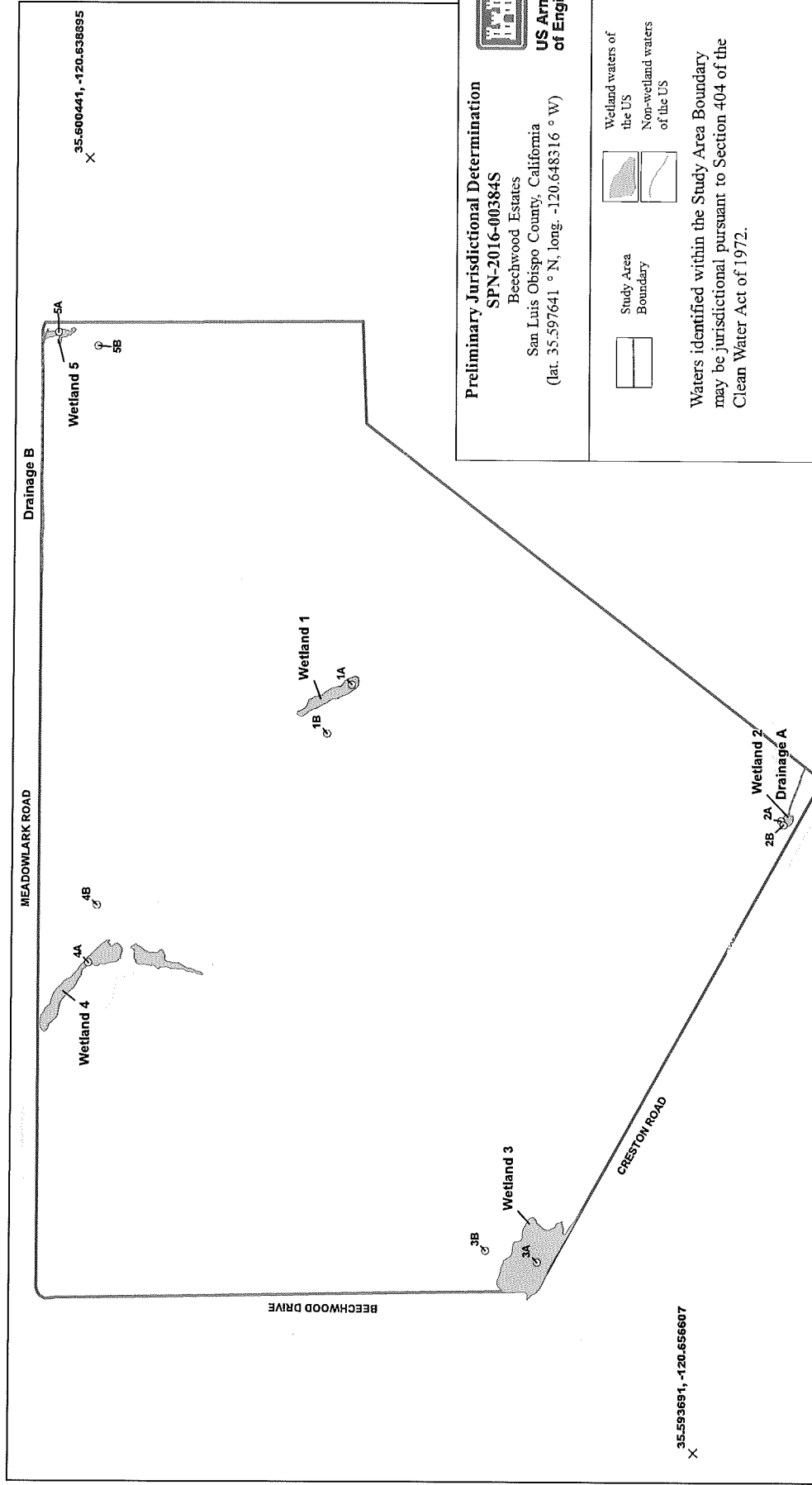
Copy Furnished (w/ encls):

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CA RWQCB, San Luis Obispo, CA

Exhibit A. Aquatic Resources Delineation Map



Preliminary Jurisdictional Determination
SPN-2016-00384S
 Beechwood Estates
 San Luis Obispo County, California
 (lat. 35.597641 ° N, long. -120.648316 ° W)

US Army Corps of Engineers

Study Area Boundary

Wetland waters of the US

Non-wetland waters of the US

Waters identified within the Study Area Boundary may be jurisdictional pursuant to Section 404 of the Clean Water Act of 1972.

1 Sheet

Date: 4 May 2018

- Map Control Point
- Sample Sites
- Federal Non-Wetland Waters (1,194 feet)
- Federal Wetlands (3.3 acres)
- Study Area

Site Name: Beechwood Estates
 Investigator: Jacqueline Tilligkelt

Delineation of Potentially Jurisdictional Wetlands and Waters of the State
 Beechwood Estates, City of Paso Robles, San Luis Obispo County



Kevin Merk Associates, LLC | P.O. Box 318, San Luis Obispo, CA 93406 | 805-748-5837

October 29, 2018

David Foote
Firma
187 Tank Farm Road
San Luis Obispo, California 93401

Subject: Peer Review of Biological Studies Prepared for the Beechwood Estates Specific Plan Environmental Impact Report, Paso Robles, California

Dear Mr. Foote:

Kevin Merk Associates, LLC (KMA) at your request, conducted a peer review of biological studies prepared for the Beechwood Estates Specific Plan project within the City of Paso Robles (Beechwood Specific Plan, GPA 12-004). The project site covers approximately 213 acres, situated between Beechwood Drive, Meadowlark Road, and Creston Road located in the eastern portion of the City of Paso Robles in San Luis Obispo County, California. It includes twelve Assessor's Parcels situated on the northeastern portion of the U. S. Geological Survey's (USGS) Templeton 7.5-minute quadrangle map (T27S R12E). The Beechwood Specific Plan project as proposed would convert the property into a residential development consisting of single and multi-family homes, in addition to commercial mixed use and park and open space land. A road and trail network is also proposed. The purpose of the peer review is to confirm adequacy of the applicant provided biological studies to assist you with preparation of the Environmental Impact Report (EIR) for the project. The following provides the methods and results of our analysis.

METHODS

The peer review analyzed two Biological Reports prepared by Althouse and Meade, Inc., (one from July 2014 and another from June 2018) and a Delineation of Potentially Jurisdictional Wetlands and Waters also prepared by Althouse and Meade, Inc. (January 2018) for the project. The Althouse and Meade (A&M) reports (collectively referred to as biological reports or studies) were prepared for the applicant and are intended to provide the basis for the Biological Resources section of the EIR. The delineation report (aka, the wetland delineation) was also reviewed by the United States Army Corps of Engineers (Corps), and the Corps confirmed that the wetlands onsite may be under their Clean Water Act Section 404 regulatory jurisdiction (May 15, 2018 Letter to Dan Meade from Rick Bottoms with the Corps). The Biological Report from 2014 included a Vernal Pool Branchiopod Habitat Assessment for the project site (Mitchell C. Dallas, May 2014), and the 2018 report included the results of a series of vernal pool branchiopod surveys completed by Mr. Dallas. Correspondence from the United States Fish and Wildlife Service to the Beechwood Owner's Group (August 15, 2016 letter to Dan Lloyd from Julie Vanderwier) was also reviewed.

Additional Background Review

Prior to a field survey to verify or ground-truth the observations of the biological reports, KMA conducted a review of other available background information, including biological and environmental studies from the region as well as agency developed survey guidelines. This included the following reports:

- Chandler Ranch Area Specific Plan Final EIR, prepared by Rincon Consultants for the City of Paso Robles (May 2006); this site is located approximately one mile to the north of the Beechwood site;
- Biological Resources Assessment for Entrada de Paso Robles and other focused studies for special status plants and wildlife, prepared by KMA (2014-2016); this site is located approximately three to four miles north of the Beechwood site;
- Biological Resources Assessment for the Spurr Ardmore Road Vesting Tentative Parcel Map, prepared by KMA (2017); this site is approximately two miles north of the Beechwood site;
- San Luis Obispo County's Draft Guidelines for Biological Resources Assessments – Guidelines for Biological Consultants (2016);
- California Dept. of Fish and Wildlife "Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities," (2018); and
- United States Fish and Wildlife Service "Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed, Proposed and Candidate Plants," (2000).

A query of the California Natural Diversity Data Base (CNDDB, October 2018) was also done to confirm no new special status biological resources (i.e., plant communities, plants or wildlife) were identified on the site or in the project area beyond those documented in the biological reports.

Field Survey

KMA conducted a field survey of the site on September 28, 2018 to observe existing conditions onsite and verify data reported in the A&M biological reports. During the survey, the property perimeter was driven and selected areas on site were walked using meandering transects to assess habitat types, search for special status plants, potential San Joaquin kit fox (*Vulpes macrotis mutica*) and American badger (*Taxidea taxus*) den sites, and other wildlife sign. The weather was clear and temperature was around 75 degrees Fahrenheit. It should be noted that the timing of the site visit was in the driest part of the year, which is not ideal for identification of annual plant species; regardless, it provided the necessary "on-the-ground" observations to corroborate the distribution of plant communities and other resources present on the site and mapped by A&M. Each habitat type documented and mapped by A&M, and each wetland area identified in the wetland delineation report were visited.

RESULTS

The A&M reports are well-written and organized documents that meet standard guidelines developed for biological reports by agencies such as the County of San Luis Obispo. The reports contain relevant regulatory context and clear summaries of potential special status species occurrences in the area, and those evaluated in the investigations. The biology reports also present an impact assessment and recommend appropriate mitigation to reduce potentially significant impacts as defined in the California Environmental Quality Act (CEQA) to less than significant levels.

The 2018 wetland delineation report identified the extent of potential Corps regulatory jurisdiction, and the Corps confirmed through completion of the Preliminary Jurisdictional Determination process that they concur with the A&M findings. The following comments are generally minor in nature, and do not affect the findings or recommendations of the biological investigations completed on the site.

Habitat Types

1. We noted considerable changes in the habitat types mapped on the site from 2014 to 2018. While the 2014 report blanketed much of the site as cropland, the 2018 study revised the classification approach to include most of this area as annual grassland. The 2018 report identified the presence of the following habitat types:
 - Annual grassland – 118.3 acres
 - Vineyard – 38.8
 - Blue Oak Savanna 26.7 acres
 - Anthropogenic – 16.9
 - Cropland – 9.8 acres
 - Wetland – 2.8 acres (June 2018) revised to 3.30 in 2018 Wetland Delineation (A&M, January, 2018)

The habitat types referred to are broad generalizations following currently accepted vegetation classifications for development projects, and are appropriate for this site and level of analysis. The majority of the property has been disturbed by agricultural activities (as evidenced by viewing Google Earth aerial imagery back to 1994), and has a relatively high human presence given existing structures, vineyard and cropland onsite. Based on the September 2018 site visit, we concur that these habitats as mapped in the 2018 report are present on site in the locations described.

2. Each wetland area and drainage feature identified in the wetland delineation report was also visited by KMA during the September 2018 field work. All were dry at the time of the visit, but did contain positive evidence of wetland hydrology. Plant composition was generally consistent with characterizations of each area in the wetland delineation report, with the exception of swamp picklegrass (*Crypsis schoenoides*) observed in several of the mapped wetland areas. Swamp picklegrass is a non-native, late-flowering annual grass that was not identified in the wetland delineation likely since it was not in

flower when the surveys were conducted in spring and early summer. It has a facultative wetland indicator status, which further supports the wetland delineation report findings. In addition, the willow species observed at Wetland 2 was identified as red willow (*Salix laevigata*) in the wetland delineation report, and it appears that arroyo willow (*Salix lasiolepis*) is more likely. This potential mis-identification does not affect the findings of the wetland delineation report, and overall, our observations are consistent with those of the A&M investigation.

Special Status Biological Resources

3. The surveys for the A&M investigation were conducted during three separate years (2014, 2017, and 2018). The timing of these surveys were conducted in the spring and early summer, which would have allowed detection of the special status plants identified as potentially-occurring onsite, since these species are known to flower during this time period. It is noted that there was no late-season (August-September) botanical survey, but this is not a critical concern given the target list of species identified for this project are in identifiable condition earlier in the season.

The 2014 report included a much lengthier special status plant table, with many species not known to occur in the Paso Robles area. The 2018 report refined the list substantially to include those species known to occur in the region with a sufficient rarity status (i.e., federal/state threatened or endangered, or California Rare Plant Rank) to be considered under the California Environmental Quality Act. The conclusions in the 2018 report regarding special status plants with potential to occur onsite are reasonable and supportable by the information presented. Two plant species were considered to have high potential to occur onsite (Santa Lucia dwarf rush and shining Navarretia), and the other two potentially-occurring special status plant species (oval-leaved snapdragon and spreading Navarretia) were considered to have moderate potential to occur onsite. Botanical surveys covered all of the site and were conducted at the time of year when these species would have been in identifiable condition. No special status plants were observed during their survey effort. Therefore, we concur with their findings that no special status plants are present on the project site.

4. The conclusions regarding the potential for special status wildlife to occur on site are also reasonable and supportable by the information presented. Six species were given moderate potential for occurrence on site, such as: American badger, Lewis' woodpecker, loggerhead shrike, Northern California legless lizard, pallid bat, and Townsend's big-eared bat. Only the loggerhead shrike was observed onsite.

The remaining five species were given low potential to occur, and include: ferruginous hawk, San Joaquin kit fox, Swainson's hawk, vernal pool fairy shrimp, and western spadefoot. No evidence or sign of the species with low potential to occur onsite were identified during the course of the investigation. Mr. Dallas conducted focused vernal pool branchiopod surveys on the site following his 2014 Habitat Assessment, and confirmed through soil analysis that vernal pool fairy shrimp are not present in any of the seasonal wetland features sampled. The USFWS working with the applicant's team concurred that vernal pool fairy shrimp are not expected to occur onsite and no further

survey efforts were required.

Regarding the San Joaquin kit fox, even though this species has a low probability of occurring onsite, the project site is within a 2:1 mitigation ratio zone that will require habitat set aside or payment of an in-lieu fee into a City-approved conservation bank to adequately mitigate impacts to this species habitat. While the CDFW had established the in-lieu fee payment as mitigation for smaller projects, adequate precedent has been set in the City for projects of varying sizes to mitigate impacts to this species through payment of an in-lieu fee.

Impact Analysis and Proposed Mitigation

The biological reports contain a general impact analysis and recommend mitigation measures for special status resources to reduce project related impacts to a less than significant level pursuant to the CEQA. The mitigation measures included in the biology reports are generally sufficient to be utilized in the EIR impact analysis, however no mitigation was identified for impacts to wetland habitat other than the preparation of a Wetland Mitigation Plan. The report correctly states that authorizations for removal of jurisdictional waters and wetlands are required by the Corps, Regional Water Quality Control Board (RWQCB) and CDFW, but states that mitigation will be prescribed by a Wetland Mitigation Plan as approved by these permitting agencies. No Wetland Mitigation Plan was provided for review with the biological reports, and the Biological Resources section of the EIR will require adequate mitigation measures for impacts to onsite wetlands and jurisdictional drainage features to reduce the impact to a less than significant level pursuant to CEQA. The following is a recommended mitigation measure for impacts to wetlands and jurisdictional drainages:

5. Prior to issuance of a grading permit, the applicant must obtain a Section 404 Permit from the Corps, a Section 401 Water Quality Certification from RWQCB, and a Section 1602 Streambed Alteration Agreement from CDFW, or provide proof from these agencies that a permit is not required. The applicant shall also prepare the above-referenced Wetland Mitigation Plan to show that jurisdictional wetlands and drainages, their size, function and value have been adequately mitigated onsite or at a City-approved off-site location. Based on the no-net-loss policy developed for federal wetland habitat, impacts to waters of the U.S., including wetland and riparian habitat, must be created, restored or enhanced at a minimum 1:1 basis (acres of habitat restored to acres of habitat lost). The project should incorporate biotechnical erosion controls and other habitat restoration techniques to improve, or at the least, maintain the existing habitat function and value in the study area. In most instances, regulatory agencies may require higher mitigation ratios to ensure that no-net-loss of the resource is attained, and specific language in agency permits shall be followed.

Further refinement to other A&M proposed mitigation measures may be appropriate, and the following comments are provided to aid in your preparation of the Biological Resources section of the EIR:

6. The proposed project would affect common and special status species, and habitats existing on site. Almost all existing habitats on site would be removed, including blue

oak savanna, wetlands, and individual oak trees. The report identifies impacts to oak trees (the specific number is not identified), nesting birds, and several special status species, including legless lizard and San Joaquin kit fox. The impacts identified appear consistent with our understanding of the development proposal, and twenty-eight mitigation measures are proposed.

7. Mitigation Measures BR-2 through BR-5 relating to oak tree impacts would benefit from a timing component. If the entire site is graded at once, then these mitigations should be required prior to site grading. However, if the site is to be graded in phases, then they could be delayed until the particular phase is authorized. The Oak Tree Protection Plan, should state the minimum requirements of the Plan in the mitigation measure, including detailed goals, objectives, success criteria, monitoring frequency and annual reporting standards.
8. Mitigation Measure BR-8 is generally adequate for the protection of nesting birds, but given the potential for raptors to be in the area, the timing of the nesting bird season should be modified to February 15 through August 31 (rather than March 15 to August 15). Buffers between construction and nesting birds are not specified and should have a minimum range based on species, slope aspect, and surrounding vegetation. To minimize impacts to nesting bird species protected by the Migratory Bird Treaty Act and California Fish and Game Code, grading of the site should be limited to the time period between September 1 and February 14 if feasible. If initial site disturbance cannot be conducted during this time period, a pre-construction survey for active bird nests within the limits of the project should be conducted by a qualified biologist, which is consistent with the A&M measure. A survey buffer of 500 feet (or as feasible) should also be included since raptor nesting has been observed in the general area.
9. Mitigation Measure BR-11 requires a protection plan be prepared if spadefoots are found in the project area. Since this is a fossorial species (i.e., lives underground for much of the year), the species likely would not be found until construction commences. This could potentially cause delays if the plan was left to be prepared once the species was observed during ground disturbance. While the branchiopod survey report is an excellent source of information to determine the potential of the species to occur onsite, the surveys were conducted during drought years, and it is possible that the species could have been missed. Moreover, tilling of the soils onsite for dry farming likely reduced the potential for the species to occur, but still, to prevent potential impacts to construction schedules should this species be uncovered during initial site disturbance, it would seem prudent to prepare the protection plan and have it submitted to the City as a requirement prior to issuance of a final grading permit.
10. The San Joaquin kit fox is highly unlikely to occur in the project area due to the extensive development (primarily vineyards) between the Estrella River and the site. Still it is not out of the realm of possibility to have a kit fox in the area given the large swaths of open space east of the city limits, and the known core population on the Carrizo Plain and historic satellite occurrence on Camp Roberts. While the in-lieu fee mitigation option was developed for smaller projects where onsite mitigation and land set aside was not feasible, other projects in the City have utilized the in-lieu fee as

adequate project mitigation. The standard mitigation measures provided in the A&M report should be adequate to avoid impacts and potential for take of the species as defined in the state and federal Endangered Species Acts.

11. Discussion of cumulative impacts is not included in the biology reports as it is typically done as part of the CEQA document preparation. Some discussion of potential cumulative impacts will be required in order to meet the CEQA Mandatory Findings of Significance guideline in the City's CEQA checklist. It may be worth noting that the loss of annual grassland combined with the loss of this habitat type from other nearby projects (i.e., Olsen and Chandler Specific Plans) may result in cumulative impacts to raptor foraging habitat within City limits.

CONCLUSION

The peer review of applicant submitted biological studies for the Beechwood Estates Specific Plan project did not identify any critical omission that would affect the preparation of the biological resources section of the EIR. The key conclusions of the biological studies prepared by A&M are that potentially significant impacts may occur to oak trees, nesting birds, wetlands, and special status species (i.e., bats, legless lizards, spadefoot, badger and San Joaquin kit fox) during construction of the project. Special status plant surveys, as well as protocol-level surveys for vernal pool fairy shrimp, confirmed these species are absent from the site, and thus, no mitigation for these resources is required. Utilizing the mitigation measures provided in the biological reports in concert with the mitigation measure for wetland and drainage feature impacts and other recommended modifications to A&M mitigation measures provided herein will be adequate for the impact analysis in the Biological Resources section of the EIR.

REFERENCES

- Althouse and Meade, Inc. 2014. Biological Report for Beechwood Estates. Prepared for Beechwood Ownership Group, Paso Robles, CA.
- _____. January, 2018. Delineation of Potentially Jurisdictional Wetlands and Waters for Beechwood Estates, Amendment 1. Prepared for Beechwood Ownership Group, Paso Robles, CA.
- _____. June, 2018. Biological Report for Beechwood Estates. Prepared for Beechwood Ownership Group, Paso Robles, CA.
- California Department of Fish and Wildlife. 2018. California Natural Diversity Database, Rarefind. Queried October 2018.
- California Department of Fish and Wildlife. 2018. Protocols for Surveying and Evaluating Impacts to Special Status Native Plant Populations and Sensitive Natural Communities. Accessed via: <http://www.wildlife.ca.gov>.
- Kevin Merk Associates (KMA). 2014-2016. Entrada de Paso Robles Biological Resources Assessment and Focused Studies.
- _____. 2017. Spurr Ardmore Road Vesting Tentative Parcel Map Biological Resources Assessment.

Rincon Consultants. 2006. Chandler Ranch Area Specific Plan Final Environmental Impact Report prepared for the City of Paso Robles.

San Luis Obispo County Planning and Development. 2016. Guidelines for Biological Resources Assessments (Draft).

United States Fish and Wildlife Service. 2000. Guidelines for Conducting and Reporting Botanical Inventories for Federally Listed, Proposed and Candidate Plants. Accessed via: <http://www.fws.gov>. (Ventura Fish and Wildlife).

United States Fish and Wildlife Service. 2018. National Wetlands Inventory website. U.S. Department of the Interior, Washington, D.C. Accessed via: <http://www.fws.gov/wetlands/>.



Thank you for the opportunity to assist you with this project. I trust the above information is sufficient to support your preparation of the Biological Resources section of the project EIR. If you have any questions regarding the information contained herein, please contact me via email at kmerk@kevinmerkassociates.com or call me at (805)748-5837.

Sincerely,
KEVIN MERK ASSOCIATES, LLC

A handwritten signature in blue ink, appearing to read "Kevin Merk", written in a cursive style.

Kevin B. Merk
Principal Biologist

Appendix C

Cultural Resource Study

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Cultural Resource Study for the Proposed Beechwood Residential Development Project City of Paso Robles, California

Erin Enright, Joshua Patterson, Jasmine Kidwell, and Maggie Wineland

Prepared By



Applied EarthWorks, Inc.

811 El Capitan Way, Suite 100
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Prepared For

David Foote

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January 2019

draft

CONFIDENTIAL
Not for Public Distribution

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July 16, 2018**

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This list is current only as of the date of this document and is based on the information available to the Commission on the date it was produced.

Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resource Section 5097.98 of the Public Resources Code.

This list is only applicable for contacting local Native American Tribes with regard to cultural resources assessments for the proposed
871 N. Ocean Ave., Cayucos & Beechwood Development, San Luis Obispo County

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July 16, 2018**

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871 N. Ocean Ave., Cayucos & Beechwood Development, San Luis Obispo County

Appendix D
Noise Impact Assessment

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NOISE IMPACT ASSESSMENT

F O R

BEECHWOOD SPECIFIC PLAN

PASO ROBLES, CA

MARCH 2019

PREPARED FOR:

firma Consultants
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PREPARED BY:



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- A. Ambient Noise Monitoring Surveys
- B. Traffic Noise Modeling

INTRODUCTION

This report discusses the existing noise setting and identifies potential noise impacts associated with the implementation of the proposed Beechwood Specific Plan Project. Noise mitigation measures are recommended where the predicted noise levels would exceed applicable noise standards.

PROJECT OVERVIEW

The proposed Beechwood Specific Plan will provide a combination of land uses that include residential, commercial mixed-use, park/open space, and trail networks. The plan will include 911 residential dwelling units. The project site totals approximately 235 acres located on the east side of Beechwood Drive, between Meadowlark Road and Creston Road. The proposed Beechwood Specific Plan is depicted in Figure 1

ACOUSTIC FUNDAMENTALS

Noise is generally defined as sound that is loud, disagreeable, or unexpected. Sound, as described in more detail below, is mechanical energy transmitted in the form of a wave because of a disturbance or vibration.

AMPLITUDE

Amplitude is the difference between ambient air pressure and the peak pressure of the sound wave. Amplitude is measured in decibels (dB) on a logarithmic scale. For example, a 65 dB source of a sound, such as a truck, when joined by another 65 dB source results in a sound amplitude of 68 dB, not 130 dB (i.e., doubling the source strength increases the sound pressure by 3 dB). Amplitude is interpreted by the ear as corresponding to different degrees of loudness. Laboratory measurements correlate a 10 dB increase in amplitude with a perceived doubling of loudness and establish a 3 dB change in amplitude as the minimum audible difference perceptible to the average person.

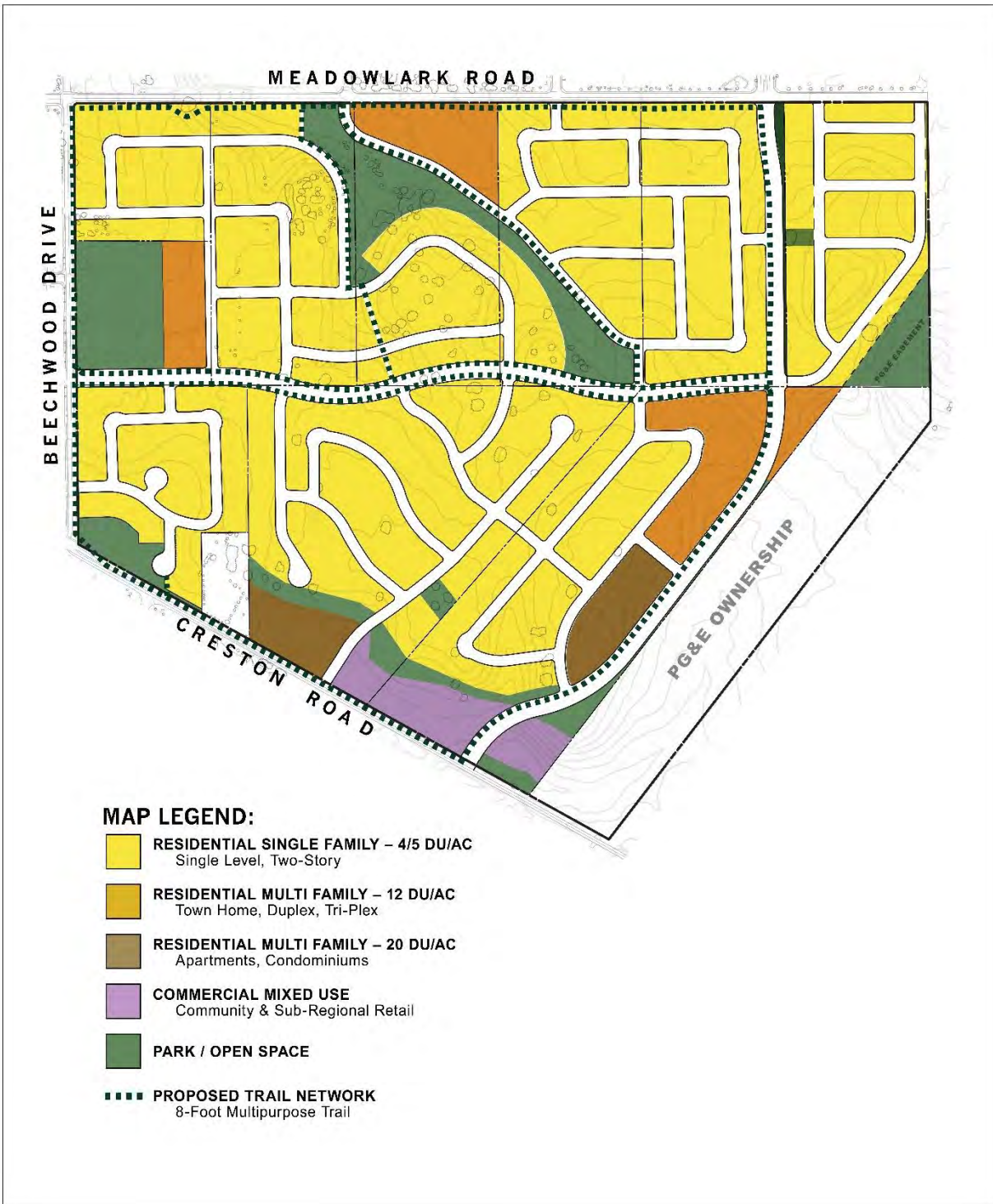
FREQUENCY

Frequency is the number of fluctuations in the pressure wave per second. The unit of frequency is the Hertz (Hz). One Hz equals one cycle per second. The human ear is not equally sensitive to the sound of different frequencies. Sound waves below 16 Hz or above 20,000 Hz cannot be heard at all, and the ear is more sensitive to sound in the higher portion of this range than in the lower. To approximate this sensitivity, the environmental sound is usually measured in A-weighted decibels (dBA). On this scale, the normal range of human hearing extends from about 10 dBA to about 140 dBA. Common community noise sources and noise levels are depicted in Figure 2.

ADDITION OF DECIBELS

Because decibels are logarithmic units, sound levels cannot be added or subtracted through ordinary arithmetic. Under the decibel scale, a doubling of sound energy corresponds to a 3-dB increase. In other words, when two identical sources are each producing sound of the same loudness, the resulting sound level at a given distance would be 3 dB higher than one source under the same conditions. For example, if one automobile produces a sound level of 70 dB when it passes an observer, two cars passing simultaneously would not produce 140 dB; rather, they would combine to produce 73 dB. Under the decibel scale, three sources of equal loudness together would produce an increase of 5 dB.

Figure 1
Proposed Beechwood Specific Plan



Source: RICK Engineering Company 2018

**Figure 2
Common Noise Levels**

Common Outdoor Activities	Noise Level (dBA)	Common Indoor Activities
Jet Fly-over at 300m (1000 ft)	110	Rock Band
Gas Lawn Mower at 1 m (3 ft)	100	
Diesel Truck at 15 m (50 ft), at 80 km (50 mph)	90	Food Blender at 1 m (3 ft)
Noisy Urban Area, Daytime	80	Garbage Disposal at 1 m (3 ft)
Gas Lawn Mower, 30 m (100 ft)	70	Vacuum Cleaner at 3 m (10 ft)
Commercial Area		Normal Speech at 1 m (3 ft)
Heavy Traffic at 90 m (300 ft)	60	
Quiet Urban Daytime	50	Large Business Office Dishwasher Next Room
Quiet Urban Nighttime	40	Theater, Large Conference Room (Background)
Quiet Suburban Nighttime		Library
Quiet Rural Nighttime	30	Bedroom at Night, Concert Hall (Background)
	20	Broadcast/Recording Studio
	10	
Lowest Threshold of Human Hearing	0	Lowest Threshold of Human Hearing

Source: Caltrans 2012

SOUND PROPAGATION & ATTENUATION

Geometric Spreading

The sound from a localized source (i.e., a point source) propagates uniformly outward in a spherical pattern. The sound level decreases (attenuates) at a rate of approximately 6 decibels for each doubling of distance from a point source. Highways consist of several localized noise sources on a defined path, and hence can be treated as a line source, which approximates the effect of several point sources. Noise from a line source propagates outward in a cylindrical pattern, often referred to as cylindrical spreading. Sound levels attenuate at a rate of approximately 3 decibels for each doubling of distance from a line source, depending on ground surface characteristics. For acoustically hard sites (i.e., sites with a reflective surface between the source and the receiver, such as a parking lot or body of water,), no excess ground attenuation is assumed. For acoustically absorptive or soft sites (i.e., those sites with an absorptive ground surface between a line source and the receiver, such as soft dirt, grass, or scattered bushes and trees), an excess ground-attenuation value of 1.5 decibels per doubling of distance is normally assumed. When added to the cylindrical spreading, the excess ground attenuation for soft surfaces results in an overall attenuation rate of 4.5 decibels per doubling of distance from a line source.

Shielding by Natural or Human-Made Features

A large object or barrier in the path between a noise source and a receiver can substantially attenuate noise levels at the receiver. The amount of attenuation provided by shielding depends on the size of the object and the frequency content of the noise source. Natural terrain features (e.g., hills and dense woods) and human-made features (e.g., buildings and walls) can substantially reduce noise levels. Walls are often constructed between a source and a receiver specifically to reduce noise. A barrier that breaks the line of sight between a source and a receiver will typically result in an approximate 5 dB of noise reduction. Taller barriers provide increased noise reduction.

NOISE DESCRIPTORS

The decibel scale alone does not adequately characterize how humans perceive noise. The dominant frequencies of a sound have a substantial effect on the human response to that sound. Although the intensity (energy per unit area) of the sound is a purely physical quantity, the loudness or human response is determined by the characteristics of the human ear.

Human hearing is limited in the range of audible frequencies as well as in the way it perceives the sound-pressure level in that range. In general, people are most sensitive to the frequency range of 1,000–8,000 Hz, and perceive sounds within that range better than sounds of the same amplitude in higher or lower frequencies. To approximate the response of the human ear, sound levels of individual frequency bands are weighted, depending on the human sensitivity to those frequencies, which is referred to as the “A-weighted” sound level (expressed in units of dBA). The A-weighting network approximates the frequency response of the average young ear when listening to most ordinary sounds. When people make judgments of the relative loudness or annoyance of a sound, their judgments correlate well with the A-weighted noise scale. Other weighting networks have been devised to address high noise levels or other special problems (e.g., B-, C-, and D-scales), but these scales are rarely used in conjunction with environmental noise.

The intensity of environmental noise fluctuates over time, and several descriptors of time-averaged noise levels are typically used. For the evaluation of environmental noise, the most commonly used descriptors are L_{eq} , L_{dn} , and CNEL. The energy-equivalent noise level, L_{eq} , is a measure of the average energy content (intensity) of noise over any given period. Many communities use 24-hour descriptors of noise levels to regulate noise. The day-night average noise level, L_{dn} , is the 24-hour average of the noise intensity, with a 10-dBA “penalty” added for nighttime noise (10 p.m. to 7 a.m.) to account for the greater sensitivity to noise during this period. CNEL, the community equivalent noise level, is similar to L_{dn} but adds an additional 5-dBA penalty for evening noise (7 p.m. to 10 p.m.) Common noise descriptors are summarized in Table 1.

Table 1
Common Acoustical Terms and Descriptors

Descriptor	Definition
Decibel (dB)	A unit-less measure of sound on a logarithmic scale, which indicates the squared ratio of sound pressure amplitude to referenced sound pressure amplitude. The reference pressure is 20 micro-pascals.
A-Weighted Decibel (dBA)	An overall frequency-weighted sound level in decibels that approximates the frequency response of the human ear.
Energy Equivalent Noise Level (Leq)	The energy means (average) noise level. The instantaneous noise levels during a specific period of time in dBA are converted to relative energy values. From the sum of the relative energy values, an average energy value (in dBA) is calculated.
Minimum Noise Level (Lmin)	The minimum instantaneous noise level during a specific period of time.
Maximum Noise Level (Lmax)	The maximum instantaneous noise level during a specific period of time.
Day-Night Average Noise Level (DNL or Ldn)	The 24-hour Leq with a 10 dBA "penalty" for noise events that occur during the noise-sensitive hours between 10:00 p.m. and 7:00 a.m. In other words, 10 dBA is "added" to noise events that occur in the nighttime hours to account for increased sensitivity to noise during these hours.
Community Noise Equivalent Level (CNEL)	The CNEL is similar to the Ldn described above, but with an additional 5 dBA "penalty" added to noise events that occur between the hours of 7:00 p.m. to 10:00 p.m. The calculated CNEL is typically approximately 0.5 dBA higher than the calculated Ldn.

HUMAN RESPONSE TO NOISE

The human response to environmental noise is subjective and varies considerably from individual to individual. Noise in the community has often been cited as a health problem, not in terms of actual physiological damage, such as hearing impairment, but in terms of inhibiting general well-being and contributing to undue stress and annoyance. The health effects of noise in the community arise from interference with human activities, including sleep, speech, recreation, and tasks that demand concentration or coordination. Hearing loss can occur at the highest noise intensity levels. When community noise interferes with human activities or contributes to stress, public annoyance with the noise source increases. The acceptability of noise and the threat to public well-being are the basis for land use planning policies preventing exposure to excessive community noise levels.

Unfortunately, there is no completely satisfactory way to measure the subjective effects of noise or of the corresponding reactions of annoyance and dissatisfaction. This is primarily because of the wide variation in individual thresholds of annoyance and habituation to noise over differing individual experiences with noise. Thus, an important way of determining a person's subjective reaction to a new noise is the comparison of it to the existing environment to which one has adapted: the so-called "ambient" environment. In general, the more a new noise exceeds the previously existing ambient noise level, the less acceptable the new noise will be judged. Regarding increases in A-weighted noise levels, knowledge of the following relationships will be helpful in understanding this analysis:

- Except in carefully controlled laboratory experiments, a change of 1 dB cannot be perceived by humans;
- Outside of the laboratory, a 3-dB change is considered a just-perceivable difference;
- A change in the level of at least 5 dB is required before any noticeable change in community response would be expected. An increase of 5 dB is typically considered substantial;
- A 10-dB change is subjectively heard as an approximate doubling in loudness and would almost certainly cause an adverse change in community response.

Speech Communication

For most noise-sensitive land uses, an interior noise level of 45 dB L_{eq} is typically identified for the protection of speech communication in order to provide for 100-percent intelligibility of speech sounds. Assuming an average 20-dB reduction in sound level between outdoors and indoors (which is an average amount of sound attenuation that assumes windows are closed), this interior noise level would equate to an exterior noise level of 65 dBA L_{eq} . For outdoor voice communication, an exterior noise level of 60 dBA L_{eq} allows normal conversation at distances up to 2 meters with 95 percent sentence intelligibility (U.S. EPA 1974.) Based on this information, speech interference begins to become a problem when steady noise levels reach approximately 60 to 65 dBA. Within more noise-sensitive interior environments, such as educational facilities and places of worship, an average-hourly background noise level of 45 dBA L_{eq} is typically recommended.

Annoyance & Sleep Disruption

With regard to potential increases in annoyance, activity interference, and sleep disruption, land use compatibility determinations are typically based on the use of the cumulative noise exposure metrics (i.e., CNEL or L_{dn}). Perhaps the most comprehensive and widely accepted evaluation of the relationship between noise exposure and the extent of annoyance was one originally developed by Theodore J. Schultz in 1978. In 1978 the research findings of Theodore J. Schultz provided support for L_{dn} as the descriptor for environmental noise. Research conducted by Schultz identified a correlation between the cumulative noise exposure metric and individuals who were highly annoyed by transportation noise. The Schultz curve, expressing this correlation, became a basis for noise standards. When expressed graphically, this relationship is typically referred to as the Schultz curve. The Schultz curve indicates that approximately 13 percent of the population is highly annoyed at a noise level of 65 dBA L_{dn} . It also indicates that the percent of people describing themselves as being highly annoyed accelerates smoothly between 55 and 70 dBA L_{dn} . A noise level of 65 dBA L_{dn} is a commonly referenced dividing point between lower and higher rates of people describing themselves as being highly annoyed.

The Schultz curve and associated research became the basis for many of the noise criteria subsequently established for federal, state, and local entities. Most federal and state of California regulations and policies related to transportation noise sources establish a noise level of 65 dBA CNEL/ L_{dn} as the basic limit of acceptable noise exposure for residential and other noise-sensitive land uses. For instance, with respect to aircraft noise, both the Federal Aviation Administration (FAA) and the State of California have identified a noise level of 65 dBA L_{dn} as the dividing point between normally compatible and normally incompatible residential land use generally applied for the determination of land use compatibility. For noise-sensitive land uses exposed to aircraft noise, noise levels in excess of 65 dBA CNEL/ L_{dn} are typically considered to result in a potentially significant increase in levels of annoyance.

Allowing for an average exterior-to-interior noise reduction of 20 dB, an exterior noise level of 65 dBA CNEL/ L_{dn} would equate to an interior noise level of 45 dBA CNEL/ L_{dn} . An interior noise level of 45 dB CNEL/ L_{dn} is generally considered sufficient to protect against long-term sleep interference (U.S. EPA, 1974.) Within California, the California Building Code establishes a noise level of 45 dBA CNEL as the maximum acceptable interior noise level for residential uses (other than detached single family dwellings). Use of the 45 dBA CNEL threshold is further supported by recommendations provided in the State of California Office of Planning and Research's *General Plan Guidelines*, which recommend an interior noise level of 45 dB CNEL/ L_{dn} as the maximum allowable interior noise level sufficient to permit "normal residential activity" (OPR 2003.)

The cumulative noise exposure metric is currently the only noise metric for which there is a substantial body of research data and regulatory guidance defining the relationship between noise exposure, people's reactions, and land use compatibility. However, when evaluating environmental noise impacts involving intermittent noise events, such as aircraft overflights and train pass by, the use of cumulative noise metrics may not provide a thorough understanding of the resultant impact. The general public often finds it difficult to understand the relationship between intermittent noise events and cumulative noise exposure metrics. In such instances, supplemental use of other noise metrics, such as the L_{eq} or L_{max} descriptor, are sometimes used as a means of increasing public understanding regarding the relationship between these metrics and the extent of the resultant noise impact.

REGULATORY FRAMEWORK

NOISE

Noise Control Act of 1972

The Noise Control Act of 1972 establishes a national policy to promote an environment for all Americans free from noise that jeopardizes their health and welfare. The Act also serves to (1) establish a means for effective coordination of Federal research and activities in noise control; (2) authorize the establishment of Federal noise emission standards for products distributed in commerce; and (3) provide information to the public respecting the noise emission and noise reduction characteristics of such products.

Department of Housing and Urban Development (HUD)

HUD guidelines for the acceptability of residential land use are set forth in the Code of Federal Regulations Title 24, Part 51, "Environmental Criteria and Standards." These guidelines parallel those suggested in the FICUN report: noise exposure of 65 dBA CNEL/L_{dn}, or less, is acceptable and between 65 and 75 dBA CNEL/L_{dn} noise exposure is considered normally acceptable provided appropriate sound-reduction measures are provided. Above 75 dBA CNEL/L_{dn} noise exposure is generally considered unacceptable. The guidelines also identify the recommended interior noise levels of 45 dBA CNEL/L_{dn}. These guidelines apply only to new construction supported by HUD grants and are not binding upon local communities.

California Code of Regulations, Title 24

Title 24 of the California Code of Regulations contains standards for allowable interior noise levels associated with exterior noise sources (California Building Code, 1998 edition, Volume 1, Appendix Chapter 12, Section 1208A). The standards apply to new hotels, motels, dormitories, apartment houses, and dwellings other than detached single family residences. The standards state that the interior noise level attributable to exterior sources shall not exceed 45 dBA CNEL in any habitable room. Proposed residential structures to be located where the CNEL exceeds 60 dBA are required to prepare an acoustical analysis showing that the proposed building design would achieve the prescribed allowable interior noise standard. Worst-case noise levels, either existing or future, shall be used as the basis for determining compliance with these standards.

California General Plan Guidelines

The State of California regulates vehicular and freeway noise affecting classrooms, sets standards for sound transmission and occupational noise control, and identifies noise insulation standards and airport noise/land-use compatibility criteria. The "State of California General Plan Guidelines" (OPR, 2003), published by the Governor's Office of Planning and Research, also provides guidance for the acceptability of projects within specific CNEL/L_{dn} contours. The guidelines also present adjustment factors that may be used in order to arrive at noise acceptability standards that reflect the noise control goals of the community, the particular community's sensitivity to noise, and the community's assessment of the relative importance of noise pollution.

2010 California Green Building Standards

The *2010 California Green Building Standards* (California Code of Regulations Title 24, Part 11, Section 5.507) requires that the wall and roof-ceiling assemblies making up a building envelope to have a minimum Sound Transmissions Class (STC) of 50, and exterior windows to have a minimum STC of 30 for any of the following building locations:

1. Within 1,000 feet of freeways
2. Within 5 miles of airports serving more than 10,000 commercial jets per year;
3. Where the sound levels at the property line regularly exceed 65 decibels, other than occasional sound due to church bells, train horns, emergency vehicles, and public warning systems.

The above standards do not apply to buildings with few or no occupants or where occupants are not likely to be affected by exterior noise (as determined by the enforcement authority), such as factories, stadiums, storage, enclosed parking structures, and utility buildings. This section also identifies a minimum STC of 40 for interior walls and floor-ceiling assemblies that separate tenant spaces and public spaces (CBSC 2010).

City of Paso Robles General Plan

Transportation Sources

The City's noise criteria for determination of future land use compatibility are presented in Figure 3. These guidelines are used to assess whether transportation noise can potentially pose a conflict with proposed land uses. For the most sensitive uses such as single-family residential, an exterior noise level of 60 dBA CNEL/L_{dn} is considered the maximum value that is "normally acceptable," 55 to 70 dBA CNEL/L_{dn} is considered the "conditionally acceptable" range, 70 to 75 dBA CNEL/L_{dn} is considered "normally unacceptable," and levels in excess of 75 dBA CNEL/L_{dn} are considered "clearly unacceptable." Proposed land uses are considered "conditionally acceptable" provided sufficient noise-reduction features have been incorporated to reduce interior noise levels to within acceptable levels.

In addition to the noise criteria for determination of land use compatibility, General Plan Policy N-1A establishes exterior and interior noise standards for transportation noise sources. Accordingly, the maximum allowable noise exposure for outdoor activity areas is 65 dBA CNEL/L_{dn}. The maximum allowable noise exposure for interior occupied areas is 45 dBA CNEL/L_{dn}. This interior noise standard applies to various noise-sensitive land uses, including residential dwellings, schools, nursing homes, hospitals, theaters, and libraries.

Stationary Sources

The City of Paso Robles has also adopted noise standards for stationary sources. The noise standards are applied at the property line of the receiving land use. The City's noise standards for stationary sources are summarized in Table 2.

Table 2
Maximum Allowable Noise Exposure-Stationary Noise Sources¹

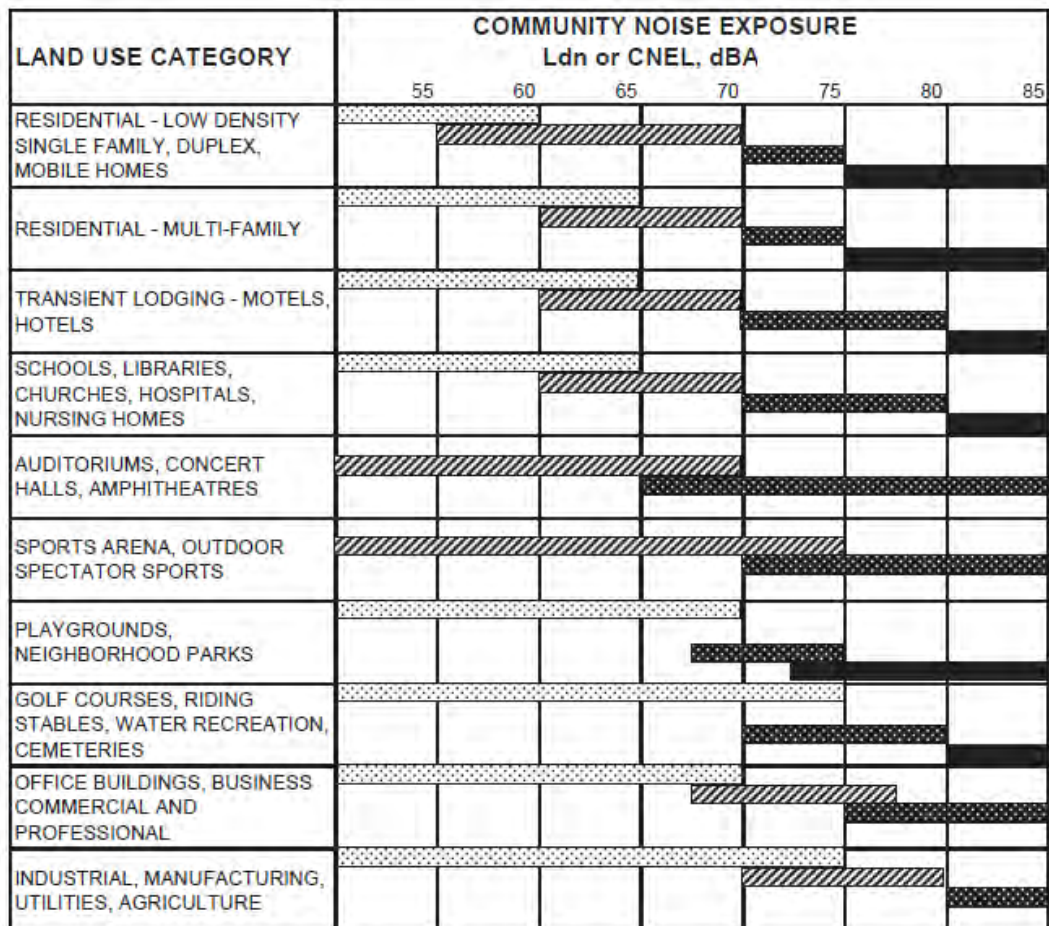
	Daytime (7 a.m. to 10 p.m.)	Nighttime (10 p.m. to 7 a.m.)
Hourly L, dB ⁽²⁾	50	45
Maximum level, dB ⁽²⁾	70	65
Maximum level, dB-Impulsive Noise ⁽³⁾	65	60
<i>1. As determined at the property line of the receiving land use. When determining the effectiveness of noise mitigation measures, the standards may be applied on the receptor side of the noise barriers or other property line noise mitigation measures.</i>		
<i>2. Sound level measurements shall be made with the slow meter response.</i>		
<i>3. Sound level measurements shall be made with the fast meter response.</i>		
<i>Source: City of El Paso de Robles 2003</i>		

GROUNDBORNE VIBRATION

There are no federal, state, or local regulatory standards for ground-borne vibration. However, Caltrans has developed vibration criteria based on potential structural damage risks and human annoyance. Caltrans-recommended criteria for the evaluation of groundborne vibration levels, with regard to structural damage and human annoyance, are summarized in Table 3. The criteria apply to continuous vibration sources, which include vehicle traffic, train, and most construction vibrations, with the exception of transient or intermittent construction activities, such as pile driving. All damage criteria for buildings are in terms of ground motion at the buildings' foundations. No allowance is included for the amplifying effects of structural components (Caltrans 2013).

As shown in Table 3, the minimum "architectural damage risk level" for continuous vibrations is a peak particle velocity (ppv) of 0.2 inches per second (in/sec). This same level corresponds to the level at which vibrations typically become annoying to people in buildings (Caltrans 2013).

Figure 3
Land Use Compatibility Noise Criteria Transportation Noise Sources



NORMALLY ACCEPTABLE

Specified land use is satisfactory, based upon the assumption that any buildings involved are of normal conventional construction, without any special noise insulation requirements.



CONDITIONALLY ACCEPTABLE

New construction or development should be undertaken only after a detailed analysis of the noise reduction requirements is made and needed noise insulation features included in the design. Conventional construction, but with closed windows and fresh air supply systems or air conditioning will normally suffice.



NORMALLY UNACCEPTABLE

New construction or development should generally be discouraged. If new construction or development does proceed, a detailed analysis of the noise reduction requirements must be made and needed noise insulation features included in the design.



CLEARLY UNACCEPTABLE

New construction or development should generally not be undertaken.

Source: City of El Paso de Robles 2003

Table 3
Summary of Groundborne Vibration Levels and Potential Effects

Vibration Level (in/sec ppv)	Human Reaction	Effect on Buildings
0.006-0.019	Threshold of perception; possibility of intrusion.	Vibrations unlikely to cause damage of any type.
0.08	Vibrations readily perceptible.	Recommended upper level of the vibration to which ruins and ancient monuments should be subjected.
0.10	Level at which continuous vibrations begin to annoy people.	Virtually no risk of "architectural" damage to normal buildings.
0.20	Vibrations annoying to people in buildings (this agrees with the levels established for people standing on bridges and subjected to relative short periods of vibrations).	Threshold at which there is a risk of "architectural" damage to structures with plastered walls and ceilings. Special types of finish such as lining of walls, flexible ceiling treatment, etc., would minimize "architectural" damage.
0.4-0.6	Vibrations considered unpleasant by people subjected to continuous vibrations and unacceptable to some people walking on bridges.	Vibrations at a greater level than normally expected from traffic but would cause "architectural" damage and possibly minor structural damage.
<i>The vibration levels are based on peak particle velocity in the vertical direction for continuous vibration sources, which includes most construction activities, with the exception of transient or intermittent construction activities, such as pile driving. For pile driving, the minimum criterion level is typically considered to be 0.2 in/sec ppv.</i> <i>Source: Caltrans 2013</i>		

AFFECTED ENVIRONMENT

NOISE-SENSITIVE RECEPTORS

Noise-sensitive land uses are generally considered to include those uses where noise exposure could result in health-related risks to individuals, as well as places where quiet is an essential element of their intended purpose. Residential dwellings are of primary concern because of the potential for increased and prolonged exposure of individuals to both interior and exterior noise levels. Additional land uses such as parks, historic sites, cemeteries, and recreation areas are also considered sensitive to increases in exterior noise levels. Schools, churches, hotels, libraries, and other places where low interior noise levels are essential are also considered noise-sensitive land uses.

The project site is located east of Beechwood Drive, between Meadowlark Road and Creston Road. The nearest noise-sensitive land uses consist predominantly of residential dwellings. The nearest residential land uses are located approximately 60 feet north of the project site, across Meadowlark Road; approximately 60 feet to the west, across Beechwood Drive; and approximately 60 feet to the southwest, across Creston Road. In addition, Virginia Peterson Elementary School is located 60 feet west of the project site, across Beechwood Drive. Nearby noise-sensitive land uses are depicted in Figure 4.

AMBIENT NOISE ENVIRONMENT

To document existing ambient noise levels at the project site, six short-term (i.e., 10-15 minute) and one long-term (i.e., 24-hour) ambient noise measurements were conducted on February 1st and 25th, 2019, respectively. Ambient noise levels were primarily influenced by vehicular traffic on area roadways. No nearby stationary sources of noise were detectable at the project site. Noise measurements were conducted using a Larson Davis Laboratories, Type I, Model 820 integrating sound-level meter positioned at a height of approximately 4.5 feet above ground level from approximately 18 to 45 feet from the centerline of nearby roadways. The long-term noise measurement was conducted at approximately 32 feet from the road centerline of Creston Road. Measured short-term ambient noise levels are summarized in Table 4. Measured long-term noise levels are depicted in Figure 5. Noise measurement locations are depicted in Figure 4.

Figure 4

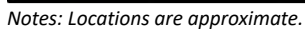
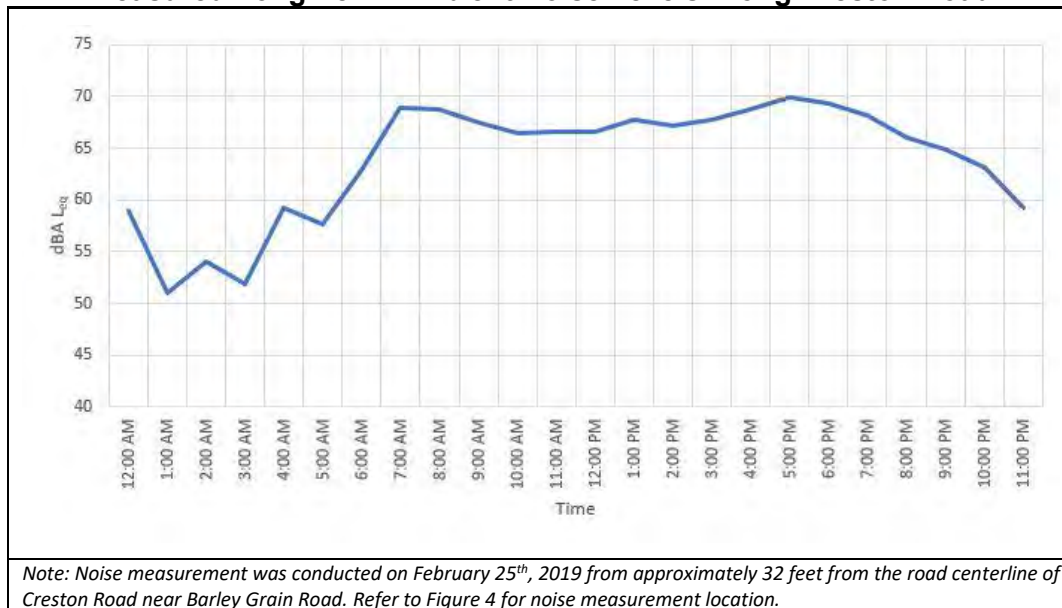


Table 4

Noise measurement survey was conducted on February 1st, 2019 using a Larson Davis Laboratories, Type I, Model 820 integrating sound-level meter positioned at a height of approximately 4.5 feet above ground level. Refer to Figure 4 for noise measurement locations.

As indicated in Table 4, measured ambient noise levels at various locations in the project area ranged from approximately 51 to 74 dBA L_{eq} during the daytime hours. Instantaneous levels ranged from approximately 74 to 89 dBA L_{max} . In general, the highest average-hourly noise levels in the project area occur along Creston Road. Average-hourly noise levels measured over a 24-hour period near Creston Road are depicted in Figure 5. As shown in Figure 5, the highest average-hourly noise levels occurred during the peak morning and late-afternoon commute hours.

Figure 5
Measured Long-Term Ambient Noise Levels Along Creston Road



Existing Traffic Noise Levels

As noted above, vehicle traffic on area roadways is the primary source of noise in the project area. Calculated existing traffic noise levels at 50 feet from the near-travel-lane centerline and distances to existing noise contours for area roadways are summarized in Table 5. Existing noise barriers are located along Creston Road, west of Beechwood Drive; Beechwood Drive, between Creston Road and Meadowlark Road; and Meadowlark Road, East of Beechwood Drive. These existing noise barriers range in height from approximately 5.5 to 6 feet. Predicted traffic noise levels noted in Table 5 take into account existing noise barriers. As shown, existing traffic noise levels range from approximately 47 to 69 dBA CNEL/L_{dn} at 50 feet from the near-travel-lane centerline.

Table 5
Predicted Existing Traffic Noise Levels

Roadway Segment	Noise Level (dBA CNEL)				
	at 50 Feet from Near-Travel-Lane Centerline	70	65	60	55
Creston Road, East of Ferro Lane	66.3	WR	68	145	313
Creston Road, East of Golden Hill Road	60.6	WR	WR	80	167
Creston Road, South of Niblick Road	64.4	WR	68	140	298
Creston Road, North of Meadowlark Road	62.0	WR	WR	76	163
Creston Road, East of Beechwood Drive	65.5	WR	61	130	280
Creston Road, West of Beechwood Drive	62.4	WR	WR	97	206
Golden Hill Road, South of Union Road	65.6	WR	74	155	332
Golden Hill Road, North of Union Road	65.0	WR	62	131	280
Niblick Road, East of Spring Street	68.8	63	128	273	585
Niblick Road, East of Quarterhorse Lane	67.1	WR	100	211	452
Charolais Road, East of South River Road	65.8	WR	64	136	293
South River Road, South of Spanish Camp Road	55.8	WR	WR	WR	64
South River Road, North of Charolais Road	64.8	WR	60	128	275
Barley Grain Road, South of Creston Road	47.2	WR	WR	WR	WR
Meadowlark Road, East of Beechwood Drive	60.5	WR	WR	60	130
Beechwood Drive, South of Meadowlark Road	53.7	WR	WR	WR	WR

Traffic noise levels were calculated using the FHWA roadway noise prediction model. WR=Within Road Right-of-Way

IMPACTS AND MITIGATION MEASURES

SIGNIFICANCE CRITERIA

Criteria for determining the significance of noise impacts were developed based on information contained in the California Environmental Quality Act Guidelines (CEQA Guidelines, Appendix G). According to the guidelines, a project may have a significant effect on the environment if it would result in the following conditions:

- a) Exposure of persons to, or generation of, noise levels in excess of standards established in the local general plan or noise ordinance, or of applicable standards of other agencies;
- b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels;
- c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project;
- d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project;
- e) For a project located within an airport land use plan area or, where such a plan has not been adopted, within two miles of a public airport or a public use airport, would the project expose people residing or working in the project area to excessive noise levels;
- f) For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?

For purposes of this analysis, a substantial increase in noise levels is defined as an increase of 3 dBA, or greater. As noted earlier in this report, a 3-dB increase is typically the minimum change in noise levels detectable by the human ear.

Noise impacts would be considered potentially significant if proposed land uses would be exposed to transportation noise levels that would exceed the City's noise exposure standards (Figure 3). For existing land uses, exposure to transportation noise levels in excess of 65 dBA CNEL/L_{dn} within outdoor activity areas or 45 dBA CNEL/L_{dn} within interior areas would be considered a potentially significant impact (General Plan Policy N-1 A). Exposure to non-transportation noise sources would be considered potentially significant if noise levels would exceed the City's stationary noise exposure standards for proposed and existing land uses (Table 2).

Groundborne vibration levels would be considered potentially significant if predicted short-term construction or long-term operational groundborne vibration levels attributable to the proposed project would exceed normally applied groundborne vibration criteria at nearby structures (Table 3).

METHODOLOGY

Short-Term Noise Exposure

Predicted noise levels at nearby noise-sensitive land uses were calculated using typical noise levels and usage rates associated with construction equipment, derived from the U.S. Department of Transportation, Federal Highway Administration's *Roadway Construction Noise Model* (version 1.1) and representative data obtained from similar construction projects. Construction noise levels were predicted assuming an average noise attenuation rate of 7.5 dB per doubling of distance from the source.

Long-term Noise Exposure

Predicted noise levels associated with on-site non-transportation noise sources were calculated based on representative data obtained from similar land uses and existing literature. Roadway traffic noise levels were calculated using the FHWA roadway noise prediction model (FHWA-RD-77-108) based on California vehicle reference noise emission factors and traffic data obtained from the traffic analysis prepared for this project. Traffic noise levels were calculated for existing, near-term, and future cumulative (year 2045) conditions. The compatibility of proposed land uses was evaluated based on projected on-site future cumulative noise levels in comparison to applicable City noise standards.

Groundborne Vibration

No major existing sources of groundborne vibration have been identified in the proposed project area. Groundborne vibration levels associated with construction-related activities were evaluated based on typical vibration levels associated with construction equipment obtained from the U.S. Department of Transportation, Federal Transit Administration (2006) and the California Department of Transportation (2013). Groundborne vibration impacts related to structural damage and human annoyance were evaluated taking into account the distance from construction activities to nearby land uses and typically applied criteria for structural damage and human annoyance (Table 3).

IMPACT DISCUSSIONS AND MITIGATION MEASURES

IMPACT A. Increases in Traffic Noise Levels.

Implementation of the proposed project would result in increased traffic volumes on area roadways. The increase in traffic volumes resulting from implementation of the proposed project would, therefore, contribute to increases in traffic noise levels. Predicted traffic noise levels for near-term and future cumulative conditions (year 2045), with and without implementation of the proposed project, are discussed, as follows.

Near-Term Conditions

Predicted traffic noise levels for near-term conditions, with and without implementation of the proposed project, are depicted in Table 6. As depicted, near-term increases in traffic noise levels along area roadways attributable to the proposed project would range from approximately 0.2 to 2.8 dBA CNEL/L_{dn}. The highest increases in predicted near-term traffic noise levels would occur along roadways located nearest the project site, including nearby segments of Creston Road, Charolais Road, Meadowlark Road, and Beechwood Drive. However, as noted in Table 6, the proposed project would not result in a significant increase (i.e., 3 dBA, or greater) in near-term traffic noise levels at noise-sensitive land uses located along area roadways. As a result, this impact is considered less than significant.

Table 6
Predicted Increases in Traffic Noise Levels – Near-Term Conditions

Roadway Segment	Noise Level (dBA CNEL/L _{dn}) at 50 Feet From Near-Travel-Lane Centerline			Significant Increase? ¹
	Near-Term without Master Plan	Near-Term with 911-Unit Master Plan	Increase	
Creston Road, East of Ferro Lane	66.7	66.8	0.2	No
Creston Road, East of Golden Hill Road	61.5	62.0	0.6	No
Creston Road, South of Niblick Road	65.0	65.8	0.8	No
Creston Road, North of Meadowlark Road	62.9	64.8	1.9	No
Creston Road, East of Beechwood Drive	64.6	66.5	1.9	No
Creston Road, West of Beechwood Drive ²	57.6	60.2	2.6	No
Golden Hill Road, South of Union Road	66.4	66.7	0.3	No
Golden Hill Road, North of Union Road	65.8	66.1	0.3	No
Niblick Road, East of Spring Street	69.5	69.8	0.3	No
Niblick Road, East of Quarterhorse Lane	68.2	68.4	0.2	No
Charolais Road, East of South River Road	66.5	67.9	1.4	No
South River Road, South of Spanish Camp Road	56.0	56.3	0.3	No
South River Road, North of Charolais Road	65.5	66.6	1.2	No
Barley Grain Road, South of Creston Road	47.7	48.5	0.8	No
Meadowlark Road, East of Beechwood Drive ²	59.2	60.8	1.6	No
Beechwood Drive, South of Meadowlark Road ²	49.3	52.1	2.8	No
1. A significant increase in traffic noise levels is defined as an increase of 3 dBA, or greater.				
2. Takes into account existing noise barriers.				

Future Cumulative Conditions

Predicted traffic noise levels for future cumulative conditions, with and without the development of the proposed project, are depicted in Table 7. As depicted in Table 7, increases in traffic noise levels along area roadways attributable to the proposed project would range from approximately 0.3 to 2.9 dBA CNEL/L_{dn}. The highest increases in predicted future cumulative traffic noise levels would occur along nearby segments of Creston Road, Golden Hill Road, Barley Grain Road, and Beechwood Drive. The proposed project would not result in a significant increase (i.e., 3 dBA, or greater) in future cumulative traffic noise levels along area roadways. As a result, this impact is considered less than significant.

Table 7
Predicted Increases in Traffic Noise Levels – Future Cumulative Conditions

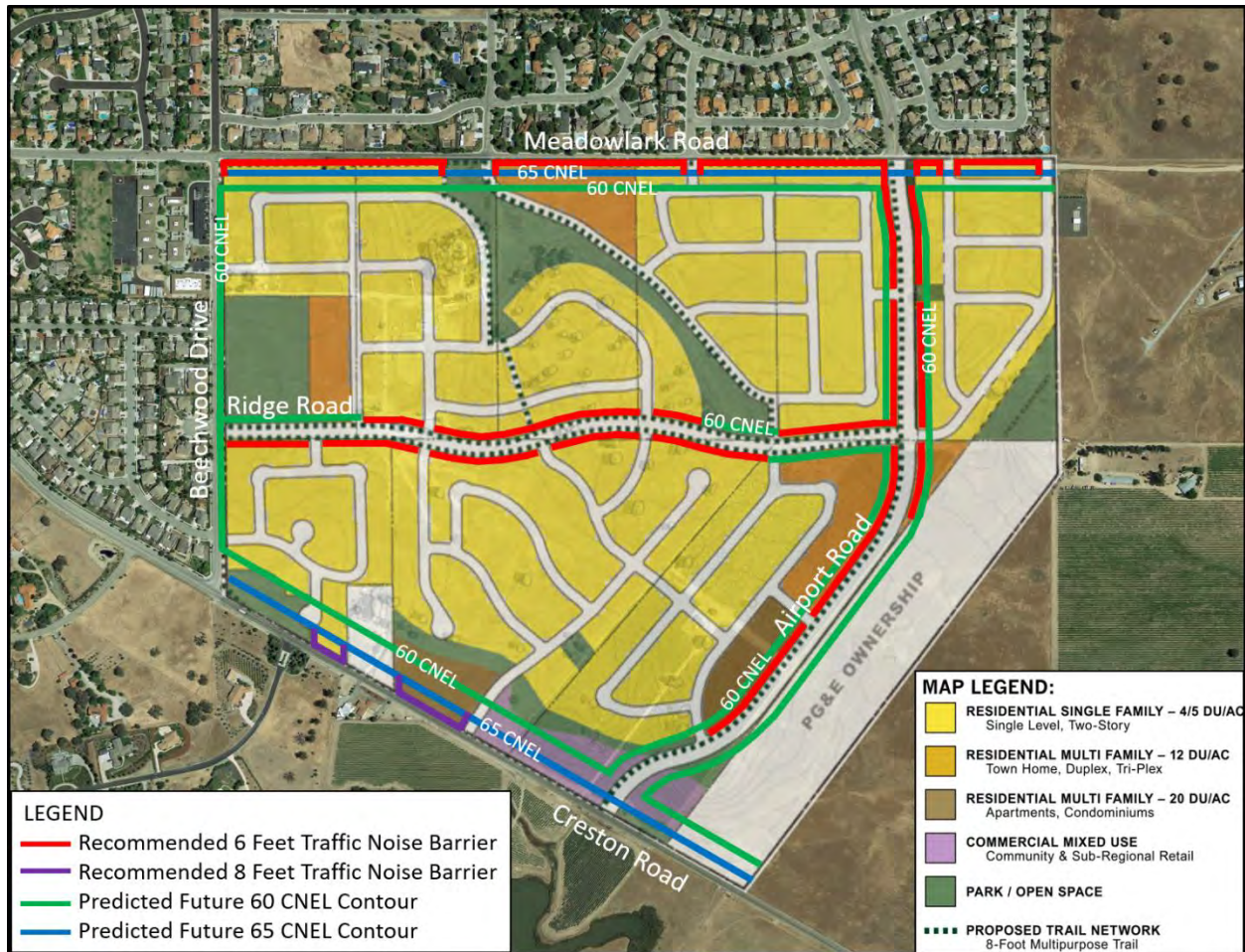
Roadway Segment	Noise Level (dBA CNEL/L _{dn}) at 50 Feet From Near-Travel-Lane Centerline			Significant Increase? ¹
	Cumulative without Master Plan	Cumulative with 911-Unit Master Plan	Increase	
Creston Road, East of Ferro Lane	66.7	67.2	0.5	No
Creston Road, East of Golden Hill Road	61.5	62.5	1.1	No
Creston Road, South of Niblick Road	65.0	65.9	0.9	No
Creston Road, North of Meadowlark Road	62.9	64.9	2.0	No
Creston Road, East of Beechwood Drive	65.3	66.7	1.4	No
Creston Road, West of Beechwood Drive ²	58.3	60.4	2.1	No
Golden Hill Road, South of Union Road	66.4	67.9	1.5	No
Golden Hill Road, North of Union Road	65.8	68.7	2.9	No
Niblick Road, East of Spring Street	69.5	69.8	0.3	No
Niblick Road, East of Quarterhorse Lane	68.2	68.8	0.6	No
Charolais Road, East of South River Road	66.5	67.9	1.3	No
South River Road, South of Spanish Camp Road	56.0	57.0	1.0	No
South River Road, North of Charolais Road	65.5	66.7	1.2	No
Barley Grain Road, South of Creston Road	47.7	49.2	1.5	No
Meadowlark Road, East of Beechwood Drive ²	59.5	60.8	1.3	No
Beechwood Drive, South of Meadowlark Road ²	49.9	52.2	2.3	No
<ol style="list-style-type: none"> 1. A significant increase in traffic noise levels is defined as an increase of 3 dBA, or greater. 2. Takes into account existing noise barriers. 				

IMPACT B. Compatibility with City's Noise Standards for Land Use Compatibility.

The compatibility of proposed land uses were evaluated based on a comparison of projected on-site future cumulative traffic noise levels to applicable City noise standards (Figure 3). As noted in Figure 3, the City's General Plan establishes a "normally acceptable" exterior noise standard of 60 dBA CNEL/L_{dn} for single-family residential, 65 dBA CNEL/L_{dn} for multi-family residential, and 70 dBA CNEL/L_{dn} for neighborhood parks and commercial land uses.

Planned on-site land uses and projected on-site future cumulative traffic noise contours with implementation of the proposed project are depicted in Figure 6 and summarized in Table 8. As noted in Table 8, the predicted on-site 60 dBA CNEL/L_{dn} traffic noise contours would extend to approximately 40 feet from the centerline of Ridge Road, 61 feet for Airport Road, 135 feet for Meadowlark Road, 32 feet for Beechwood Drive, and approximately 184 feet for Creston Road. The predicted 65 dBA CNEL/L_{dn} on-site traffic noise contours would extend to approximately 63 feet from the centerline of Meadowlark Road and approximately 87 feet for Creston Road.

Figure 6
Predicted Future Cumulative On-Site Traffic Noise Contours &
Recommended Traffic Noise Barrier Locations



Notes: Locations are approximate.

Table 8
Predicted Future Cumulative Plus Master Plan Traffic Noise Levels &
Distances to Traffic Noise Contours

Roadway Segment	Predicted CNEL/L _{dn} at 50 Feet From Near-Travel-Lane Centerline	Distance (Feet) to CNEL/L _{dn} Contours From Roadway Centerline		
		70	65	60
Ridge Road, East of Beechwood Drive	58.6	WR	WR	40
Airport Road, South of Meadowlark Road	59.8	WR	WR	61
Meadowlark Road, East of Beechwood Drive	65.8	WR	63	135
Beechwood Drive, South of Meadowlark Road	57.2	WR	WR	32
Creston Road, East of Beechwood Drive	66.7	WR	87	184

WR=Within Road Right-of-Way

Predicted future cumulative traffic noise levels at the nearest proposed on-site residential land uses are summarized in Table 9. Under future cumulative conditions with implementation of the proposed project, predicted on-site noise levels at the nearest proposed residential land uses would be approximately 61.7 dBA CNEL/L_{dn} along Ridge Road, 65.5 dBA CNEL/L_{dn} along Airport Road, 68.9 dBA CNEL/L_{dn} along Meadowlark Road, 59.7 dBA CNEL/L_{dn} along Beechwood Drive, and approximately 72.5 dBA CNEL/L_{dn} along Creston Road (refer to Table 9). Depending on the setback distances of future residential land uses located along area roadways, predicted future cumulative traffic noise levels at proposed single-family and multi-family

residential land uses could potentially exceed the City's "normally acceptable" land use compatibility noise standards of 60 and 65 dBA CNEL/L_{dn}, respectively. Predicted onsite traffic noise levels at proposed neighborhood parks and commercial land uses would not be projected to exceed the City's "normally acceptable" land use compatibility noise standard of 70 dBA CNEL/L_{dn}. However, because future cumulative noise levels at proposed residential land uses could potentially exceed the City's noise standards, this impact is considered potentially significant.

Table 9
Predicted Future Cumulative Plus Master Plan Traffic Noise Levels at
Nearest On-Site Residential Land Uses

Roadway Segment	Minimum Setback Distance (feet) from Roadway Centerline ¹	Predicted CNEL/L _{dn} at Nearest On-Site Residential Land Use	
		Without Noise Barriers	With Noise Barriers ²
Ridge Road, East of Beechwood Drive	37	61.7	56.7
Airport Road, South of Meadowlark Road	33	65.5	60.5
Meadowlark Road, East of Beechwood Drive	37	68.9	63.9
Beechwood Drive, South of Meadowlark Road	40	59.7	NA ³
Creston Road, East of Beechwood Drive	45	72.5	64.5
^{1.} Setback distance are approximate based on distances derived from roadway profiles (RICK Engineering Company 2018). ^{2.} Assumes a minimum barrier height of 6 feet along Ridge Road, Airport Road, and Meadowlark Road, 8-foot barrier along Creston Road. ^{3.} Noise barriers are not required.			

Mitigation Measure Noise-1:

Noise-reduction features (e.g., noise barriers, increased setback distances) shall be incorporated into the project design for proposed single-family or multi-family residential land uses located within the predicted 60 and 65 dBA CNEL/L_{dn} roadway noise contours, respectively (refer to Table 8 and Figure 6). Noise-reduction features shall be incorporated sufficient to achieve the City's exterior noise standard of 65 dBA CNEL/L_{dn} within residential-use outdoor activity areas, 70 dBA CNEL/L_{dn} at building facades, and 45 dBA CNEL/L_{dn} within interior occupied spaces of residential dwellings. Noise barriers may consist of walls, earthen berms, or a combination of the two. Barrier walls should be constructed of masonry block, or material of similar density and usage, with no visible air gaps at the base of the barrier or between construction materials.

Significance after Mitigation

Implementation of Mitigation Measure Noise-1 would require incorporation of noise-reduction features sufficient to achieve the City's transportation noise standards for residential land uses. Such measures may include, but are not limited to, the installation of noise barriers or increased setback distances for single-family or multi-family residential land uses located within the predicted 60 and 65 dBA CNEL/L_{dn} roadway noise contours, respectively. These roadways include the adjacent segments of Meadowlark Road and Creston Road; as well as, proposed Ridge Road and Airport Road (refer to Table 9). Assuming that noise barriers were to be installed, recommended minimum barrier heights would be 6 feet above the roadway/site ground elevations for single-family residential proposed along Ridge Road; as well as, single-family and multi-family residential located along Meadowlark Road and Airport Road. The minimum recommended barrier heights for single-family and multi-family residential located along Creston Road would be 8 feet above the roadway/site ground elevations (refer to Figure 6 for recommended barrier locations). It is important to note that actual barrier heights and locations may vary depending on final site design and setback distances.

As noted in Table 9, implementation of recommended noise barriers would reduce predicted future cumulative exterior noise levels to approximately 65 dBA CNEL/L_{dn}, or less. Based on this noise level and assuming an average exterior-to-interior noise reduction of 30 dB, which is typical for new building construction, predicted interior noise levels within proposed residential dwellings would be approximately 35 dBA CNEL/L_{dn}, or less. With mitigation, predicted onsite noise levels would not exceed the City's exterior or interior noise standards. This impact would be considered less than significant with implementation of Mitigation Measure Noise-1.

IMPACT C. Exposure to Excessive Groundborne Vibration Levels.

Increases in groundborne vibration levels attributable to the proposed project would be primarily associated with short-term construction-related activities. Construction activities associated with the proposed project would likely require the use of various off-road equipment, such as tractors, concrete mixers, and haul trucks.

Groundborne vibration levels associated with representative construction equipment are summarized in Table 10. Based on the vibration levels presented, ground vibration generated by construction equipment would not exceed approximately 0.09 inches per second ppv at 25 feet. Predicted vibration levels at the nearest offsite structures, which are located in excess of 25 feet from the project site, would not exceed commonly recommended criteria for structural damage and human annoyance (i.e., 0.2 in/sec ppv).

In addition, haul trucks traveling along project area roadways may result in perceptible increases in vibration levels. However, these vibration levels would be transient and instantaneous events, which would be typical of existing vibrations along the roadway network. Based on measurements conducted by Caltrans, on-road heavy-duty trucks would not generate substantial increases in groundborne vibration that would be expected to exceed commonly applied criteria for structural damage or annoyance (Caltrans 2013). As a result, this impact would be considered less than significant.

Table 10
Representative Construction Equipment Vibration Levels

Equipment	Vibration Level at 25 ft.	
	Peak Particle Velocity (ppv, in/sec)	VdB (micro-inch/second)
Hoe Ram/Pavement Breaker	0.089	87
Large Bulldozers	0.089	87
Loaded Trucks	0.076	86
Jackhammer	0.035	79
Small Bulldozers	0.003	58
Source: FTA 2006, Caltrans 2013		

IMPACT D. Exposure to Non-Transportation Noise Levels.

The proposed project includes the development of residential, commercial mixed-use, park/open space, and trail networks. The land uses would result in non-transportation noise sources that could potentially exceed the City's applicable noise standards at nearby noise-sensitive land uses. Noise levels typically associated with these land use and associated noise impacts are discussed separately below.

Residential Land Uses

Noise associated with proposed residential dwellings would expose other nearby residences (both existing and project related) to minor increases in ambient noise levels. Noise typically associated with such development includes lawn and garden equipment, voices, air conditioning equipment, and amplified music. Noise generated by these land uses would result in only minor increases in ambient noise levels, primarily during the day and evening hours and less frequently at night. As a result, increased noise levels associated with proposed residential land uses would be less than significant.

Recreational Land Uses

Noise typically associated with neighborhood parks, trails and open space areas are typically limited to the voices of adults and children and the occasional opening and closing of vehicle doors. Noise levels associated with these uses typically average less than 50 dBA L_{eq} at approximately 25 feet. Noise events are

typically sporadic and limited primarily to the daytime hours of operation. Parks, trails and open space areas/corridors are typically considered to be an accepted land use within residential developments and generally do not result in noise events that are uncharacteristic of typical residential noise environments. For these reasons, noise-generated by the planned park, trails, and open space land uses would be considered to have a less-than-significant impact.

Commercial Land Uses

Noise sources commonly associated with commercial uses include building mechanical systems (e.g., HVAC systems), back-up power generators, and loading dock activities. Noise levels associated with building mechanical systems, such as larger air conditioning units, can range from 60 to 79 dBA L_{eq} at 5 feet. Back-up power generators can generate noise levels of approximately 79 dBA L_{eq} at 50 feet (FTA 2006. FHWA 2008). Based on measurements conducted at various commercial uses, noise levels associated with loading dock operations and material handling activities can generate noise levels of approximately 70 dBA L_{eq} at 50 feet. Assuming a maximum noise level of 79 dBA L_{eq} at 50 feet, predicted operational noise levels within approximately 825 feet of commercial land uses could exceed 45 dBA L_{eq} .

Depending on the specific uses proposed, site design, and hours of operation predicted noise levels associated with proposed commercial land uses could potentially exceed the City's stationary noise source standards at nearby noise-sensitive land uses (refer to Table 2). Areas where commercial and residential development would occur in close proximity, such as planned mixed-use development, would be of particular concern. As a result, noise generated by planned commercial uses would be considered potentially significant.

Mitigation Measure Noise-2:

The City shall require acoustical assessments to be prepared as part of the environmental review process for future land use development projects where noise-sensitive land uses are located within 825 feet of commercial development. The acoustical assessments shall evaluate potential noise impacts attributable to the proposed project, as well as, the compatibility of proposed land uses in comparison to applicable City noise standards for stationary noise sources (refer to Table 2). Where the acoustical analysis determines that stationary-source noise levels would exceed applicable City noise standards, noise-reduction measures shall be incorporated sufficient to reduce operational noise levels to below applicable noise standards. Such measure may include, but are not limited to, the incorporation of setbacks, sound barriers, berms, hourly limitations, or equipment enclosures. The emphasis of such measures shall be placed upon site planning and project design.

Significance After Mitigation

In accordance with Mitigation Measure Noise-2, acoustical assessments would be required where noise-sensitive land uses are located within 825 feet of commercial development. This mitigation measure would apply to newly proposed stationary noise sources, as well as, proposed noise-sensitive land uses located near existing stationary noise sources. Noise-reduction measures, such as the incorporation of setbacks, sound barriers, berms, hourly limitations, or equipment enclosures, would be required sufficient to demonstrate compliance with the City's maximum allowable noise-exposure standards for stationary noise sources (refer to Table 2). With mitigation, this impact would be considered less than significant.

IMPACT C. Exposure to Short-term Construction Noise Levels.

Construction noise typically occurs intermittently and varies depending upon the nature or phase of construction (e.g., land clearing, grading, excavation, and paving). Noise generated by construction equipment, including earth movers, material handlers, and portable generators, can reach high levels. Although noise ranges are generally similar for all construction phases, the initial site preparation phase tends to involve the most heavy-duty equipment having a higher noise-generation potential. Noise levels associated with individual construction equipment are summarized in Table 11.

Table 11
Typical Construction Equipment Noise Levels

Equipment	Typical Noise Level (dBA) 50 feet from Source		Distance to Noise Contours (feet, dBA L_{eq})		
	L_{max}	L_{eq}	70	65	60
Air Compressor	80	76	105	187	334
Backhoe/Front End Loader	80	76	105	187	334
Compactor (Ground)	80	73	74	133	236
Concrete Mixer Truck	85	81	187	334	594
Concrete Saw	90	83	236	420	748
Crane	85	77	118	210	374
Dozer/Grader/Excavator/Scraper	85	81	187	334	594
Drill Rig Truck	84	77	118	210	374
Generator	82	79	149	265	472
Gradall	85	81	187	334	594
Hydraulic Break Ram	90	80	167	297	529
Jack Hammer	85	78	133	236	420
Impact Hammer/Hoe Ram (Mounted)	90	83	236	420	748
Pavement Scarifier/Roller	85	78	133	236	420
Paver	85	82	210	374	667
Pneumatic Tools	85	82	210	374	667
Pumps	77	74	83	149	265
Truck (Dump/Flat Bed)	84	80	167	297	529
<i>Based on maximum equipment noise levels. Actual noise levels are typically lower, particularly if the equipment is fitted with exhaust mufflers and engine shrouds.</i>					
<i>Sources: FTA 2006, FHWA 2008</i>					

As depicted in Table 11, noise levels generated by individual pieces of construction equipment typically range from approximately 77 dBA to 90 dBA L_{max} at 50 feet (FTA 2006). Average-hourly noise levels associated with road improvement projects can vary, depending on the activities performed, reaching levels of up to approximately 83 dBA L_{eq} at 50 feet. Noise from localized point sources, such as construction sites, typically decreases by approximately 6 to 7.5 dBA with each doubling of distance from a source. Assuming a minimum noise attenuation rate of 6 dB per doubling of distance from the source and the equipment noise levels noted above, construction-related noise levels could reach approximately 65 dBA L_{eq} at approximately 400 feet from the construction site. Short-term increases in vehicle traffic, including worker commute trips and haul truck trips may also result in temporary increases in ambient noise levels at nearby receptors.

With regard to residential land uses, noise levels associated with construction activities occurring during the more noise-sensitive evening and nighttime hours (i.e., 7:00 p.m. to 7:00 a.m.) are also of increased concern. Because exterior ambient noise levels typically decrease during the evening and nighttime hours, as community activities (e.g., commercial activities, vehicle traffic) decrease, construction activities performed during these more noise-sensitive periods of the day can result in increased annoyance and potential sleep disruption for occupants of nearby residential dwellings. In addition, assuming a minimum exterior-to-interior noise reduction of 20 dB for the existing school, construction activities occurring within approximately 400 feet of Virginia Peterson Elementary School would result in increased noise levels that could potentially exceed a commonly applied interior noise standard of 45 dBA L_{eq} , which may interfere with instructional activities at the school. For these reasons, noise-generating construction activities would be considered to have a potentially significant short-term noise impact.

Mitigation Measure Noise-3:

- a. Unless otherwise provided for in a validly issued permit or approval, noise-generating construction activities should be limited to the hours of 7:00 a.m. and 7:00 p.m. Noise-generating construction activities should not occur on Sundays or City holidays.
- b. Construction equipment should be properly maintained and equipped with noise-reduction intake and exhaust mufflers and engine shrouds, in accordance with manufacturers' recommendations. Equipment-engine shrouds should be closed during equipment operation.

- c. Equipment shall be turned off when not in use for an excess of five minutes, except for equipment that requires idling to maintain performance.
- d. A public liaison shall be appointed for project construction and shall be responsible for addressing public concerns about construction activities, including excessive noise. The liaison shall work directly with the construction contractor to ensure implementation of the appropriate noise-reduction measures to address public concerns. Signage shall be posted at the site perimeter identifying the public liaison's contact information.
- e. Virginia Peterson Elementary School shall be provided written notification a minimum of two weeks prior to beginning construction when construction activities are anticipated to occur within 400 feet of the school. The notification shall identify of the anticipated location, dates and hours of construction; as well as, the contact information for the public liaison..
- f. Where necessary, temporary noise barriers shall be installed.
- g. Staging and queuing areas shall be located at the furthest distance possible from nearby noise-sensitive land use identified in the project area at the time of construction.

Significance After Mitigation

With the implementation of Mitigation Measure Noise-3, construction activities would be limited to the daytime hours for less noise-sensitive periods of the day. The proper maintenance of construction equipment and use of manufacturer-recommended mufflers and engine shrouds would reduce equipment noise levels by approximately 10 dB. The installation of temporary noise barriers, where required, would decrease noise level by approximately 5 to 10 dB. With mitigation, this impact would be considered less than significant.


IMPACT C. Exposure to Aircraft Noise Levels.

The project site is not located within two miles of a public airport or private airstrip. The nearest airport is the Paso Robles Municipal Airport, which is located approximately six miles northeast of the project site. The project site is not located within the 65 dBA CNEL contour of this airport. As a result, the project site is not subject to high levels of aircraft noise. This impact is considered less than significant.

REFERENCES

- California Building Standards Commission (CBSC). June 2010. *2010 California Green Building Standards Code, California Code of Regulations, Title 24, Part 11*.
- California Department of Transportation (Caltrans). 2012. *IS/EA Annotated Outline*.
- California Department of Transportation (Caltrans). 2013. *Transportation and Construction Vibration Guidance Manual*.
- City of El Paso de Robles. December 16, 2003. *City of El Paso de Robles General Plan 2003 Noise Element*.
- Federal Aviation Administration (FAA). July 14, 2000. *FAA Aviation Noise Abatement Policy. Federal Register Vol 65, No 136*.
- Federal Highway Administration (FHWA). December 8, 2008. *Roadway Construction Noise Model, version 1.1*.
- Federal Transit Administration (FTA). 2006. *Transit Noise and Vibration Impact Assessment*.
- RICK Engineering Company. 2018. *Proposed Beechwood Specific Plan*.
- State of California Department of Transportation (Caltrans). 2002. *Transportation-Related Earth Borne Vibrations*.
- State of California Department of Transportation (Caltrans). June 2004. *Transportation and Construction-Induced Vibration Guidance Manual*.
- State of California Governor's Office of Planning and Research (OPR). 2003. *General Plan Guidelines*.
- U.S. Environmental Protection Agency (EPA). 1974. *Information on Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety*.

APPENDIX A AMBIENT NOISE MONITORING SURVEYS




NOISE MEASUREMENT SURVEY FORM

DATE: 1-Feb-19

PROJECT: BEECHWOOD SPECIFIC PLAN

NOISE MONITORING LOCATION: PASO ROBLES



LOCATIONS ARE APPROXIMATE

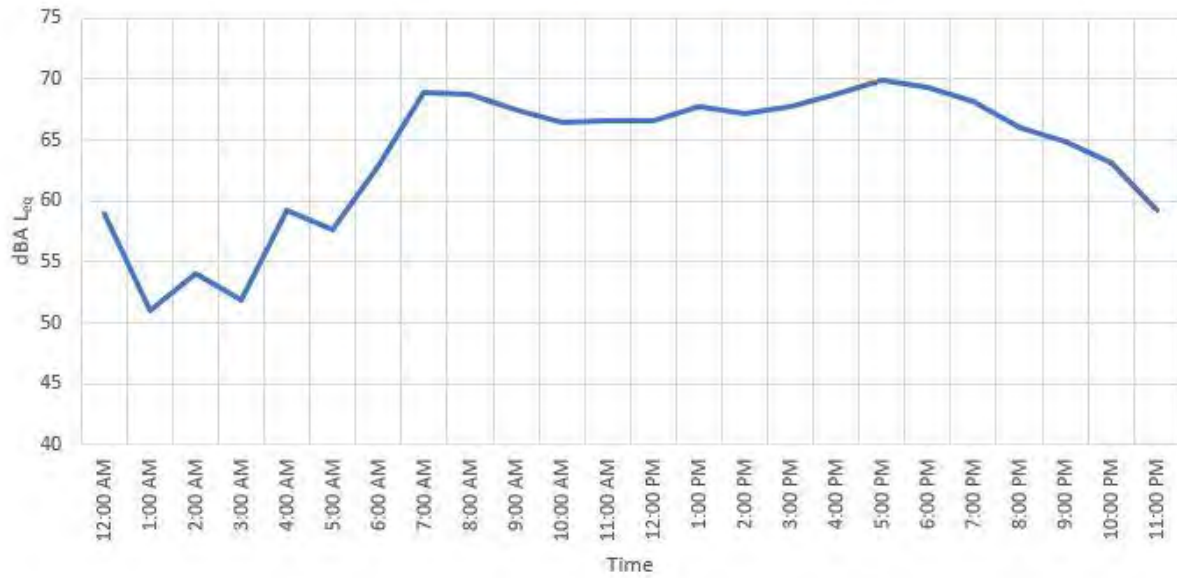
MET CONDITIONS: TEMP: 49 F - 53 F HUMIDITY: 76% - 90% WIND SPEED: 8 MPH - 16 MPH SKY: OVERCAST GROUND: WET

NOISE MONITORING EQUIPMENT: LARSON DAVIS MODEL 820, TYPE I SLM

CALIBRATED PRIOR TO AND UPON COMPLETION OF MEASUREMENTS: YES

LOCATION	MONITORING PERIOD	NOISE SOURCES NOTED	NOISE LEVEL		
			LEQ	LMAX	LMIN
Creston Road near Beechwood Drive, ~45 ft from road centerline (ST-1)	2/1/2019	Vehicle Traffic, Bicyclist, Dog	69.7	82.15	36.15
	1030-1045				
Creston Road, ~18ft from road centerline (ST-2)	2/1/2019	Vehicle Traffic, Airplane, Bird, Water Outlet, Windmill	74.2	89	35.1
	1055-1110				
Beechwood Drive near Beechwood Court, ~25 ft from road centerline (ST-3)	2/1/2019	Vehicle Traffic, Airplane, Bicyclist, Bird, Jogger	59.6	77.7	36.3
	1125-1135				
Meadowlark Road near Oriole Way, ~20 ft from road centerline (ST-4)	2/1/2019	Vehicle Traffic, Bird, Jogger, Windchime	64.6	79.9	37.8
	1150-1200				
Meadowlark Road near Airport Road, ~20 ft from road centerline (ST-5)	2/1/2019	Vehicle Traffic, Helicopter, Vacuum	60.7	77.3	39.7
	1210-1220				
Meadowlark Road, ~20 ft from road centerline (ST-6)	2/1/2019	Vehicle Traffic, Bird, Dog, Walker	51	73.9	35.3
	1230-1240				

LONG-TERM NOISE MEASUREMENT AT LT-1
 32 Feet from the Centerline of Creston Road
 Measured Noise Level: 68.4 CNEL



APPENDIX B

TRAFFIC NOISE MODELING

TRAFFIC SUMMARY

ROADWAY SEGMENT	SEGID	VOLUME (ADT)		TOTAL NUMBER OF LANES	SPEED
		EXISTING	EXISTING PLUS 911 UNIT PROJECT		
CRESTON ROAD, EAST OF FERRO LANE	1	16,049	16,783	2	35
CRESTON ROAD, EAST OF GOLDEN HILL ROAD	2	13,675	16,086	4	25
CRESTON ROAD, SOUTH OF NIBLICK ROAD	3	14,856	18,473	4	35
CRESTON ROAD, NORTH OF MEADOWLARK ROAD	4	6,008	10,149	2	35
GOLDEN HILL ROAD, SOUTH OF UNION ROAD	5	12,676	13,829	3	40
GOLDEN HILL ROAD, NORTH OF UNION ROAD	6	9,805	10,644	3	40
NIBLICK ROAD, EAST OF SPRING STREET	7	29,676	32,454	4	40
NIBLICK ROAD, EAST OF QUARTERHOUSE LANE	8	20,115	21,426	4	40
CHAROLAIS ROAD, EAST OF SOUTH RIVER ROAD	9	7,838	11,245	2	45
SOUTH RIVER ROAD, SOUTH OF SPANISH CAMP ROAD	10	1,458	1,563	2	35
SOUTH RIVER ROAD, NORTH OF CHAROLAIS ROAD	11	9,531	12,938	2	40
BARLEY GRAIN ROAD, SOUTH OF CRESTON ROAD	12	439	544	2	25
RIDGE ROAD, EAST OF BEECHWOOD DRIVE	13	0	2306	2	40
AIRPORT ROAD, SOUTH OF MEADOWLARK ROAD	14	0	2097	2	40
MEADOWLARK ROAD, EAST OF BEECHWOOD DRIVE	15	2300		2	45
BEECHWOOD DRIVE, SOUTH OF MEADOWLARK ROAD	16	2000		2	25
CRESTON ROAD, EAST OF BEECHWOOD DRIVE	17	4400		2	55
CRESTON ROAD, WEST OF BEECHWOOD DRIVE	18	4600		3	45

ROADWAY SEGMENT	SEGID	VOLUME (ADT)		TOTAL NUMBER OF LANES	SPEED
		NEAR TERM	NEAR TERM PLUS 911 UNIT PROJECT		
CRESTON ROAD, EAST OF FERRO LANE	1	17,600	18,334	2	35
CRESTON ROAD, EAST OF GOLDEN HILL ROAD	2	16,700	19,111	4	25
CRESTON ROAD, SOUTH OF NIBLICK ROAD	3	16,900	20,517	4	35
CRESTON ROAD, NORTH OF MEADOWLARK ROAD	4	7,400	11,541	2	35
GOLDEN HILL ROAD, SOUTH OF UNION ROAD	5	15,200	16,353	3	40
GOLDEN HILL ROAD, NORTH OF UNION ROAD	6	11,900	12,739	3	40
NIBLICK ROAD, EAST OF SPRING STREET	7	34,400	37,178	4	40
NIBLICK ROAD, EAST OF QUARTERHOUSE LANE	8	25,700	27,011	4	40
CHAROLAIS ROAD, EAST OF SOUTH RIVER ROAD	9	9,200	12,607	2	45
SOUTH RIVER ROAD, SOUTH OF SPANISH CAMP ROAD	10	1,500	1,605	2	35
SOUTH RIVER ROAD, NORTH OF CHAROLAIS ROAD	11	11,000	14,407	2	40
BARLEY GRAIN ROAD, SOUTH OF CRESTON ROAD	12	500	605	2	25
RIDGE ROAD, EAST OF BEECHWOOD DRIVE	13	0	2306	2	40
AIRPORT ROAD, SOUTH OF MEADOWLARK ROAD	14	300	2397	2	40
MEADOWLARK ROAD, EAST OF BEECHWOOD DRIVE	15	5400	7800	2	45
BEECHWOOD DRIVE, SOUTH OF MEADOWLARK ROAD	16	2300	4300	2	25
CRESTON ROAD, EAST OF BEECHWOOD DRIVE	17	4600	7000	3	55
CRESTON ROAD, WEST OF BEECHWOOD DRIVE	18	4800	8600	3	45

ROADWAY SEGMENT	SEGID	VOLUME (ADT)		TOTAL NUMBER OF LANES	SPEED
		CUMULATIVE	CUMULATIVE PLUS 911 UNIT PROJECT		
CRESTON ROAD, EAST OF FERRO LANE	1	19,300	19,929	2	35
CRESTON ROAD, EAST OF GOLDEN HILL ROAD	2	19,600	21,487	4	25
CRESTON ROAD, SOUTH OF NIBLICK ROAD	3	17,600	20,745	4	35
CRESTON ROAD, NORTH OF MEADOWLARK ROAD	4	8,100	11,665	2	35
GOLDEN HILL ROAD, SOUTH OF UNION ROAD	5	20,600	21,648	3	40
GOLDEN HILL ROAD, NORTH OF UNION ROAD	6	22,400	23,239	3	40
NIBLICK ROAD, EAST OF SPRING STREET	7	34,700	37,111	4	40
NIBLICK ROAD, EAST OF QUARTERHOUSE LANE	8	28,600	29,753	4	40
CHAROLAIS ROAD, EAST OF SOUTH RIVER ROAD	9	9,700	12,531	2	45
SOUTH RIVER ROAD, SOUTH OF SPANISH CAMP ROAD	10	1,800	1,905	2	35
SOUTH RIVER ROAD, NORTH OF CHAROLAIS ROAD	11	11,700	14,531	2	40
BARLEY GRAIN ROAD, SOUTH OF CRESTON ROAD	12	600	705	2	25
RIDGE ROAD, EAST OF BEECHWOOD DRIVE	13	0	1992	2	40
AIRPORT ROAD, SOUTH OF MEADOWLARK ROAD	14	400	3021	2	40
MEADOWLARK ROAD, EAST OF BEECHWOOD DRIVE	15	5800	7700	2	45
BEECHWOOD DRIVE, SOUTH OF MEADOWLARK ROAD	16	2600	4400	2	25
CRESTON ROAD, EAST OF BEECHWOOD DRIVE	17	5300	7400	3	55
CRESTON ROAD, WEST OF BEECHWOOD DRIVE	18	5600	9000	3	45

PREDICTED TRAFFIC NOISE LEVELS AND CONTOUR DISTANCES

EXISTING CONDITIONS

ROADWAY SEGMENT	SEGID	NOISE LEVEL				
		CNEL AT 50' FROM NEAR TRAVEL LANE CENTERLINE	70 CNEL	65 CNEL	60 CNEL	55 CNEL
CRESTON ROAD, EAST OF FERRO LANE	1	66.3	WR	68	145	313
CRESTON ROAD, EAST OF GOLDEN HILL ROAD	2	60.6	WR	WR	80	167
CRESTON ROAD, SOUTH OF NIBLICK ROAD	3	64.4	WR	68	140	298
CRESTON ROAD, NORTH OF MEADOWLARK ROAD	4	62.0	WR	WR	76	163
GOLDEN HILL ROAD, SOUTH OF UNION ROAD	5	65.6	WR	74	155	332
GOLDEN HILL ROAD, NORTH OF UNION ROAD	6	65.0	WR	62	131	280
NIBLICK ROAD, EAST OF SPRING STREET	7	68.8	63	128	273	585
NIBLICK ROAD, EAST OF QUARTERHOUSE LANE	8	67.1	WR	100	211	452
CHAROLAIS ROAD, EAST OF SOUTH RIVER ROAD	9	65.8	WR	64	136	293
SOUTH RIVER ROAD, SOUTH OF SPANISH CAMP ROAD	10	55.8	WR	WR	WR	64
SOUTH RIVER ROAD, NORTH OF CHAROLAIS ROAD	11	64.8	WR	60	128	275
BARLEY GRAIN ROAD, SOUTH OF CRESTON ROAD	12	47.2	WR	WR	WR	WR
RIDGE ROAD, EAST OF BEECHWOOD DRIVE	13	0.0	WR	WR	WR	WR
AIRPORT ROAD, SOUTH OF MEADOWLARK ROAD	14	0.0	WR	WR	WR	WR
MEADOWLARK ROAD, EAST OF BEECHWOOD DRIVE	15	60.5	WR	WR	60	130
BEECHWOOD DRIVE, SOUTH OF MEADOWLARK ROAD	16	53.7	WR	WR	WR	WR
CRESTON ROAD, EAST OF BEECHWOOD DRIVE	17	65.5	WR	61	130	280
CRESTON ROAD, WEST OF BEECHWOOD DRIVE	18	62.4	WR	WR	97	206

WR=Within Road Right-of-Way

EXISTING PLUS 911 UNIT MASTER PLAN CONDITIONS

ROADWAY SEGMENT	SEGID	NOISE LEVEL				
		CNEL AT 50' FROM NEAR TRAVEL LANE CENTERLINE	70 CNEL	65 CNEL	60 CNEL	55 CNEL
CRESTON ROAD, EAST OF FERRO LANE	1	66.4	WR	70	150	322
CRESTON ROAD, EAST OF GOLDEN HILL ROAD	2	61.3	WR	WR	89	185
CRESTON ROAD, SOUTH OF NIBLICK ROAD	3	65.4	WR	78	161	344
CRESTON ROAD, NORTH OF MEADOWLARK ROAD	4	64.3	WR	WR	107	231
GOLDEN HILL ROAD, SOUTH OF UNION ROAD	5	66.0	WR	78	164	352
GOLDEN HILL ROAD, NORTH OF UNION ROAD	6	65.3	WR	65	138	296
NIBLICK ROAD, EAST OF SPRING STREET	7	69.2	67	136	289	621
NIBLICK ROAD, EAST OF QUARTERHORSE LANE	8	67.4	WR	104	220	471
CHAROLAIS ROAD, EAST OF SOUTH RIVER ROAD	9	67.4	WR	81	173	373
SOUTH RIVER ROAD, SOUTH OF SPANISH CAMP ROAD	10	56.1	WR	WR	WR	67
SOUTH RIVER ROAD, NORTH OF CHAROLAIS ROAD	11	66.2	WR	74	157	337
BARLEY GRAIN ROAD, SOUTH OF CRESTON ROAD	12	48.1	WR	WR	WR	WR
RIDGE ROAD, EAST OF BEECHWOOD DRIVE	13	59.2	WR	WR	WR	107
AIRPORT ROAD, SOUTH OF MEADOWLARK ROAD	14	58.3	WR	WR	WR	101

WR=Within Road Right-of-Way

NEAR TERM CONDITONS

ROADWAY SEGMENT	SEGID	NOISE LEVEL				
		CNEL AT 50' FROM NEAR TRAVEL LANE CENTERLINE	70 CNEL	65 CNEL	60 CNEL	55 CNEL
CRESTON ROAD, EAST OF FERRO LANE	1	66.7	WR	72	155	333
CRESTON ROAD, EAST OF GOLDEN HILL ROAD	2	61.5	WR	WR	91	190
CRESTON ROAD, SOUTH OF NIBLICK ROAD	3	65.0	WR	74	152	324
CRESTON ROAD, NORTH OF MEADOWLARK ROAD	4	62.9	WR	WR	87	187
GOLDEN HILL ROAD, SOUTH OF UNION ROAD	5	66.4	WR	83	175	375
GOLDEN HILL ROAD, NORTH OF UNION ROAD	6	65.8	WR	70	148	319
NIBLICK ROAD, EAST OF SPRING STREET	7	69.5	69	141	301	646
NIBLICK ROAD, EAST OF QUARTERHORSE LANE	8	68.2	58	117	248	532
CHAROLAIS ROAD, EAST OF SOUTH RIVER ROAD	9	66.5	WR	71	152	326
SOUTH RIVER ROAD, SOUTH OF SPANISH CAMP ROAD	10	56.0	WR	WR	WR	65
SOUTH RIVER ROAD, NORTH OF CHAROLAIS ROAD	11	65.5	WR	66	141	302
BARLEY GRAIN ROAD, SOUTH OF CRESTON ROAD	12	47.7	WR	WR	WR	WR
RIDGE ROAD, EAST OF BEECHWOOD DRIVE	13	0.0	WR	WR	WR	WR
AIRPORT ROAD, SOUTH OF MEADOWLARK ROAD	14	49.8	WR	WR	WR	WR
MEADOWLARK ROAD, EAST OF BEECHWOOD DRIVE	15	64.2	WR	WR	106	229
BEECHWOOD DRIVE, SOUTH OF MEADOWLARK ROAD	16	54.3	WR	WR	WR	51
CRESTON ROAD, EAST OF BEECHWOOD DRIVE	17	64.6	WR	65	135	288
CRESTON ROAD, WEST OF BEECHWOOD DRIVE	18	62.6	WR	WR	99.7	212

WR=Within Road Right-of-Way

NEAR TERM PLUS 911 UNIT MASTER PLAN CONDITONS

ROADWAY SEGMENT	SEGID	NOISE LEVEL				
		CNEL AT 50' FROM NEAR TRAVEL LANE CENTERLINE	70 CNEL	65 CNEL	60 CNEL	55 CNEL
CRESTON ROAD, EAST OF FERRO LANE	1	66.8	WR	74	159	342
CRESTON ROAD, EAST OF GOLDEN HILL ROAD	2	62.0	WR	WR	99	207
CRESTON ROAD, SOUTH OF NIBLICK ROAD	3	65.8	WR	83	172	369
CRESTON ROAD, NORTH OF MEADOWLARK ROAD	4	64.8	WR	54	117	251
GOLDEN HILL ROAD, SOUTH OF UNION ROAD	5	66.7	WR	87	184	394
GOLDEN HILL ROAD, NORTH OF UNION ROAD	6	66.1	WR	73	155	333
NIBLICK ROAD, EAST OF SPRING STREET	7	69.8	72	148	316	680
NIBLICK ROAD, EAST OF QUARTERHORSE LANE	8	68.4	60	120	256	550
CHAROLAIS ROAD, EAST OF SOUTH RIVER ROAD	9	67.9	WR	87	187	403
SOUTH RIVER ROAD, SOUTH OF SPANISH CAMP ROAD	10	56.3	WR	WR	WR	68
SOUTH RIVER ROAD, NORTH OF CHAROLAIS ROAD	11	66.6	WR	79	168	362
BARLEY GRAIN ROAD, SOUTH OF CRESTON ROAD	12	48.5	WR	WR	WR	WR
RIDGE ROAD, EAST OF BEECHWOOD DRIVE	13	59.2	WR	WR	WR	107
AIRPORT ROAD, SOUTH OF MEADOWLARK ROAD	14	58.8	WR	WR	52	110
MEADOWLARK ROAD, EAST OF BEECHWOOD DRIVE	15	65.8	WR	63	136	292
BEECHWOOD DRIVE, SOUTH OF MEADOWLARK ROAD	16	57.1	WR	WR	WR	77
CRESTON ROAD, EAST OF BEECHWOOD DRIVE	17	66.5	WR	84	178	381
CRESTON ROAD, WEST OF BEECHWOOD DRIVE	18	65.2	WR	70	146	312

WR=Within Road Right-of-Way

CUMULATIVE CONDITIONS

ROADWAY SEGMENT	SEGID	NOISE LEVEL				
		CNEL AT 50' FROM NEAR TRAVEL LANE CENTERLINE	70 CNEL	65 CNEL	60 CNEL	55 CNEL
CRESTON ROAD, EAST OF FERRO LANE	1	66.7	WR	72	155	333
CRESTON ROAD, EAST OF GOLDEN HILL ROAD	2	61.5	WR	WR	91	190
CRESTON ROAD, SOUTH OF NIBLICK ROAD	3	65.0	WR	74	152	324
CRESTON ROAD, NORTH OF MEADOWLARK ROAD	4	62.9	WR	WR	87	187
GOLDEN HILL ROAD, SOUTH OF UNION ROAD	5	66.4	WR	83	175	375
GOLDEN HILL ROAD, NORTH OF UNION ROAD	6	65.8	WR	70	148	319
NIBLICK ROAD, EAST OF SPRING STREET	7	69.5	69	141	301	646
NIBLICK ROAD, EAST OF QUARTERHORSE LANE	8	68.2	58	117	247	532
CHAROLAIS ROAD, EAST OF SOUTH RIVER ROAD	9	66.5	WR	71	152	326
SOUTH RIVER ROAD, SOUTH OF SPANISH CAMP ROAD	10	56.0	WR	WR	WR	65
SOUTH RIVER ROAD, NORTH OF CHAROLAIS ROAD	11	65.5	WR	66	141	302
BARLEY GRAIN ROAD, SOUTH OF CRESTON ROAD	12	47.7	WR	WR	WR	WR
RIDGE ROAD, EAST OF BEECHWOOD DRIVE	13	0.0	WR	WR	WR	WR
AIRPORT ROAD, SOUTH OF MEADOWLARK ROAD	14	51.1	WR	WR	WR	WR
MEADOWLARK ROAD, EAST OF BEECHWOOD DRIVE	15	64.5	WR	52	112	240
BEECHWOOD DRIVE, SOUTH OF MEADOWLARK ROAD	16	54.9	WR	WR	WR	55
CRESTON ROAD, EAST OF BEECHWOOD DRIVE	17	65.3	WR	71	148	317
CRESTON ROAD, WEST OF BEECHWOOD DRIVE	18	63.3	WR	54	110	235

WR=Within Road Right-of-Way

**CUMULATIVE CONDITIONS PLUS 911 UNIT MASTER PLAN
CONDITIONS**

ROADWAY SEGMENT	SEGID	NOISE LEVEL				
		CNEL AT 50' FROM NEAR TRAVEL LANE CENTERLINE	70 CNEL	65 CNEL	60 CNEL	55 CNEL
CRESTON ROAD, EAST OF FERRO LANE	1	67.2	WR	78	168	361
CRESTON ROAD, EAST OF GOLDEN HILL ROAD	2	62.5	WR	WR	106	224
CRESTON ROAD, SOUTH OF NIBLICK ROAD	3	65.9	WR	83	174	371
CRESTON ROAD, NORTH OF MEADOWLARK ROAD	4	64.9	WR	55	118	253
GOLDEN HILL ROAD, SOUTH OF UNION ROAD	5	67.9	WR	104	221	475
GOLDEN HILL ROAD, NORTH OF UNION ROAD	6	68.7	WR	108	231	498
NIBLICK ROAD, EAST OF SPRING STREET	7	69.8	72	148	316	679
NIBLICK ROAD, EAST OF QUARTERHORSE LANE	8	68.8	63	129	273	586
CHAROLAIS ROAD, EAST OF SOUTH RIVER ROAD	9	67.9	WR	87	186	401
SOUTH RIVER ROAD, SOUTH OF SPANISH CAMP ROAD	10	57.0	WR	WR	WR	76
SOUTH RIVER ROAD, NORTH OF CHAROLAIS ROAD	11	66.7	WR	79	169	364
BARLEY GRAIN ROAD, SOUTH OF CRESTON ROAD	12	49.2	WR	WR	WR	WR
RIDGE ROAD, EAST OF BEECHWOOD DRIVE	13	58.6	WR	WR	WR	97
AIRPORT ROAD, SOUTH OF MEADOWLARK ROAD	14	59.8	WR	WR	61	128
MEADOWLARK ROAD, EAST OF BEECHWOOD DRIVE	15	65.8	WR	63	135	290
BEECHWOOD DRIVE, SOUTH OF MEADOWLARK ROAD	16	57.2	WR	WR	WR	78
CRESTON ROAD, EAST OF BEECHWOOD DRIVE	17	66.7	WR	87	184	386
CRESTON ROAD, WEST OF BEECHWOOD DRIVE	18	65.4	WR	72	150	322

WR=Within Road Right-of-Way

NOISE PREDICTION MODEL CALIBRATION

MODELED NOISE LEVEL: 67.2

MEASURED NOISE LEVEL: 68.4

DIFFERENCE: 1.2

ACCEPTABLE? YES

CORRECTION FACTORS APPLIED? NO

Appendix E

Air Quality Modeling Reports

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Typical Residential Development Emissions (Unmitigated)

Beechwood SP - typical phase 20181219 - San Luis Obispo County, Annual

Beechwood SP - typical phase 20181219
San Luis Obispo County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Asphalt Surfaces	5.60	Acre	5.60	243,936.00	0
City Park	2.70	Acre	2.70	117,612.00	0
Apartments Mid Rise	11.00	Dwelling Unit	0.70	11,000.00	31
Condo/Townhouse	15.00	Dwelling Unit	1.50	15,000.00	43
Single Family Housing	75.00	Dwelling Unit	12.30	135,000.00	215

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	3.2	Precipitation Freq (Days)	44
Climate Zone	4			Operational Year	2021
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	268.02	CH4 Intensity (lb/MWhr)	0.04	N2O Intensity (lb/MWhr)	0.006

1.3 User Entered Comments & Non-Default Data

Beechwood SP - typical phase 20181219 - San Luis Obispo County, Annual

Project Characteristics - CO2 and CH4 insentisty factor updated to match PG&E 2021

Land Use - Lot acreage from project description

Construction Phase - No demo required

Off-road Equipment - No demo

Trips and VMT -

Architectural Coating - SLOAPCD Rule 433

Vehicle Trips - Trip rates obtained from Beechwood TIS Assumptions Memo (Central Coast Transportation Consulting, Aug 2018)

Woodstoves -

Consumer Products - all roads

Area Coating - SLOAPCD Rule 433

Energy Use - Title-24 intensity adjusted to comply with the 2019 requirements

Land Use Change -

Construction Off-road Equipment Mitigation - Mitigation Measure AIR-1b and 1c

Mobile Land Use Mitigation -

Energy Mitigation - Comply with Cal Green Building Codes 2019

Water Mitigation -

Area Mitigation - MM AIR 7

Off-road Equipment -

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Nonresidential_Exterior	250.00	100.00
tblArchitecturalCoating	EF_Nonresidential_Interior	250.00	100.00
tblArchitecturalCoating	EF_Parking	150.00	100.00
tblArchitecturalCoating	EF_Residential_Exterior	250.00	100.00
tblArchitecturalCoating	EF_Residential_Interior	250.00	100.00
tblAreaCoating	Area_EF_Nonresidential_Exterior	250	100
tblAreaCoating	Area_EF_Nonresidential_Interior	250	100

Beechwood SP - typical phase 20181219 - San Luis Obispo County, Annual

tblAreaCoating	Area_EF_Parking	150	100
tblAreaCoating	Area_EF_Residential_Exterior	250	100
tblAreaCoating	Area_EF_Residential_Interior	250	100
tblConstructionPhase	NumDays	20.00	0.00
tblConsumerProducts	ROG_EF_Degreaser	3.542E-07	0
tblEnergyUse	T24E	332.81	309.51
tblEnergyUse	T24E	249.32	231.87
tblEnergyUse	T24E	325.76	302.96
tblEnergyUse	T24NG	5,484.45	5,100.54
tblEnergyUse	T24NG	15,568.01	14,478.25
tblEnergyUse	T24NG	25,910.09	24,096.38
tblLandUse	LotAcreage	0.29	0.70
tblLandUse	LotAcreage	0.94	1.50
tblLandUse	LotAcreage	24.35	12.30
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblProjectCharacteristics	CH4IntensityFactor	0.029	0.04
tblProjectCharacteristics	CO2IntensityFactor	641.35	268.02
tblVehicleTrips	WD_TR	6.65	7.40
tblVehicleTrips	WD_TR	5.81	7.40
tblVehicleTrips	WD_TR	9.52	9.20

2.0 Emissions Summary

Beechwood SP - typical phase 20181219 - San Luis Obispo County, Annual

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					
2020	0.4556	4.0772	3.5144	7.7200e-003	0.4899	0.1771	0.6670	0.1793	0.1656	0.3448	0.0000	691.3059	691.3059	0.1129	0.0000	694.1271
2021	1.2862	2.0187	2.0467	4.6700e-003	0.1732	0.0825	0.2557	0.0466	0.0775	0.1241	0.0000	419.1065	419.1065	0.0585	0.0000	420.5679
Maximum	1.2862	4.0772	3.5144	7.7200e-003	0.4899	0.1771	0.6670	0.1793	0.1656	0.3448	0.0000	691.3059	691.3059	0.1129	0.0000	694.1271

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					
2020	0.4556	4.0772	3.5144	7.7200e-003	0.3567	0.1771	0.5338	0.1173	0.1656	0.2829	0.0000	691.3054	691.3054	0.1129	0.0000	694.1267
2021	1.2862	2.0187	2.0467	4.6700e-003	0.1732	0.0825	0.2557	0.0466	0.0775	0.1241	0.0000	419.1063	419.1063	0.0585	0.0000	420.5677
Maximum	1.2862	4.0772	3.5144	7.7200e-003	0.3567	0.1771	0.5338	0.1173	0.1656	0.2829	0.0000	691.3054	691.3054	0.1129	0.0000	694.1267

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	20.08	0.00	14.43	27.42	0.00	13.21	0.00	0.00	0.00	0.00	0.00	0.00

Beechwood SP - typical phase 20181219 - San Luis Obispo County, Annual

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	1-1-2020	3-31-2020	1.5307	1.5307
2	4-1-2020	6-30-2020	0.9860	0.9860
3	7-1-2020	9-30-2020	0.9968	0.9968
4	10-1-2020	12-31-2020	1.0031	1.0031
5	1-1-2021	3-31-2021	0.8918	0.8918
6	4-1-2021	6-30-2021	0.8963	0.8963
7	7-1-2021	9-30-2021	0.5215	0.5215
		Highest	1.5307	1.5307

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	0.7758	0.0159	1.3780	7.0000e-005		7.6000e-003	7.6000e-003		7.6000e-003	7.6000e-003	0.0000	2.2461	2.2461	2.1800e-003	0.0000	2.3006
Energy	0.0129	0.1106	0.0470	7.1000e-004		8.9400e-003	8.9400e-003		8.9400e-003	8.9400e-003	0.0000	216.2480	216.2480	0.0156	4.3200e-003	217.9265
Mobile	0.2943	1.2753	3.4307	9.5100e-003	0.8457	0.0101	0.8558	0.2265	9.4800e-003	0.2360	0.0000	869.4318	869.4318	0.0357	0.0000	870.3230
Waste						0.0000	0.0000		0.0000	0.0000	20.3681	0.0000	20.3681	1.2037	0.0000	50.4611
Water						0.0000	0.0000		0.0000	0.0000	2.0877	7.4629	9.5506	0.2155	5.2300e-003	16.4978
Total	1.0830	1.4017	4.8558	0.0103	0.8457	0.0266	0.8723	0.2265	0.0260	0.2525	22.4558	1,095.3889	1,117.8447	1.4727	9.5500e-003	1,157.5089

Beechwood SP - typical phase 20181219 - San Luis Obispo County, Annual

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	0.7758	0.0159	1.3780	7.0000e-005		7.6000e-003	7.6000e-003		7.6000e-003	7.6000e-003	0.0000	2.2461	2.2461	2.1800e-003	0.0000	2.3006
Energy	0.0129	0.1106	0.0470	7.1000e-004		8.9400e-003	8.9400e-003		8.9400e-003	8.9400e-003	0.0000	216.1061	216.1061	0.0156	4.3200e-003	217.7831
Mobile	0.2943	1.2753	3.4307	9.5100e-003	0.8457	0.0101	0.8558	0.2265	9.4800e-003	0.2360	0.0000	869.4318	869.4318	0.0357	0.0000	870.3230
Waste						0.0000	0.0000		0.0000	0.0000	20.3681	0.0000	20.3681	1.2037	0.0000	50.4611
Water						0.0000	0.0000		0.0000	0.0000	1.6702	6.5972	8.2673	0.1725	4.2000e-003	13.8316
Total	1.0830	1.4017	4.8558	0.0103	0.8457	0.0266	0.8723	0.2265	0.0260	0.2525	22.0383	1,094.381 2	1,116.419 4	1.4297	8.5200e-003	1,154.699 3

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.86	0.09	0.13	2.92	10.79	0.24

Beechwood SP - typical phase 20181219 - San Luis Obispo County, Annual

2.3 Vegetation**Vegetation**

	CO2e
Category	MT
Vegetation Land Change	-86.6310
Total	-86.6310

3.0 Construction Detail**Construction Phase**

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/1/2020	1/28/2019	5	0	
2	Site Preparation	Site Preparation	1/1/2020	1/14/2020	5	10	
3	Grading	Grading	1/15/2020	3/3/2020	5	35	
4	Building Construction	Building Construction	3/1/2020	7/30/2021	5	370	
5	Paving	Paving	9/1/2021	9/28/2021	5	20	
6	Architectural Coating	Architectural Coating	9/29/2021	10/26/2021	5	20	

Acres of Grading (Site Preparation Phase): 0**Acres of Grading (Grading Phase): 87.5****Acres of Paving: 5.6**

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Residential Indoor: 326,025; Residential Outdoor: 108,675; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 14,636 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	0	8.00	81	0.73
Demolition	Excavators	0	8.00	158	0.38
Demolition	Rubber Tired Dozers	0	8.00	247	0.40
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
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
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
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

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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
Demolition	0	0.00	0.00	0.00	13.00	5.00	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	13.00	5.00	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	13.00	5.00	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	198.00	70.00	0.00	13.00	5.00	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	13.00	5.00	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	40.00	0.00	0.00	13.00	5.00	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.3 Site Preparation - 2020

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					0.0903	0.0000	0.0903	0.0497	0.0000	0.0497	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0204	0.2121	0.1076	1.9000e-004		0.0110	0.0110		0.0101	0.0101	0.0000	16.7153	16.7153	5.4100e-003	0.0000	16.8505
Total	0.0204	0.2121	0.1076	1.9000e-004	0.0903	0.0110	0.1013	0.0497	0.0101	0.0598	0.0000	16.7153	16.7153	5.4100e-003	0.0000	16.8505

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3.3 Site Preparation - 2020**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	3.9000e-004	3.6000e-004	3.1000e-003	1.0000e-005	8.7000e-004	1.0000e-005	8.7000e-004	2.3000e-004	1.0000e-005	2.4000e-004	0.0000	0.7249	0.7249	2.0000e-005	0.0000	0.7255
Total	3.9000e-004	3.6000e-004	3.1000e-003	1.0000e-005	8.7000e-004	1.0000e-005	8.7000e-004	2.3000e-004	1.0000e-005	2.4000e-004	0.0000	0.7249	0.7249	2.0000e-005	0.0000	0.7255

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					0.0407	0.0000	0.0407	0.0223	0.0000	0.0223	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0204	0.2121	0.1076	1.9000e-004		0.0110	0.0110		0.0101	0.0101	0.0000	16.7153	16.7153	5.4100e-003	0.0000	16.8505
Total	0.0204	0.2121	0.1076	1.9000e-004	0.0407	0.0110	0.0516	0.0223	0.0101	0.0325	0.0000	16.7153	16.7153	5.4100e-003	0.0000	16.8505

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3.3 Site Preparation - 2020**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	3.9000e-004	3.6000e-004	3.1000e-003	1.0000e-005	8.7000e-004	1.0000e-005	8.7000e-004	2.3000e-004	1.0000e-005	2.4000e-004	0.0000	0.7249	0.7249	2.0000e-005	0.0000	0.7255
Total	3.9000e-004	3.6000e-004	3.1000e-003	1.0000e-005	8.7000e-004	1.0000e-005	8.7000e-004	2.3000e-004	1.0000e-005	2.4000e-004	0.0000	0.7249	0.7249	2.0000e-005	0.0000	0.7255

3.4 Grading - 2020**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					0.1518	0.0000	0.1518	0.0629	0.0000	0.0629	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0779	0.8785	0.5593	1.0900e-003		0.0380	0.0380		0.0350	0.0350	0.0000	95.3475	95.3475	0.0308	0.0000	96.1185
Total	0.0779	0.8785	0.5593	1.0900e-003	0.1518	0.0380	0.1898	0.0629	0.0350	0.0979	0.0000	95.3475	95.3475	0.0308	0.0000	96.1185

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3.4 Grading - 2020**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	1.5300e-003	1.3900e-003	0.0120	3.0000e-005	3.3700e-003	2.0000e-005	3.3900e-003	9.0000e-004	2.0000e-005	9.2000e-004	0.0000	2.8189	2.8189	9.0000e-005	0.0000	2.8213
Total	1.5300e-003	1.3900e-003	0.0120	3.0000e-005	3.3700e-003	2.0000e-005	3.3900e-003	9.0000e-004	2.0000e-005	9.2000e-004	0.0000	2.8189	2.8189	9.0000e-005	0.0000	2.8213

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					0.0683	0.0000	0.0683	0.0283	0.0000	0.0283	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0779	0.8785	0.5593	1.0900e-003		0.0380	0.0380		0.0350	0.0350	0.0000	95.3474	95.3474	0.0308	0.0000	96.1183
Total	0.0779	0.8785	0.5593	1.0900e-003	0.0683	0.0380	0.1063	0.0283	0.0350	0.0633	0.0000	95.3474	95.3474	0.0308	0.0000	96.1183

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3.4 Grading - 2020**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	1.5300e-003	1.3900e-003	0.0120	3.0000e-005	3.3700e-003	2.0000e-005	3.3900e-003	9.0000e-004	2.0000e-005	9.2000e-004	0.0000	2.8189	2.8189	9.0000e-005	0.0000	2.8213
Total	1.5300e-003	1.3900e-003	0.0120	3.0000e-005	3.3700e-003	2.0000e-005	3.3900e-003	9.0000e-004	2.0000e-005	9.2000e-004	0.0000	2.8189	2.8189	9.0000e-005	0.0000	2.8213

3.5 Building Construction - 2020**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	0.2321	2.1009	1.8449	2.9500e-003		0.1223	0.1223		0.1150	0.1150	0.0000	253.6129	253.6129	0.0619	0.0000	255.1598
Total	0.2321	2.1009	1.8449	2.9500e-003		0.1223	0.1223		0.1150	0.1150	0.0000	253.6129	253.6129	0.0619	0.0000	255.1598

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3.5 Building Construction - 2020**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	0.0285	0.7979	0.2417	1.5300e-003	0.0348	4.3500e-003	0.0392	0.0101	4.1600e-003	0.0142	0.0000	147.4657	147.4657	8.8700e-003	0.0000	147.6875
Worker	0.0948	0.0861	0.7457	1.9300e-003	0.2087	1.3700e-003	0.2101	0.0555	1.2600e-003	0.0567	0.0000	174.6205	174.6205	5.7500e-003	0.0000	174.7642
Total	0.1233	0.8840	0.9875	3.4600e-003	0.2436	5.7200e-003	0.2493	0.0655	5.4200e-003	0.0710	0.0000	322.0863	322.0863	0.0146	0.0000	322.4517

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	0.2321	2.1009	1.8449	2.9500e-003		0.1223	0.1223		0.1150	0.1150	0.0000	253.6126	253.6126	0.0619	0.0000	255.1594
Total	0.2321	2.1009	1.8449	2.9500e-003		0.1223	0.1223		0.1150	0.1150	0.0000	253.6126	253.6126	0.0619	0.0000	255.1594

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3.5 Building Construction - 2020**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	0.0285	0.7979	0.2417	1.5300e-003	0.0348	4.3500e-003	0.0392	0.0101	4.1600e-003	0.0142	0.0000	147.4657	147.4657	8.8700e-003	0.0000	147.6875
Worker	0.0948	0.0861	0.7457	1.9300e-003	0.2087	1.3700e-003	0.2101	0.0555	1.2600e-003	0.0567	0.0000	174.6205	174.6205	5.7500e-003	0.0000	174.7642
Total	0.1233	0.8840	0.9875	3.4600e-003	0.2436	5.7200e-003	0.2493	0.0655	5.4200e-003	0.0710	0.0000	322.0863	322.0863	0.0146	0.0000	322.4517

3.5 Building Construction - 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					
Off-Road	0.1435	1.3161	1.2514	2.0300e-003		0.0724	0.0724		0.0681	0.0681	0.0000	174.8861	174.8861	0.0422	0.0000	175.9410
Total	0.1435	1.3161	1.2514	2.0300e-003		0.0724	0.0724		0.0681	0.0681	0.0000	174.8861	174.8861	0.0422	0.0000	175.9410

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3.5 Building Construction - 2021**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	0.0161	0.5031	0.1474	1.0500e-003	0.0240	1.4400e-003	0.0255	6.9400e-003	1.3700e-003	8.3100e-003	0.0000	101.0678	101.0678	5.9600e-003	0.0000	101.2168
Worker	0.0609	0.0531	0.4660	1.2900e-003	0.1439	9.2000e-004	0.1448	0.0383	8.4000e-004	0.0391	0.0000	116.2971	116.2971	3.5200e-003	0.0000	116.3851
Total	0.0770	0.5562	0.6135	2.3400e-003	0.1679	2.3600e-003	0.1703	0.0452	2.2100e-003	0.0474	0.0000	217.3649	217.3649	9.4800e-003	0.0000	217.6019

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	0.1435	1.3161	1.2514	2.0300e-003		0.0724	0.0724		0.0681	0.0681	0.0000	174.8859	174.8859	0.0422	0.0000	175.9407
Total	0.1435	1.3161	1.2514	2.0300e-003		0.0724	0.0724		0.0681	0.0681	0.0000	174.8859	174.8859	0.0422	0.0000	175.9407

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3.5 Building Construction - 2021**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	0.0161	0.5031	0.1474	1.0500e-003	0.0240	1.4400e-003	0.0255	6.9400e-003	1.3700e-003	8.3100e-003	0.0000	101.0678	101.0678	5.9600e-003	0.0000	101.2168
Worker	0.0609	0.0531	0.4660	1.2900e-003	0.1439	9.2000e-004	0.1448	0.0383	8.4000e-004	0.0391	0.0000	116.2971	116.2971	3.5200e-003	0.0000	116.3851
Total	0.0770	0.5562	0.6135	2.3400e-003	0.1679	2.3600e-003	0.1703	0.0452	2.2100e-003	0.0474	0.0000	217.3649	217.3649	9.4800e-003	0.0000	217.6019

3.6 Paving - 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					
Off-Road	0.0126	0.1292	0.1465	2.3000e-004		6.7800e-003	6.7800e-003		6.2400e-003	6.2400e-003	0.0000	20.0235	20.0235	6.4800e-003	0.0000	20.1854
Paving	7.3400e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	0.0199	0.1292	0.1465	2.3000e-004		6.7800e-003	6.7800e-003		6.2400e-003	6.2400e-003	0.0000	20.0235	20.0235	6.4800e-003	0.0000	20.1854

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3.6 Paving - 2021**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	6.1000e-004	5.3000e-004	4.6800e-003	1.0000e-005	1.4400e-003	1.0000e-005	1.4500e-003	3.8000e-004	1.0000e-005	3.9000e-004	0.0000	1.1669	1.1669	4.0000e-005	0.0000	1.1678
Total	6.1000e-004	5.3000e-004	4.6800e-003	1.0000e-005	1.4400e-003	1.0000e-005	1.4500e-003	3.8000e-004	1.0000e-005	3.9000e-004	0.0000	1.1669	1.1669	4.0000e-005	0.0000	1.1678

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	0.0126	0.1292	0.1465	2.3000e-004		6.7800e-003	6.7800e-003		6.2400e-003	6.2400e-003	0.0000	20.0235	20.0235	6.4800e-003	0.0000	20.1854
Paving	7.3400e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	0.0199	0.1292	0.1465	2.3000e-004		6.7800e-003	6.7800e-003		6.2400e-003	6.2400e-003	0.0000	20.0235	20.0235	6.4800e-003	0.0000	20.1854

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3.6 Paving - 2021**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	6.1000e-004	5.3000e-004	4.6800e-003	1.0000e-005	1.4400e-003	1.0000e-005	1.4500e-003	3.8000e-004	1.0000e-005	3.9000e-004	0.0000	1.1669	1.1669	4.0000e-005	0.0000	1.1678
Total	6.1000e-004	5.3000e-004	4.6800e-003	1.0000e-005	1.4400e-003	1.0000e-005	1.4500e-003	3.8000e-004	1.0000e-005	3.9000e-004	0.0000	1.1669	1.1669	4.0000e-005	0.0000	1.1678

3.7 Architectural Coating - 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					
Archit. Coating	1.0413					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.1900e-003	0.0153	0.0182	3.0000e-005		9.4000e-004	9.4000e-004		9.4000e-004	9.4000e-004	0.0000	2.5533	2.5533	1.8000e-004	0.0000	2.5576
Total	1.0435	0.0153	0.0182	3.0000e-005		9.4000e-004	9.4000e-004		9.4000e-004	9.4000e-004	0.0000	2.5533	2.5533	1.8000e-004	0.0000	2.5576

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3.7 Architectural Coating - 2021**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	1.6300e-003	1.4200e-003	0.0125	3.0000e-005	3.8500e-003	2.0000e-005	3.8800e-003	1.0200e-003	2.0000e-005	1.0500e-003	0.0000	3.1118	3.1118	9.0000e-005	0.0000	3.1142
Total	1.6300e-003	1.4200e-003	0.0125	3.0000e-005	3.8500e-003	2.0000e-005	3.8800e-003	1.0200e-003	2.0000e-005	1.0500e-003	0.0000	3.1118	3.1118	9.0000e-005	0.0000	3.1142

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	1.0413					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.1900e-003	0.0153	0.0182	3.0000e-005		9.4000e-004	9.4000e-004		9.4000e-004	9.4000e-004	0.0000	2.5533	2.5533	1.8000e-004	0.0000	2.5576
Total	1.0435	0.0153	0.0182	3.0000e-005		9.4000e-004	9.4000e-004		9.4000e-004	9.4000e-004	0.0000	2.5533	2.5533	1.8000e-004	0.0000	2.5576

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3.7 Architectural Coating - 2021**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	1.6300e-003	1.4200e-003	0.0125	3.0000e-005	3.8500e-003	2.0000e-005	3.8800e-003	1.0200e-003	2.0000e-005	1.0500e-003	0.0000	3.1118	3.1118	9.0000e-005	0.0000	3.1142
Total	1.6300e-003	1.4200e-003	0.0125	3.0000e-005	3.8500e-003	2.0000e-005	3.8800e-003	1.0200e-003	2.0000e-005	1.0500e-003	0.0000	3.1118	3.1118	9.0000e-005	0.0000	3.1142

4.0 Operational Detail - Mobile**4.1 Mitigation Measures Mobile**

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	ROG	NOx	CO	SO2	Fugitive 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	0.2943	1.2753	3.4307	9.5100e-003	0.8457	0.0101	0.8558	0.2265	9.4800e-003	0.2360	0.0000	869.4318	869.4318	0.0357	0.0000	870.3230
Unmitigated	0.2943	1.2753	3.4307	9.5100e-003	0.8457	0.0101	0.8558	0.2265	9.4800e-003	0.2360	0.0000	869.4318	869.4318	0.0357	0.0000	870.3230

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	81.40	70.29	64.46	196,698	196,698
City Park	5.10	61.43	45.20	38,363	38,363
Condo/Townhouse	111.00	85.05	72.60	258,749	258,749
Other Asphalt Surfaces	0.00	0.00	0.00		
Single Family Housing	690.00	743.25	646.50	1,757,214	1,757,214
Total	887.50	960.02	828.76	2,251,025	2,251,025

4.3 Trip Type Information

Land Use	Miles			Trip %			Trip Purpose %		
	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	13.00	5.00	5.00	35.80	21.00	43.20	86	11	3
City Park	13.00	5.00	5.00	33.00	48.00	19.00	66	28	6
Condo/Townhouse	13.00	5.00	5.00	35.80	21.00	43.20	86	11	3
Other Asphalt Surfaces	13.00	5.00	5.00	0.00	0.00	0.00	0	0	0
Single Family Housing	13.00	5.00	5.00	35.80	21.00	43.20	86	11	3

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4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Mid Rise	0.567875	0.030811	0.198391	0.124124	0.028385	0.006896	0.012949	0.019383	0.002368	0.001236	0.005232	0.000797	0.001552
City Park	0.567875	0.030811	0.198391	0.124124	0.028385	0.006896	0.012949	0.019383	0.002368	0.001236	0.005232	0.000797	0.001552
Condo/Townhouse	0.567875	0.030811	0.198391	0.124124	0.028385	0.006896	0.012949	0.019383	0.002368	0.001236	0.005232	0.000797	0.001552
Other Asphalt Surfaces	0.567875	0.030811	0.198391	0.124124	0.028385	0.006896	0.012949	0.019383	0.002368	0.001236	0.005232	0.000797	0.001552
Single Family Housing	0.567875	0.030811	0.198391	0.124124	0.028385	0.006896	0.012949	0.019383	0.002368	0.001236	0.005232	0.000797	0.001552

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Install Energy Efficient Appliances

	ROG	NOx	CO	SO2	Fugitive 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	88.0776	88.0776	0.0131	1.9700e-003	88.9938
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	88.2195	88.2195	0.0132	1.9700e-003	89.1372
NaturalGas Mitigated	0.0129	0.1106	0.0470	7.1000e-004		8.9400e-003	8.9400e-003		8.9400e-003	8.9400e-003	0.0000	128.0285	128.0285	2.4500e-003	2.3500e-003	128.7893
NaturalGas Unmitigated	0.0129	0.1106	0.0470	7.1000e-004		8.9400e-003	8.9400e-003		8.9400e-003	8.9400e-003	0.0000	128.0285	128.0285	2.4500e-003	2.3500e-003	128.7893

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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	90810.9	4.9000e-004	4.1800e-003	1.7800e-003	3.0000e-005		3.4000e-004	3.4000e-004		3.4000e-004	3.4000e-004	0.0000	4.8460	4.8460	9.0000e-005	9.0000e-005	4.8748
City Park	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
Condo/Townhouse	264499	1.4300e-003	0.0122	5.1900e-003	8.0000e-005		9.9000e-004	9.9000e-004		9.9000e-004	9.9000e-004	0.0000	14.1147	14.1147	2.7000e-004	2.6000e-004	14.1985
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
Single Family Housing	2.04385e+006	0.0110	0.0942	0.0401	6.0000e-004		7.6100e-003	7.6100e-003		7.6100e-003	7.6100e-003	0.0000	109.0678	109.0678	2.0900e-003	2.0000e-003	109.7160
Total		0.0129	0.1106	0.0471	7.1000e-004		8.9400e-003	8.9400e-003		8.9400e-003	8.9400e-003	0.0000	128.0285	128.0285	2.4500e-003	2.3500e-003	128.7893

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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	90810.9	4.9000e-004	4.1800e-003	1.7800e-003	3.0000e-005		3.4000e-004	3.4000e-004		3.4000e-004	3.4000e-004	0.0000	4.8460	4.8460	9.0000e-005	9.0000e-005	4.8748
City Park	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
Condo/Townhouse	264499	1.4300e-003	0.0122	5.1900e-003	8.0000e-005		9.9000e-004	9.9000e-004		9.9000e-004	9.9000e-004	0.0000	14.1147	14.1147	2.7000e-004	2.6000e-004	14.1985
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
Single Family Housing	2.04385e+006	0.0110	0.0942	0.0401	6.0000e-004		7.6100e-003	7.6100e-003		7.6100e-003	7.6100e-003	0.0000	109.0678	109.0678	2.0900e-003	2.0000e-003	109.7160
Total		0.0129	0.1106	0.0471	7.1000e-004		8.9400e-003	8.9400e-003		8.9400e-003	8.9400e-003	0.0000	128.0285	128.0285	2.4500e-003	2.3500e-003	128.7893

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5.3 Energy by Land Use - Electricity**Unmitigated**

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	45155.6	5.4897	8.2000e-004	1.2000e-004	5.5468
City Park	0	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse	75419.7	9.1689	1.3700e-003	2.1000e-004	9.2643
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Single Family Housing	605083	73.5610	0.0110	1.6500e-003	74.3262
Total		88.2196	0.0132	1.9800e-003	89.1372

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5.3 Energy by Land Use - Electricity**Mitigated**

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	43987.8	5.3477	8.0000e-004	1.2000e-004	5.4033
City Park	0	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse	75419.7	9.1689	1.3700e-003	2.1000e-004	9.2643
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Single Family Housing	605083	73.5610	0.0110	1.6500e-003	74.3262
Total		88.0776	0.0132	1.9800e-003	88.9938

6.0 Area Detail**6.1 Mitigation Measures Area**

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	ROG	NOx	CO	SO2	Fugitive 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	0.7758	0.0159	1.3780	7.0000e-005		7.6000e-003	7.6000e-003		7.6000e-003	7.6000e-003	0.0000	2.2461	2.2461	2.1800e-003	0.0000	2.3006
Unmitigated	0.7758	0.0159	1.3780	7.0000e-005		7.6000e-003	7.6000e-003		7.6000e-003	7.6000e-003	0.0000	2.2461	2.2461	2.1800e-003	0.0000	2.3006

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	0.1041					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.6299					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	0.0418	0.0159	1.3780	7.0000e-005		7.6000e-003	7.6000e-003		7.6000e-003	7.6000e-003	0.0000	2.2461	2.2461	2.1800e-003	0.0000	2.3006
Total	0.7758	0.0159	1.3780	7.0000e-005		7.6000e-003	7.6000e-003		7.6000e-003	7.6000e-003	0.0000	2.2461	2.2461	2.1800e-003	0.0000	2.3006

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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	0.1041					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.6299					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	0.0418	0.0159	1.3780	7.0000e-005		7.6000e-003	7.6000e-003		7.6000e-003	7.6000e-003	0.0000	2.2461	2.2461	2.1800e-003	0.0000	2.3006
Total	0.7758	0.0159	1.3780	7.0000e-005		7.6000e-003	7.6000e-003		7.6000e-003	7.6000e-003	0.0000	2.2461	2.2461	2.1800e-003	0.0000	2.3006

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

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	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	8.2673	0.1725	4.2000e-003	13.8316
Unmitigated	9.5506	0.2155	5.2300e-003	16.4978

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	0.716694 / 0.451829	0.8911	0.0235	5.7000e-004	1.6462
City Park	0 / 3.217	1.3688	2.0000e-004	3.0000e-005	1.3831
Condo/Townhouse	0.97731 / 0.61613	1.2151	0.0320	7.7000e-004	2.2448
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Single Family Housing	4.88655 / 3.08065	6.0756	0.1599	3.8600e-003	11.2238
Total		9.5507	0.2155	5.2300e-003	16.4978

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7.2 Water by Land Use**Mitigated**

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	0.573355 / 0.451829	0.7513	0.0188	4.5000e-004	1.3558
City Park	0 / 3.217	1.3688	2.0000e-004	3.0000e-005	1.3831
Condo/Townhouse	0.781848 / 0.61613	1.0245	0.0256	6.2000e-004	1.8488
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Single Family Housing	3.90924 / 3.08065	5.1226	0.1280	3.0900e-003	9.2439
Total		8.2673	0.1725	4.1900e-003	13.8315

8.0 Waste Detail**8.1 Mitigation Measures Waste**

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Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	20.3681	1.2037	0.0000	50.4611
Unmitigated	20.3681	1.2037	0.0000	50.4611

8.2 Waste by Land Use**Unmitigated**

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	5.06	1.0271	0.0607	0.0000	2.5447
City Park	0.23	0.0467	2.7600e-003	0.0000	0.1157
Condo/Townhouse	6.9	1.4006	0.0828	0.0000	3.4700
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Single Family Housing	88.15	17.8937	1.0575	0.0000	44.3308
Total		20.3681	1.2037	0.0000	50.4611

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8.2 Waste by Land Use**Mitigated**

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	5.06	1.0271	0.0607	0.0000	2.5447
City Park	0.23	0.0467	2.7600e-003	0.0000	0.1157
Condo/Townhouse	6.9	1.4006	0.0828	0.0000	3.4700
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Single Family Housing	88.15	17.8937	1.0575	0.0000	44.3308
Total		20.3681	1.2037	0.0000	50.4611

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
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10.0 Stationary Equipment**Fire Pumps and Emergency Generators**

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
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Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type
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Beechwood SP - typical phase 20181219 - San Luis Obispo County, Annual

User Defined Equipment

Equipment Type	Number
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11.0 Vegetation

	Total CO2	CH4	N2O	CO2e
Category	MT			
Unmitigated	-86.6310	0.0000	0.0000	-86.6310

11.1 Vegetation Land Change**Vegetation Type**

	Initial/Final	Total CO2	CH4	N2O	CO2e
	Acres	MT			
Grassland	20.1 / 0	-86.6310	0.0000	0.0000	-86.6310
Total		-86.6310	0.0000	0.0000	-86.6310

Beechwood SP - typical phase 20181219 - San Luis Obispo County, Winter

Beechwood SP - typical phase 20181219**San Luis Obispo County, Winter****1.0 Project Characteristics****1.1 Land Usage**

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Asphalt Surfaces	5.60	Acre	5.60	243,936.00	0
City Park	2.70	Acre	2.70	117,612.00	0
Apartments Mid Rise	11.00	Dwelling Unit	0.70	11,000.00	31
Condo/Townhouse	15.00	Dwelling Unit	1.50	15,000.00	43
Single Family Housing	75.00	Dwelling Unit	12.30	135,000.00	215

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	3.2	Precipitation Freq (Days)	44
Climate Zone	4			Operational Year	2021
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	268.02	CH4 Intensity (lb/MWhr)	0.04	N2O Intensity (lb/MWhr)	0.006

1.3 User Entered Comments & Non-Default Data

Beechwood SP - typical phase 20181219 - San Luis Obispo County, Winter

Project Characteristics - CO2 and CH4 insentisty factor updated to match PG&E 2021

Land Use - Lot acreage from project description

Construction Phase - No demo required

Off-road Equipment - No demo

Trips and VMT -

Architectural Coating - SLOAPCD Rule 433

Vehicle Trips - Trip rates obtained from Beechwood TIS Assumptions Memo (Central Coast Transportation Consulting, Aug 2018)

Woodstoves -

Consumer Products - all roads

Area Coating - SLOAPCD Rule 433

Energy Use - Title-24 intensity adjusted to comply with the 2019 requirements

Land Use Change -

Construction Off-road Equipment Mitigation - Mitigation Measure AIR-1b and 1c

Mobile Land Use Mitigation -

Energy Mitigation - Comply with Cal Green Building Codes 2019

Water Mitigation -

Area Mitigation - MM AIR 7

Off-road Equipment -

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Nonresidential_Exterior	250.00	100.00
tblArchitecturalCoating	EF_Nonresidential_Interior	250.00	100.00
tblArchitecturalCoating	EF_Parking	150.00	100.00
tblArchitecturalCoating	EF_Residential_Exterior	250.00	100.00
tblArchitecturalCoating	EF_Residential_Interior	250.00	100.00
tblAreaCoating	Area_EF_Nonresidential_Exterior	250	100
tblAreaCoating	Area_EF_Nonresidential_Interior	250	100

Beechwood SP - typical phase 20181219 - San Luis Obispo County, Winter

tblAreaCoating	Area_EF_Parking	150	100
tblAreaCoating	Area_EF_Residential_Exterior	250	100
tblAreaCoating	Area_EF_Residential_Interior	250	100
tblConstructionPhase	NumDays	20.00	0.00
tblConsumerProducts	ROG_EF_Degreaser	3.542E-07	0
tblEnergyUse	T24E	332.81	309.51
tblEnergyUse	T24E	249.32	231.87
tblEnergyUse	T24E	325.76	302.96
tblEnergyUse	T24NG	5,484.45	5,100.54
tblEnergyUse	T24NG	15,568.01	14,478.25
tblEnergyUse	T24NG	25,910.09	24,096.38
tblLandUse	LotAcreage	0.29	0.70
tblLandUse	LotAcreage	0.94	1.50
tblLandUse	LotAcreage	24.35	12.30
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblProjectCharacteristics	CH4IntensityFactor	0.029	0.04
tblProjectCharacteristics	CO2IntensityFactor	641.35	268.02
tblVehicleTrips	WD_TR	6.65	7.40
tblVehicleTrips	WD_TR	5.81	7.40
tblVehicleTrips	WD_TR	9.52	9.20

2.0 Emissions Summary

Beechwood SP - typical phase 20181219 - San Luis Obispo County, Winter

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					
2020	7.9013	77.4547	58.6664	0.1219	18.2442	3.3452	20.4428	9.9779	3.1017	12.0006	0.0000	11,936.8700	11,936.8700	2.7212	0.0000	12,004.9001
2021	104.5345	24.7222	24.8352	0.0574	2.2824	0.9904	3.2729	0.6128	0.9313	1.5440	0.0000	5,686.6043	5,686.6043	0.7574	0.0000	5,705.5393
Maximum	104.5345	77.4547	58.6664	0.1219	18.2442	3.3452	20.4428	9.9779	3.1017	12.0006	0.0000	11,936.8700	11,936.8700	2.7212	0.0000	12,004.9001

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					
2020	7.9013	77.4547	58.6664	0.1219	8.3078	3.3452	10.5063	4.5160	3.1017	6.5387	0.0000	11,936.8700	11,936.8700	2.7212	0.0000	12,004.9001
2021	104.5345	24.7222	24.8352	0.0574	2.2824	0.9904	3.2729	0.6128	0.9313	1.5440	0.0000	5,686.6043	5,686.6043	0.7574	0.0000	5,705.5393
Maximum	104.5345	77.4547	58.6664	0.1219	8.3078	3.3452	10.5063	4.5160	3.1017	6.5387	0.0000	11,936.8700	11,936.8700	2.7212	0.0000	12,004.9001

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	48.41	0.00	41.90	51.57	0.00	40.33	0.00	0.00	0.00	0.00	0.00	0.00

Beechwood SP - typical phase 20181219 - San Luis Obispo County, Winter

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	4.2752	0.0964	8.3516	4.4000e-004		0.0460	0.0460		0.0460	0.0460	0.0000	15.0056	15.0056	0.0145	0.0000	15.3692
Energy	0.0709	0.6058	0.2578	3.8700e-003		0.0490	0.0490		0.0490	0.0490		773.3001	773.3001	0.0148	0.0142	777.8954
Mobile	1.8469	7.8003	21.4163	0.0577	5.3036	0.0622	5.3657	1.4172	0.0584	1.4755		5,814.6964	5,814.6964	0.2434		5,820.7807
Total	6.1930	8.5025	30.0257	0.0620	5.3036	0.1572	5.4607	1.4172	0.1534	1.5705	0.0000	6,603.0020	6,603.0020	0.2727	0.0142	6,614.0453

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	4.2752	0.0964	8.3516	4.4000e-004		0.0460	0.0460		0.0460	0.0460	0.0000	15.0056	15.0056	0.0145	0.0000	15.3692
Energy	0.0709	0.6058	0.2578	3.8700e-003		0.0490	0.0490		0.0490	0.0490		773.3001	773.3001	0.0148	0.0142	777.8954
Mobile	1.8469	7.8003	21.4163	0.0577	5.3036	0.0622	5.3657	1.4172	0.0584	1.4755		5,814.6964	5,814.6964	0.2434		5,820.7807
Total	6.1930	8.5025	30.0257	0.0620	5.3036	0.1572	5.4607	1.4172	0.1534	1.5705	0.0000	6,603.0020	6,603.0020	0.2727	0.0142	6,614.0453

Beechwood SP - typical phase 20181219 - San Luis Obispo County, Winter

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	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	Demolition	Demolition	1/1/2020	1/28/2019	5	0	
2	Site Preparation	Site Preparation	1/1/2020	1/14/2020	5	10	
3	Grading	Grading	1/15/2020	3/3/2020	5	35	
4	Building Construction	Building Construction	3/1/2020	7/30/2021	5	370	
5	Paving	Paving	9/1/2021	9/28/2021	5	20	
6	Architectural Coating	Architectural Coating	9/29/2021	10/26/2021	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 87.5

Acres of Paving: 5.6

Residential Indoor: 326,025; Residential Outdoor: 108,675; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 14,636 (Architectural Coating – sqft)

OffRoad Equipment

Beechwood SP - typical phase 20181219 - San Luis Obispo County, Winter

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	0	8.00	81	0.73
Demolition	Excavators	0	8.00	158	0.38
Demolition	Rubber Tired Dozers	0	8.00	247	0.40
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
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
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
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Beechwood SP - typical phase 20181219 - San Luis Obispo County, Winter

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
Demolition	0	0.00	0.00	0.00	13.00	5.00	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	13.00	5.00	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	13.00	5.00	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	198.00	70.00	0.00	13.00	5.00	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	13.00	5.00	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	40.00	0.00	0.00	13.00	5.00	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.3 Site Preparation - 2020**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	4.0765	42.4173	21.5136	0.0380		2.1974	2.1974		2.0216	2.0216		3,685.1016	3,685.1016	1.1918		3,714.8975
Total	4.0765	42.4173	21.5136	0.0380	18.0663	2.1974	20.2637	9.9307	2.0216	11.9523		3,685.1016	3,685.1016	1.1918		3,714.8975

Beechwood SP - typical phase 20181219 - San Luis Obispo County, Winter

3.3 Site Preparation - 2020**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	0.0878	0.0729	0.6216	1.5900e-003	0.1780	1.1400e-003	0.1791	0.0472	1.0500e-003	0.0483		158.5129	158.5129	5.2400e-003		158.6439
Total	0.0878	0.0729	0.6216	1.5900e-003	0.1780	1.1400e-003	0.1791	0.0472	1.0500e-003	0.0483		158.5129	158.5129	5.2400e-003		158.6439

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					8.1298	0.0000	8.1298	4.4688	0.0000	4.4688			0.0000			0.0000
Off-Road	4.0765	42.4173	21.5136	0.0380		2.1974	2.1974		2.0216	2.0216	0.0000	3,685.1016	3,685.1016	1.1918		3,714.8975
Total	4.0765	42.4173	21.5136	0.0380	8.1298	2.1974	10.3272	4.4688	2.0216	6.4904	0.0000	3,685.1016	3,685.1016	1.1918		3,714.8975

Beechwood SP - typical phase 20181219 - San Luis Obispo County, Winter

3.3 Site Preparation - 2020**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	0.0878	0.0729	0.6216	1.5900e-003	0.1780	1.1400e-003	0.1791	0.0472	1.0500e-003	0.0483		158.5129	158.5129	5.2400e-003		158.6439
Total	0.0878	0.0729	0.6216	1.5900e-003	0.1780	1.1400e-003	0.1791	0.0472	1.0500e-003	0.0483		158.5129	158.5129	5.2400e-003		158.6439

3.4 Grading - 2020**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					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	4.4501	50.1975	31.9583	0.0620		2.1739	2.1739		2.0000	2.0000		6,005.8653	6,005.8653	1.9424		6,054.4257
Total	4.4501	50.1975	31.9583	0.0620	8.6733	2.1739	10.8472	3.5965	2.0000	5.5965		6,005.8653	6,005.8653	1.9424		6,054.4257

Beechwood SP - typical phase 20181219 - San Luis Obispo County, Winter

3.4 Grading - 2020**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	0.0975	0.0810	0.6907	1.7700e-003	0.1977	1.2600e-003	0.1990	0.0524	1.1700e-003	0.0536		176.1254	176.1254	5.8200e-003		176.2710
Total	0.0975	0.0810	0.6907	1.7700e-003	0.1977	1.2600e-003	0.1990	0.0524	1.1700e-003	0.0536		176.1254	176.1254	5.8200e-003		176.2710

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					3.9030	0.0000	3.9030	1.6184	0.0000	1.6184			0.0000			0.0000
Off-Road	4.4501	50.1975	31.9583	0.0620		2.1739	2.1739		2.0000	2.0000	0.0000	6,005.8653	6,005.8653	1.9424		6,054.4257
Total	4.4501	50.1975	31.9583	0.0620	3.9030	2.1739	6.0769	1.6184	2.0000	3.6184	0.0000	6,005.8653	6,005.8653	1.9424		6,054.4257

Beechwood SP - typical phase 20181219 - San Luis Obispo County, Winter

3.4 Grading - 2020**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	0.0975	0.0810	0.6907	1.7700e-003	0.1977	1.2600e-003	0.1990	0.0524	1.1700e-003	0.0536		176.1254	176.1254	5.8200e-003		176.2710
Total	0.0975	0.0810	0.6907	1.7700e-003	0.1977	1.2600e-003	0.1990	0.0524	1.1700e-003	0.0536		176.1254	176.1254	5.8200e-003		176.2710

3.5 Building Construction - 2020**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	2.1198	19.1860	16.8485	0.0269		1.1171	1.1171		1.0503	1.0503		2,553.0631	2,553.0631	0.6229		2,568.6345
Total	2.1198	19.1860	16.8485	0.0269		1.1171	1.1171		1.0503	1.0503		2,553.0631	2,553.0631	0.6229		2,568.6345

Beechwood SP - typical phase 20181219 - San Luis Obispo County, Winter

3.5 Building Construction - 2020**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	0.2685	7.1884	2.3311	0.0137	0.3249	0.0405	0.3654	0.0936	0.0387	0.1323		1,458.174 5	1,458.174 5	0.0925		1,460.485 7
Worker	0.9654	0.8018	6.8378	0.0175	1.9575	0.0125	1.9700	0.5192	0.0116	0.5307		1,743.641 8	1,743.641 8	0.0577		1,745.083 2
Total	1.2338	7.9902	9.1689	0.0312	2.2824	0.0530	2.3354	0.6127	0.0502	0.6630		3,201.816 3	3,201.816 3	0.1501		3,205.568 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	2.1198	19.1860	16.8485	0.0269		1.1171	1.1171		1.0503	1.0503	0.0000	2,553.063 1	2,553.063 1	0.6229		2,568.634 5
Total	2.1198	19.1860	16.8485	0.0269		1.1171	1.1171		1.0503	1.0503	0.0000	2,553.063 1	2,553.063 1	0.6229		2,568.634 5

Beechwood SP - typical phase 20181219 - San Luis Obispo County, Winter

3.5 Building Construction - 2020**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	0.2685	7.1884	2.3311	0.0137	0.3249	0.0405	0.3654	0.0936	0.0387	0.1323		1,458.174 5	1,458.174 5	0.0925		1,460.485 7
Worker	0.9654	0.8018	6.8378	0.0175	1.9575	0.0125	1.9700	0.5192	0.0116	0.5307		1,743.641 8	1,743.641 8	0.0577		1,745.083 2
Total	1.2338	7.9902	9.1689	0.0312	2.2824	0.0530	2.3354	0.6127	0.0502	0.6630		3,201.816 3	3,201.816 3	0.1501		3,205.568 9

3.5 Building Construction - 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					
Off-Road	1.9009	17.4321	16.5752	0.0269		0.9586	0.9586		0.9013	0.9013		2,553.363 9	2,553.363 9	0.6160		2,568.764 3
Total	1.9009	17.4321	16.5752	0.0269		0.9586	0.9586		0.9013	0.9013		2,553.363 9	2,553.363 9	0.6160		2,568.764 3

Beechwood SP - typical phase 20181219 - San Luis Obispo County, Winter

3.5 Building Construction - 2021**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	0.2209	6.5732	2.0672	0.0136	0.3250	0.0197	0.3447	0.0936	0.0188	0.1124		1,449.0249	1,449.0249	0.0902		1,451.2799
Worker	0.9009	0.7169	6.1928	0.0169	1.9575	0.0121	1.9696	0.5192	0.0112	0.5303		1,684.2155	1,684.2155	0.0512		1,685.4952
Total	1.1218	7.2901	8.2600	0.0305	2.2824	0.0318	2.3142	0.6128	0.0300	0.6427		3,133.2404	3,133.2404	0.1414		3,136.7751

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	1.9009	17.4321	16.5752	0.0269		0.9586	0.9586		0.9013	0.9013	0.0000	2,553.3639	2,553.3639	0.6160		2,568.7643
Total	1.9009	17.4321	16.5752	0.0269		0.9586	0.9586		0.9013	0.9013	0.0000	2,553.3639	2,553.3639	0.6160		2,568.7643

Beechwood SP - typical phase 20181219 - San Luis Obispo County, Winter

3.5 Building Construction - 2021**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	0.2209	6.5732	2.0672	0.0136	0.3250	0.0197	0.3447	0.0936	0.0188	0.1124		1,449.0249	1,449.0249	0.0902		1,451.2799
Worker	0.9009	0.7169	6.1928	0.0169	1.9575	0.0121	1.9696	0.5192	0.0112	0.5303		1,684.2155	1,684.2155	0.0512		1,685.4952
Total	1.1218	7.2901	8.2600	0.0305	2.2824	0.0318	2.3142	0.6128	0.0300	0.6427		3,133.2404	3,133.2404	0.1414		3,136.7751

3.6 Paving - 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					
Off-Road	1.2556	12.9191	14.6532	0.0228		0.6777	0.6777		0.6235	0.6235		2,207.2109	2,207.2109	0.7139		2,225.0573
Paving	0.7336					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	1.9892	12.9191	14.6532	0.0228		0.6777	0.6777		0.6235	0.6235		2,207.2109	2,207.2109	0.7139		2,225.0573

Beechwood SP - typical phase 20181219 - San Luis Obispo County, Winter

3.6 Paving - 2021**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	0.0683	0.0543	0.4692	1.2800e-003	0.1483	9.2000e-004	0.1492	0.0393	8.5000e-004	0.0402		127.5921	127.5921	3.8800e-003		127.6890
Total	0.0683	0.0543	0.4692	1.2800e-003	0.1483	9.2000e-004	0.1492	0.0393	8.5000e-004	0.0402		127.5921	127.5921	3.8800e-003		127.6890

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	1.2556	12.9191	14.6532	0.0228		0.6777	0.6777		0.6235	0.6235	0.0000	2,207.2109	2,207.2109	0.7139		2,225.0573
Paving	0.7336					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	1.9892	12.9191	14.6532	0.0228		0.6777	0.6777		0.6235	0.6235	0.0000	2,207.2109	2,207.2109	0.7139		2,225.0573

Beechwood SP - typical phase 20181219 - San Luis Obispo County, Winter

3.6 Paving - 2021**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	0.0683	0.0543	0.4692	1.2800e-003	0.1483	9.2000e-004	0.1492	0.0393	8.5000e-004	0.0402		127.5921	127.5921	3.8800e-003		127.6890
Total	0.0683	0.0543	0.4692	1.2800e-003	0.1483	9.2000e-004	0.1492	0.0393	8.5000e-004	0.0402		127.5921	127.5921	3.8800e-003		127.6890

3.7 Architectural Coating - 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					
Archit. Coating	104.1336					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2189	1.5268	1.8176	2.9700e-003		0.0941	0.0941		0.0941	0.0941		281.4481	281.4481	0.0193		281.9309
Total	104.3525	1.5268	1.8176	2.9700e-003		0.0941	0.0941		0.0941	0.0941		281.4481	281.4481	0.0193		281.9309

Beechwood SP - typical phase 20181219 - San Luis Obispo County, Winter

3.7 Architectural Coating - 2021**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	0.1820	0.1448	1.2511	3.4200e-003	0.3955	2.4500e-003	0.3979	0.1049	2.2600e-003	0.1071		340.2456	340.2456	0.0103		340.5041
Total	0.1820	0.1448	1.2511	3.4200e-003	0.3955	2.4500e-003	0.3979	0.1049	2.2600e-003	0.1071		340.2456	340.2456	0.0103		340.5041

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	104.1336					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2189	1.5268	1.8176	2.9700e-003		0.0941	0.0941		0.0941	0.0941	0.0000	281.4481	281.4481	0.0193		281.9309
Total	104.3525	1.5268	1.8176	2.9700e-003		0.0941	0.0941		0.0941	0.0941	0.0000	281.4481	281.4481	0.0193		281.9309

Beechwood SP - typical phase 20181219 - San Luis Obispo County, Winter

3.7 Architectural Coating - 2021**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	0.1820	0.1448	1.2511	3.4200e-003	0.3955	2.4500e-003	0.3979	0.1049	2.2600e-003	0.1071		340.2456	340.2456	0.0103		340.5041
Total	0.1820	0.1448	1.2511	3.4200e-003	0.3955	2.4500e-003	0.3979	0.1049	2.2600e-003	0.1071		340.2456	340.2456	0.0103		340.5041

4.0 Operational Detail - Mobile**4.1 Mitigation Measures Mobile**

Beechwood SP - typical phase 20181219 - San Luis Obispo County, Winter

	ROG	NOx	CO	SO2	Fugitive 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	1.8469	7.8003	21.4163	0.0577	5.3036	0.0622	5.3657	1.4172	0.0584	1.4755		5,814.696 4	5,814.696 4	0.2434		5,820.780 7
Unmitigated	1.8469	7.8003	21.4163	0.0577	5.3036	0.0622	5.3657	1.4172	0.0584	1.4755		5,814.696 4	5,814.696 4	0.2434		5,820.780 7

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	81.40	70.29	64.46	196,698	196,698
City Park	5.10	61.43	45.20	38,363	38,363
Condo/Townhouse	111.00	85.05	72.60	258,749	258,749
Other Asphalt Surfaces	0.00	0.00	0.00		
Single Family Housing	690.00	743.25	646.50	1,757,214	1,757,214
Total	887.50	960.02	828.76	2,251,025	2,251,025

4.3 Trip Type Information

Land Use	Miles			Trip %			Trip Purpose %		
	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	13.00	5.00	5.00	35.80	21.00	43.20	86	11	3
City Park	13.00	5.00	5.00	33.00	48.00	19.00	66	28	6
Condo/Townhouse	13.00	5.00	5.00	35.80	21.00	43.20	86	11	3
Other Asphalt Surfaces	13.00	5.00	5.00	0.00	0.00	0.00	0	0	0
Single Family Housing	13.00	5.00	5.00	35.80	21.00	43.20	86	11	3

Beechwood SP - typical phase 20181219 - San Luis Obispo County, Winter

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Mid Rise	0.567875	0.030811	0.198391	0.124124	0.028385	0.006896	0.012949	0.019383	0.002368	0.001236	0.005232	0.000797	0.001552
City Park	0.567875	0.030811	0.198391	0.124124	0.028385	0.006896	0.012949	0.019383	0.002368	0.001236	0.005232	0.000797	0.001552
Condo/Townhouse	0.567875	0.030811	0.198391	0.124124	0.028385	0.006896	0.012949	0.019383	0.002368	0.001236	0.005232	0.000797	0.001552
Other Asphalt Surfaces	0.567875	0.030811	0.198391	0.124124	0.028385	0.006896	0.012949	0.019383	0.002368	0.001236	0.005232	0.000797	0.001552
Single Family Housing	0.567875	0.030811	0.198391	0.124124	0.028385	0.006896	0.012949	0.019383	0.002368	0.001236	0.005232	0.000797	0.001552

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Install Energy Efficient Appliances

	ROG	NOx	CO	SO2	Fugitive 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	0.0709	0.6058	0.2578	3.8700e-003		0.0490	0.0490		0.0490	0.0490		773.3001	773.3001	0.0148	0.0142	777.8954
NaturalGas Unmitigated	0.0709	0.6058	0.2578	3.8700e-003		0.0490	0.0490		0.0490	0.0490		773.3001	773.3001	0.0148	0.0142	777.8954

Beechwood SP - typical phase 20181219 - San Luis Obispo County, Winter

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	248.797	2.6800e-003	0.0229	9.7600e-003	1.5000e-004		1.8500e-003	1.8500e-003		1.8500e-003	1.8500e-003		29.2702	29.2702	5.6000e-004	5.4000e-004	29.4442
City Park	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
Condo/Townhouse	724.654	7.8100e-003	0.0668	0.0284	4.3000e-004		5.4000e-003	5.4000e-003		5.4000e-003	5.4000e-003		85.2534	85.2534	1.6300e-003	1.5600e-003	85.7600
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
Single Family Housing	5599.6	0.0604	0.5160	0.2196	3.2900e-003		0.0417	0.0417		0.0417	0.0417		658.7764	658.7764	0.0126	0.0121	662.6912
Total		0.0709	0.6058	0.2578	3.8700e-003		0.0490	0.0490		0.0490	0.0490		773.3001	773.3001	0.0148	0.0142	777.8954

Beechwood SP - typical phase 20181219 - San Luis Obispo County, Winter

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	0.248797	2.6800e-003	0.0229	9.7600e-003	1.5000e-004		1.8500e-003	1.8500e-003		1.8500e-003	1.8500e-003		29.2702	29.2702	5.6000e-004	5.4000e-004	29.4442
City Park	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
Condo/Townhouse	0.724654	7.8100e-003	0.0668	0.0284	4.3000e-004		5.4000e-003	5.4000e-003		5.4000e-003	5.4000e-003		85.2534	85.2534	1.6300e-003	1.5600e-003	85.7600
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
Single Family Housing	5.5996	0.0604	0.5160	0.2196	3.2900e-003		0.0417	0.0417		0.0417	0.0417		658.7764	658.7764	0.0126	0.0121	662.6912
Total		0.0709	0.6058	0.2578	3.8700e-003		0.0490	0.0490		0.0490	0.0490		773.3001	773.3001	0.0148	0.0142	777.8954

6.0 Area Detail**6.1 Mitigation Measures Area**

Beechwood SP - typical phase 20181219 - San Luis Obispo County, Winter

	ROG	NOx	CO	SO2	Fugitive 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	4.2752	0.0964	8.3516	4.4000e-004		0.0460	0.0460		0.0460	0.0460	0.0000	15.0056	15.0056	0.0145	0.0000	15.3692
Unmitigated	4.2752	0.0964	8.3516	4.4000e-004		0.0460	0.0460		0.0460	0.0460	0.0000	15.0056	15.0056	0.0145	0.0000	15.3692

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	0.5706					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	3.4515					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	0.2531	0.0964	8.3516	4.4000e-004		0.0460	0.0460		0.0460	0.0460		15.0056	15.0056	0.0145		15.3692
Total	4.2752	0.0964	8.3516	4.4000e-004		0.0460	0.0460		0.0460	0.0460	0.0000	15.0056	15.0056	0.0145	0.0000	15.3692

Beechwood SP - typical phase 20181219 - San Luis Obispo County, Winter

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	0.5706					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	3.4515					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	0.2531	0.0964	8.3516	4.4000e-004		0.0460	0.0460		0.0460	0.0460		15.0056	15.0056	0.0145		15.3692
Total	4.2752	0.0964	8.3516	4.4000e-004		0.0460	0.0460		0.0460	0.0460	0.0000	15.0056	15.0056	0.0145	0.0000	15.3692

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

8.0 Waste Detail**8.1 Mitigation Measures Waste****9.0 Operational Offroad**

Beechwood SP - typical phase 20181219 - San Luis Obispo County, Winter

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
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10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
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Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type
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User Defined Equipment

Equipment Type	Number
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11.0 Vegetation

Typical Residential Development Emissions (Mitigated)

Beechwood SP - typical phase (mitigated) - San Luis Obispo County, Annual

Beechwood SP - typical phase (mitigated)
San Luis Obispo County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Asphalt Surfaces	5.60	Acre	5.60	243,936.00	0
City Park	2.70	Acre	2.70	117,612.00	0
Apartments Mid Rise	11.00	Dwelling Unit	0.70	11,000.00	31
Condo/Townhouse	15.00	Dwelling Unit	1.50	15,000.00	43
Single Family Housing	75.00	Dwelling Unit	12.30	135,000.00	215

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	3.2	Precipitation Freq (Days)	44
Climate Zone	4			Operational Year	2021
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	268.02	CH4 Intensity (lb/MWhr)	0.04	N2O Intensity (lb/MWhr)	0.006

1.3 User Entered Comments & Non-Default Data

Beechwood SP - typical phase (mitigated) - San Luis Obispo County, Annual

Project Characteristics - CO2 and CH4 insentisty factor updated to match PG&E 2021

Land Use - Lot acreage from project description

Construction Phase - No demo required

Off-road Equipment - No demo

Trips and VMT - no demo

Architectural Coating - VOC limit in compliance with SLO APCD Rule 433

Vehicle Trips - Trip rates obtained from Beechwood TIS Assumptions Memo (Central Coast Transportation Consulting, Aug 2018)

Woodstoves - SLOAPCD Rule 433

Consumer Products - all roads

Area Coating - Compliance with SLOAPCD Rule 433

Energy Use - Title-24 intensity adjusted to comply with the 2019 requirements

Land Use Change -

Construction Off-road Equipment Mitigation - Mitigation Measure AIR-1b and 1c

Mobile Land Use Mitigation -

Energy Mitigation -

Water Mitigation -

Area Mitigation -

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Nonresidential_Exterior	250.00	50.00
tblArchitecturalCoating	EF_Nonresidential_Interior	250.00	50.00
tblArchitecturalCoating	EF_Parking	150.00	50.00
tblArchitecturalCoating	EF_Residential_Exterior	250.00	50.00
tblArchitecturalCoating	EF_Residential_Interior	250.00	50.00
tblAreaCoating	Area_EF_Nonresidential_Exterior	250	100
tblAreaCoating	Area_EF_Nonresidential_Interior	250	100
tblAreaCoating	Area_EF_Parking	150	100

Beechwood SP - typical phase (mitigated) - San Luis Obispo County, Annual

[illegible]

Beechwood SP - typical phase (mitigated) - San Luis Obispo County, Annual

tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstructionPhase	NumDays	20.00	0.00
tblConsumerProducts	ROG_EF_Degreaser	3.542E-07	0
tblEnergyUse	T24E	332.81	309.51
tblEnergyUse	T24E	249.32	231.87
tblEnergyUse	T24E	325.76	302.96
tblEnergyUse	T24NG	5,484.45	5,100.54
tblEnergyUse	T24NG	15,568.01	14,478.25
tblEnergyUse	T24NG	25,910.09	24,096.38
tblLandUse	LotAcreage	0.29	0.70
tblLandUse	LotAcreage	0.94	1.50
tblLandUse	LotAcreage	24.35	12.30
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblProjectCharacteristics	CH4IntensityFactor	0.029	0.04
tblProjectCharacteristics	CO2IntensityFactor	641.35	268.02
tblVehicleTrips	WD_TR	6.65	7.40
tblVehicleTrips	WD_TR	5.81	7.40
tblVehicleTrips	WD_TR	9.52	9.20
tblWoodstoves	WoodstoveWoodMass	2,016.00	0.00
tblWoodstoves	WoodstoveWoodMass	2,016.00	0.00
tblWoodstoves	WoodstoveWoodMass	2,016.00	0.00

2.0 Emissions Summary

Beechwood SP - typical phase (mitigated) - San Luis Obispo County, Annual

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					
2020	0.4524	4.0499	3.4885	7.6600e-003	0.4877	0.1759	0.6636	0.1787	0.1645	0.3431	0.0000	686.0483	686.0483	0.1122	0.0000	688.8521
2021	0.7685	2.0435	2.0714	4.7300e-003	0.1755	0.0835	0.2589	0.0472	0.0784	0.1256	0.0000	424.3019	424.3019	0.0591	0.0000	425.7804
Maximum	0.7685	4.0499	3.4885	7.6600e-003	0.4877	0.1759	0.6636	0.1787	0.1645	0.3431	0.0000	686.0483	686.0483	0.1122	0.0000	688.8521

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					
2020	0.2286	3.0412	3.6903	7.6600e-003	0.3545	0.1312	0.4857	0.1167	0.1309	0.2476	0.0000	686.0479	686.0479	0.1122	0.0000	688.8517
2021	0.6661	1.7803	2.1974	4.7300e-003	0.1755	0.0786	0.2540	0.0472	0.0784	0.1256	0.0000	424.3017	424.3017	0.0591	0.0000	425.7802
Maximum	0.6661	3.0412	3.6903	7.6600e-003	0.3545	0.1312	0.4857	0.1167	0.1309	0.2476	0.0000	686.0479	686.0479	0.1122	0.0000	688.8517

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	26.72	20.87	-5.90	0.00	20.08	19.13	19.81	27.42	13.80	20.36	0.00	0.00	0.00	0.00	0.00	0.00

Beechwood SP - typical phase (mitigated) - San Luis Obispo County, Annual

Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	1-1-2020	3-31-2020	1.4980	0.8964
2	4-1-2020	6-30-2020	0.9860	0.7778
3	7-1-2020	9-30-2020	0.9968	0.7863
4	10-1-2020	12-31-2020	1.0031	0.7926
5	1-1-2021	3-31-2021	0.8918	0.7493
6	4-1-2021	6-30-2021	0.8963	0.7522
7	7-1-2021	9-30-2021	1.0260	0.9457
		Highest	1.4980	0.9457

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	0.7758	0.0159	1.3780	7.0000e-005		7.6000e-003	7.6000e-003		7.6000e-003	7.6000e-003	0.0000	2.2461	2.2461	2.1800e-003	0.0000	2.3006
Energy	0.0129	0.1106	0.0470	7.1000e-004		8.9400e-003	8.9400e-003		8.9400e-003	8.9400e-003	0.0000	216.2480	216.2480	0.0156	4.3200e-003	217.9265
Mobile	0.2943	1.2753	3.4307	9.5100e-003	0.8457	0.0101	0.8558	0.2265	9.4800e-003	0.2360	0.0000	869.4318	869.4318	0.0357	0.0000	870.3230
Waste						0.0000	0.0000		0.0000	0.0000	20.3681	0.0000	20.3681	1.2037	0.0000	50.4611
Water						0.0000	0.0000		0.0000	0.0000	2.0877	7.4629	9.5506	0.2155	5.2300e-003	16.4978
Total	1.0830	1.4017	4.8558	0.0103	0.8457	0.0266	0.8723	0.2265	0.0260	0.2525	22.4558	1,095.3889	1,117.8447	1.4727	9.5500e-003	1,157.5089

Beechwood SP - typical phase (mitigated) - San Luis Obispo County, Annual

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	0.7758	0.0159	1.3780	7.0000e-005		7.6000e-003	7.6000e-003		7.6000e-003	7.6000e-003	0.0000	2.2461	2.2461	2.1800e-003	0.0000	2.3006
Energy	0.0129	0.1106	0.0470	7.1000e-004		8.9400e-003	8.9400e-003		8.9400e-003	8.9400e-003	0.0000	176.4712	176.4712	9.6800e-003	3.4300e-003	177.7359
Mobile	0.2841	1.1922	3.1889	8.6300e-003	0.7633	9.2200e-003	0.7725	0.2044	8.6600e-003	0.2131	0.0000	789.4785	789.4785	0.0330	0.0000	790.3039
Waste						0.0000	0.0000		0.0000	0.0000	20.3681	0.0000	20.3681	1.2037	0.0000	50.4611
Water						0.0000	0.0000		0.0000	0.0000	1.6702	6.5972	8.2673	0.1725	4.2000e-003	13.8316
Total	1.0729	1.3187	4.6139	9.4100e-003	0.7633	0.0258	0.7890	0.2044	0.0252	0.2296	22.0383	974.7929	996.8312	1.4211	7.6300e-003	1,034.6330

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.94	5.93	4.98	8.55	9.75	3.27	9.55	9.75	3.15	9.07	1.86	11.01	10.83	3.50	20.10	10.62

Beechwood SP - typical phase (mitigated) - San Luis Obispo County, Annual

2.3 Vegetation**Vegetation**

	CO2e
Category	MT
Vegetation Land Change	-86.6310
Total	-86.6310

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	1/1/2020	1/14/2020	5	10	
2	Grading	Grading	1/15/2020	3/3/2020	5	35	
3	Building Construction	Building Construction	3/4/2020	8/3/2021	5	370	
4	Demolition	Demolition	1/1/2021	1/28/2020	5	0	
5	Paving	Paving	8/4/2021	8/31/2021	5	20	
6	Architectural Coating	Architectural Coating	9/1/2021	9/28/2021	5	20	

Acres of Grading (Site Preparation Phase): 0**Acres of Grading (Grading Phase): 87.5****Acres of Paving: 5.6**

Beechwood SP - typical phase (mitigated) - San Luis Obispo County, Annual

Residential Indoor: 326,025; Residential Outdoor: 108,675; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 14,636 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	0	8.00	81	0.73
Demolition	Excavators	0	8.00	158	0.38
Demolition	Rubber Tired Dozers	0	8.00	247	0.40
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
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
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
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Beechwood SP - typical phase (mitigated) - San Luis Obispo County, Annual

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
Demolition	0	0.00	0.00	0.00	13.00	5.00	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	13.00	5.00	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	13.00	5.00	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	198.00	70.00	0.00	13.00	5.00	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	13.00	5.00	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	40.00	0.00	0.00	13.00	5.00	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

3.2 Site Preparation - 2020**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					0.0903	0.0000	0.0903	0.0497	0.0000	0.0497	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0204	0.2121	0.1076	1.9000e-004		0.0110	0.0110		0.0101	0.0101	0.0000	16.7153	16.7153	5.4100e-003	0.0000	16.8505
Total	0.0204	0.2121	0.1076	1.9000e-004	0.0903	0.0110	0.1013	0.0497	0.0101	0.0598	0.0000	16.7153	16.7153	5.4100e-003	0.0000	16.8505

Beechwood SP - typical phase (mitigated) - San Luis Obispo County, Annual

3.2 Site Preparation - 2020**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	3.9000e-004	3.6000e-004	3.1000e-003	1.0000e-005	8.7000e-004	1.0000e-005	8.7000e-004	2.3000e-004	1.0000e-005	2.4000e-004	0.0000	0.7249	0.7249	2.0000e-005	0.0000	0.7255
Total	3.9000e-004	3.6000e-004	3.1000e-003	1.0000e-005	8.7000e-004	1.0000e-005	8.7000e-004	2.3000e-004	1.0000e-005	2.4000e-004	0.0000	0.7249	0.7249	2.0000e-005	0.0000	0.7255

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					0.0407	0.0000	0.0407	0.0223	0.0000	0.0223	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.6600e-003	0.0953	0.1148	1.9000e-004		4.7300e-003	4.7300e-003		4.7300e-003	4.7300e-003	0.0000	16.7153	16.7153	5.4100e-003	0.0000	16.8505
Total	4.6600e-003	0.0953	0.1148	1.9000e-004	0.0407	4.7300e-003	0.0454	0.0223	4.7300e-003	0.0271	0.0000	16.7153	16.7153	5.4100e-003	0.0000	16.8505

Beechwood SP - typical phase (mitigated) - San Luis Obispo County, Annual

3.2 Site Preparation - 2020**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	3.9000e-004	3.6000e-004	3.1000e-003	1.0000e-005	8.7000e-004	1.0000e-005	8.7000e-004	2.3000e-004	1.0000e-005	2.4000e-004	0.0000	0.7249	0.7249	2.0000e-005	0.0000	0.7255
Total	3.9000e-004	3.6000e-004	3.1000e-003	1.0000e-005	8.7000e-004	1.0000e-005	8.7000e-004	2.3000e-004	1.0000e-005	2.4000e-004	0.0000	0.7249	0.7249	2.0000e-005	0.0000	0.7255

3.3 Grading - 2020**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					0.1518	0.0000	0.1518	0.0629	0.0000	0.0629	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0779	0.8785	0.5593	1.0900e-003		0.0380	0.0380		0.0350	0.0350	0.0000	95.3475	95.3475	0.0308	0.0000	96.1185
Total	0.0779	0.8785	0.5593	1.0900e-003	0.1518	0.0380	0.1898	0.0629	0.0350	0.0979	0.0000	95.3475	95.3475	0.0308	0.0000	96.1185

Beechwood SP - typical phase (mitigated) - San Luis Obispo County, Annual

3.3 Grading - 2020**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	1.5300e-003	1.3900e-003	0.0120	3.0000e-005	3.3700e-003	2.0000e-005	3.3900e-003	9.0000e-004	2.0000e-005	9.2000e-004	0.0000	2.8189	2.8189	9.0000e-005	0.0000	2.8213
Total	1.5300e-003	1.3900e-003	0.0120	3.0000e-005	3.3700e-003	2.0000e-005	3.3900e-003	9.0000e-004	2.0000e-005	9.2000e-004	0.0000	2.8189	2.8189	9.0000e-005	0.0000	2.8213

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					0.0683	0.0000	0.0683	0.0283	0.0000	0.0283	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0267	0.5246	0.6426	1.0900e-003		0.0227	0.0227		0.0227	0.0227	0.0000	95.3474	95.3474	0.0308	0.0000	96.1183
Total	0.0267	0.5246	0.6426	1.0900e-003	0.0683	0.0227	0.0910	0.0283	0.0227	0.0511	0.0000	95.3474	95.3474	0.0308	0.0000	96.1183

Beechwood SP - typical phase (mitigated) - San Luis Obispo County, Annual

3.3 Grading - 2020**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	1.5300e-003	1.3900e-003	0.0120	3.0000e-005	3.3700e-003	2.0000e-005	3.3900e-003	9.0000e-004	2.0000e-005	9.2000e-004	0.0000	2.8189	2.8189	9.0000e-005	0.0000	2.8213
Total	1.5300e-003	1.3900e-003	0.0120	3.0000e-005	3.3700e-003	2.0000e-005	3.3900e-003	9.0000e-004	2.0000e-005	9.2000e-004	0.0000	2.8189	2.8189	9.0000e-005	0.0000	2.8213

3.4 Building Construction - 2020**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	0.2300	2.0817	1.8281	2.9200e-003		0.1212	0.1212		0.1140	0.1140	0.0000	251.2968	251.2968	0.0613	0.0000	252.8295
Total	0.2300	2.0817	1.8281	2.9200e-003		0.1212	0.1212		0.1140	0.1140	0.0000	251.2968	251.2968	0.0613	0.0000	252.8295

Beechwood SP - typical phase (mitigated) - San Luis Obispo County, Annual

3.4 Building Construction - 2020**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	0.0282	0.7906	0.2395	1.5100e-003	0.0345	4.3100e-003	0.0388	9.9700e-003	4.1200e-003	0.0141	0.0000	146.1190	146.1190	8.7900e-003	0.0000	146.3388
Worker	0.0940	0.0854	0.7389	1.9200e-003	0.2068	1.3600e-003	0.2082	0.0550	1.2500e-003	0.0562	0.0000	173.0258	173.0258	5.7000e-003	0.0000	173.1682
Total	0.1222	0.8760	0.9785	3.4300e-003	0.2413	5.6700e-003	0.2470	0.0649	5.3700e-003	0.0703	0.0000	319.1448	319.1448	0.0145	0.0000	319.5070

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	0.0731	1.5435	1.9393	2.9200e-003		0.0980	0.0980		0.0980	0.0980	0.0000	251.2965	251.2965	0.0613	0.0000	252.8292
Total	0.0731	1.5435	1.9393	2.9200e-003		0.0980	0.0980		0.0980	0.0980	0.0000	251.2965	251.2965	0.0613	0.0000	252.8292

Beechwood SP - typical phase (mitigated) - San Luis Obispo County, Annual

3.4 Building Construction - 2020**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	0.0282	0.7906	0.2395	1.5100e-003	0.0345	4.3100e-003	0.0388	9.9700e-003	4.1200e-003	0.0141	0.0000	146.1190	146.1190	8.7900e-003	0.0000	146.3388
Worker	0.0940	0.0854	0.7389	1.9200e-003	0.2068	1.3600e-003	0.2082	0.0550	1.2500e-003	0.0562	0.0000	173.0258	173.0258	5.7000e-003	0.0000	173.1682
Total	0.1222	0.8760	0.9785	3.4300e-003	0.2413	5.6700e-003	0.2470	0.0649	5.3700e-003	0.0703	0.0000	319.1448	319.1448	0.0145	0.0000	319.5070

3.4 Building Construction - 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					
Off-Road	0.1454	1.3336	1.2680	2.0600e-003		0.0733	0.0733		0.0690	0.0690	0.0000	177.2025	177.2025	0.0428	0.0000	178.2713
Total	0.1454	1.3336	1.2680	2.0600e-003		0.0733	0.0733		0.0690	0.0690	0.0000	177.2025	177.2025	0.0428	0.0000	178.2713

Beechwood SP - typical phase (mitigated) - San Luis Obispo County, Annual

3.4 Building Construction - 2021**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	0.0163	0.5097	0.1494	1.0600e-003	0.0243	1.4600e-003	0.0258	7.0300e-003	1.3900e-003	8.4200e-003	0.0000	102.4065	102.4065	6.0400e-003	0.0000	102.5575
Worker	0.0617	0.0538	0.4722	1.3000e-003	0.1458	9.3000e-004	0.1468	0.0388	8.6000e-004	0.0396	0.0000	117.8374	117.8374	3.5700e-003	0.0000	117.9266
Total	0.0781	0.5636	0.6216	2.3600e-003	0.1702	2.3900e-003	0.1725	0.0458	2.2500e-003	0.0480	0.0000	220.2439	220.2439	9.6100e-003	0.0000	220.4841

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	0.0516	1.0883	1.3673	2.0600e-003		0.0691	0.0691		0.0691	0.0691	0.0000	177.2023	177.2023	0.0428	0.0000	178.2711
Total	0.0516	1.0883	1.3673	2.0600e-003		0.0691	0.0691		0.0691	0.0691	0.0000	177.2023	177.2023	0.0428	0.0000	178.2711

Beechwood SP - typical phase (mitigated) - San Luis Obispo County, Annual

3.4 Building Construction - 2021**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	0.0163	0.5097	0.1494	1.0600e-003	0.0243	1.4600e-003	0.0258	7.0300e-003	1.3900e-003	8.4200e-003	0.0000	102.4065	102.4065	6.0400e-003	0.0000	102.5575
Worker	0.0617	0.0538	0.4722	1.3000e-003	0.1458	9.3000e-004	0.1468	0.0388	8.6000e-004	0.0396	0.0000	117.8374	117.8374	3.5700e-003	0.0000	117.9266
Total	0.0781	0.5636	0.6216	2.3600e-003	0.1702	2.3900e-003	0.1725	0.0458	2.2500e-003	0.0480	0.0000	220.2439	220.2439	9.6100e-003	0.0000	220.4841

3.6 Paving - 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					
Off-Road	0.0126	0.1292	0.1465	2.3000e-004		6.7800e-003	6.7800e-003		6.2400e-003	6.2400e-003	0.0000	20.0235	20.0235	6.4800e-003	0.0000	20.1854
Paving	7.3400e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	0.0199	0.1292	0.1465	2.3000e-004		6.7800e-003	6.7800e-003		6.2400e-003	6.2400e-003	0.0000	20.0235	20.0235	6.4800e-003	0.0000	20.1854

Beechwood SP - typical phase (mitigated) - San Luis Obispo County, Annual

3.6 Paving - 2021**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	6.1000e-004	5.3000e-004	4.6800e-003	1.0000e-005	1.4400e-003	1.0000e-005	1.4500e-003	3.8000e-004	1.0000e-005	3.9000e-004	0.0000	1.1669	1.1669	4.0000e-005	0.0000	1.1678
Total	6.1000e-004	5.3000e-004	4.6800e-003	1.0000e-005	1.4400e-003	1.0000e-005	1.4500e-003	3.8000e-004	1.0000e-005	3.9000e-004	0.0000	1.1669	1.1669	4.0000e-005	0.0000	1.1678

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	5.6100e-003	0.1130	0.1730	2.3000e-004		6.0900e-003	6.0900e-003		6.0900e-003	6.0900e-003	0.0000	20.0235	20.0235	6.4800e-003	0.0000	20.1854
Paving	7.3400e-003					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	0.0130	0.1130	0.1730	2.3000e-004		6.0900e-003	6.0900e-003		6.0900e-003	6.0900e-003	0.0000	20.0235	20.0235	6.4800e-003	0.0000	20.1854

Beechwood SP - typical phase (mitigated) - San Luis Obispo County, Annual

3.6 Paving - 2021**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	6.1000e-004	5.3000e-004	4.6800e-003	1.0000e-005	1.4400e-003	1.0000e-005	1.4500e-003	3.8000e-004	1.0000e-005	3.9000e-004	0.0000	1.1669	1.1669	4.0000e-005	0.0000	1.1678
Total	6.1000e-004	5.3000e-004	4.6800e-003	1.0000e-005	1.4400e-003	1.0000e-005	1.4500e-003	3.8000e-004	1.0000e-005	3.9000e-004	0.0000	1.1669	1.1669	4.0000e-005	0.0000	1.1678

3.7 Architectural Coating - 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					
Archit. Coating	0.5207					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.1900e-003	0.0153	0.0182	3.0000e-005		9.4000e-004	9.4000e-004		9.4000e-004	9.4000e-004	0.0000	2.5533	2.5533	1.8000e-004	0.0000	2.5576
Total	0.5229	0.0153	0.0182	3.0000e-005		9.4000e-004	9.4000e-004		9.4000e-004	9.4000e-004	0.0000	2.5533	2.5533	1.8000e-004	0.0000	2.5576

Beechwood SP - typical phase (mitigated) - San Luis Obispo County, Annual

3.7 Architectural Coating - 2021**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	1.6300e-003	1.4200e-003	0.0125	3.0000e-005	3.8500e-003	2.0000e-005	3.8800e-003	1.0200e-003	2.0000e-005	1.0500e-003	0.0000	3.1118	3.1118	9.0000e-005	0.0000	3.1142
Total	1.6300e-003	1.4200e-003	0.0125	3.0000e-005	3.8500e-003	2.0000e-005	3.8800e-003	1.0200e-003	2.0000e-005	1.0500e-003	0.0000	3.1118	3.1118	9.0000e-005	0.0000	3.1142

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	0.5207					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	5.9000e-004	0.0136	0.0183	3.0000e-005		9.5000e-004	9.5000e-004		9.5000e-004	9.5000e-004	0.0000	2.5533	2.5533	1.8000e-004	0.0000	2.5576
Total	0.5213	0.0136	0.0183	3.0000e-005		9.5000e-004	9.5000e-004		9.5000e-004	9.5000e-004	0.0000	2.5533	2.5533	1.8000e-004	0.0000	2.5576

Beechwood SP - typical phase (mitigated) - San Luis Obispo County, Annual

3.7 Architectural Coating - 2021**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	1.6300e-003	1.4200e-003	0.0125	3.0000e-005	3.8500e-003	2.0000e-005	3.8800e-003	1.0200e-003	2.0000e-005	1.0500e-003	0.0000	3.1118	3.1118	9.0000e-005	0.0000	3.1142
Total	1.6300e-003	1.4200e-003	0.0125	3.0000e-005	3.8500e-003	2.0000e-005	3.8800e-003	1.0200e-003	2.0000e-005	1.0500e-003	0.0000	3.1118	3.1118	9.0000e-005	0.0000	3.1142

4.0 Operational Detail - Mobile**4.1 Mitigation Measures Mobile**

Increase Density

Improve Walkability Design

Improve Pedestrian Network

Provide Traffic Calming Measures

Beechwood SP - typical phase (mitigated) - San Luis Obispo County, Annual

	ROG	NOx	CO	SO2	Fugitive 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	0.2841	1.1922	3.1889	8.6300e-003	0.7633	9.2200e-003	0.7725	0.2044	8.6600e-003	0.2131	0.0000	789.4785	789.4785	0.0330	0.0000	790.3039
Unmitigated	0.2943	1.2753	3.4307	9.5100e-003	0.8457	0.0101	0.8558	0.2265	9.4800e-003	0.2360	0.0000	869.4318	869.4318	0.0357	0.0000	870.3230

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	81.40	70.29	64.46	196,698	177,520
City Park	5.10	61.43	45.20	38,363	34,623
Condo/Townhouse	111.00	85.05	72.60	258,749	233,521
Other Asphalt Surfaces	0.00	0.00	0.00		
Single Family Housing	690.00	743.25	646.50	1,757,214	1,585,886
Total	887.50	960.02	828.76	2,251,025	2,031,550

4.3 Trip Type Information

Land Use	Miles			Trip %			Trip Purpose %		
	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	13.00	5.00	5.00	35.80	21.00	43.20	86	11	3
City Park	13.00	5.00	5.00	33.00	48.00	19.00	66	28	6
Condo/Townhouse	13.00	5.00	5.00	35.80	21.00	43.20	86	11	3
Other Asphalt Surfaces	13.00	5.00	5.00	0.00	0.00	0.00	0	0	0
Single Family Housing	13.00	5.00	5.00	35.80	21.00	43.20	86	11	3

Beechwood SP - typical phase (mitigated) - San Luis Obispo County, Annual

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Mid Rise	0.567875	0.030811	0.198391	0.124124	0.028385	0.006896	0.012949	0.019383	0.002368	0.001236	0.005232	0.000797	0.001552
City Park	0.567875	0.030811	0.198391	0.124124	0.028385	0.006896	0.012949	0.019383	0.002368	0.001236	0.005232	0.000797	0.001552
Condo/Townhouse	0.567875	0.030811	0.198391	0.124124	0.028385	0.006896	0.012949	0.019383	0.002368	0.001236	0.005232	0.000797	0.001552
Other Asphalt Surfaces	0.567875	0.030811	0.198391	0.124124	0.028385	0.006896	0.012949	0.019383	0.002368	0.001236	0.005232	0.000797	0.001552
Single Family Housing	0.567875	0.030811	0.198391	0.124124	0.028385	0.006896	0.012949	0.019383	0.002368	0.001236	0.005232	0.000797	0.001552

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Percent of Electricity Use Generated with Renewable Energy

Install Energy Efficient Appliances

Beechwood SP - typical phase (mitigated) - San Luis Obispo County, Annual

	ROG	NOx	CO	SO2	Fugitive 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	48.4427	48.4427	7.2300e-003	1.0800e-003	48.9466
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	88.2195	88.2195	0.0132	1.9700e-003	89.1372
NaturalGas Mitigated	0.0129	0.1106	0.0470	7.1000e-004		8.9400e-003	8.9400e-003		8.9400e-003	8.9400e-003	0.0000	128.0285	128.0285	2.4500e-003	2.3500e-003	128.7893
NaturalGas Unmitigated	0.0129	0.1106	0.0470	7.1000e-004		8.9400e-003	8.9400e-003		8.9400e-003	8.9400e-003	0.0000	128.0285	128.0285	2.4500e-003	2.3500e-003	128.7893

Beechwood SP - typical phase (mitigated) - San Luis Obispo County, Annual

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	90810.9	4.9000e-004	4.1800e-003	1.7800e-003	3.0000e-005		3.4000e-004	3.4000e-004		3.4000e-004	3.4000e-004	0.0000	4.8460	4.8460	9.0000e-005	9.0000e-005	4.8748
City Park	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
Condo/Townhouse	264499	1.4300e-003	0.0122	5.1900e-003	8.0000e-005		9.9000e-004	9.9000e-004		9.9000e-004	9.9000e-004	0.0000	14.1147	14.1147	2.7000e-004	2.6000e-004	14.1985
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
Single Family Housing	2.04385e+006	0.0110	0.0942	0.0401	6.0000e-004		7.6100e-003	7.6100e-003		7.6100e-003	7.6100e-003	0.0000	109.0678	109.0678	2.0900e-003	2.0000e-003	109.7160
Total		0.0129	0.1106	0.0471	7.1000e-004		8.9400e-003	8.9400e-003		8.9400e-003	8.9400e-003	0.0000	128.0285	128.0285	2.4500e-003	2.3500e-003	128.7893

Beechwood SP - typical phase (mitigated) - San Luis Obispo County, Annual

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	90810.9	4.9000e-004	4.1800e-003	1.7800e-003	3.0000e-005		3.4000e-004	3.4000e-004		3.4000e-004	3.4000e-004	0.0000	4.8460	4.8460	9.0000e-005	9.0000e-005	4.8748
City Park	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
Condo/Townhouse	264499	1.4300e-003	0.0122	5.1900e-003	8.0000e-005		9.9000e-004	9.9000e-004		9.9000e-004	9.9000e-004	0.0000	14.1147	14.1147	2.7000e-004	2.6000e-004	14.1985
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
Single Family Housing	2.04385e+006	0.0110	0.0942	0.0401	6.0000e-004		7.6100e-003	7.6100e-003		7.6100e-003	7.6100e-003	0.0000	109.0678	109.0678	2.0900e-003	2.0000e-003	109.7160
Total		0.0129	0.1106	0.0471	7.1000e-004		8.9400e-003	8.9400e-003		8.9400e-003	8.9400e-003	0.0000	128.0285	128.0285	2.4500e-003	2.3500e-003	128.7893

Beechwood SP - typical phase (mitigated) - San Luis Obispo County, Annual

5.3 Energy by Land Use - Electricity**Unmitigated**

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	45155.6	5.4897	8.2000e-004	1.2000e-004	5.5468
City Park	0	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse	75419.7	9.1689	1.3700e-003	2.1000e-004	9.2643
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Single Family Housing	605083	73.5610	0.0110	1.6500e-003	74.3262
Total		88.2196	0.0132	1.9800e-003	89.1372

Beechwood SP - typical phase (mitigated) - San Luis Obispo County, Annual

5.3 Energy by Land Use - Electricity**Mitigated**

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	24193.3	2.9412	4.4000e-004	7.0000e-005	2.9718
City Park	0	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse	41480.8	5.0429	7.5000e-004	1.1000e-004	5.0954
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Single Family Housing	332795	40.4585	6.0400e-003	9.1000e-004	40.8794
Total		48.4427	7.2300e-003	1.0900e-003	48.9466

6.0 Area Detail**6.1 Mitigation Measures Area**

Beechwood SP - typical phase (mitigated) - San Luis Obispo County, Annual

	ROG	NOx	CO	SO2	Fugitive 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	0.7758	0.0159	1.3780	7.0000e-005		7.6000e-003	7.6000e-003		7.6000e-003	7.6000e-003	0.0000	2.2461	2.2461	2.1800e-003	0.0000	2.3006
Unmitigated	0.7758	0.0159	1.3780	7.0000e-005		7.6000e-003	7.6000e-003		7.6000e-003	7.6000e-003	0.0000	2.2461	2.2461	2.1800e-003	0.0000	2.3006

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	0.1041					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.6299					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	0.0418	0.0159	1.3780	7.0000e-005		7.6000e-003	7.6000e-003		7.6000e-003	7.6000e-003	0.0000	2.2461	2.2461	2.1800e-003	0.0000	2.3006
Total	0.7758	0.0159	1.3780	7.0000e-005		7.6000e-003	7.6000e-003		7.6000e-003	7.6000e-003	0.0000	2.2461	2.2461	2.1800e-003	0.0000	2.3006

Beechwood SP - typical phase (mitigated) - San Luis Obispo County, Annual

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	0.1041					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.6299					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	0.0418	0.0159	1.3780	7.0000e-005		7.6000e-003	7.6000e-003		7.6000e-003	7.6000e-003	0.0000	2.2461	2.2461	2.1800e-003	0.0000	2.3006
Total	0.7758	0.0159	1.3780	7.0000e-005		7.6000e-003	7.6000e-003		7.6000e-003	7.6000e-003	0.0000	2.2461	2.2461	2.1800e-003	0.0000	2.3006

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

Beechwood SP - typical phase (mitigated) - San Luis Obispo County, Annual

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	8.2673	0.1725	4.2000e-003	13.8316
Unmitigated	9.5506	0.2155	5.2300e-003	16.4978

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	0.716694 / 0.451829	0.8911	0.0235	5.7000e-004	1.6462
City Park	0 / 3.217	1.3688	2.0000e-004	3.0000e-005	1.3831
Condo/Townhouse	0.97731 / 0.61613	1.2151	0.0320	7.7000e-004	2.2448
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Single Family Housing	4.88655 / 3.08065	6.0756	0.1599	3.8600e-003	11.2238
Total		9.5507	0.2155	5.2300e-003	16.4978

Beechwood SP - typical phase (mitigated) - San Luis Obispo County, Annual

7.2 Water by Land Use**Mitigated**

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	0.573355 / 0.451829	0.7513	0.0188	4.5000e-004	1.3558
City Park	0 / 3.217	1.3688	2.0000e-004	3.0000e-005	1.3831
Condo/Townhouse	0.781848 / 0.61613	1.0245	0.0256	6.2000e-004	1.8488
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Single Family Housing	3.90924 / 3.08065	5.1226	0.1280	3.0900e-003	9.2439
Total		8.2673	0.1725	4.1900e-003	13.8315

8.0 Waste Detail**8.1 Mitigation Measures Waste**

Beechwood SP - typical phase (mitigated) - San Luis Obispo County, Annual

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	20.3681	1.2037	0.0000	50.4611
Unmitigated	20.3681	1.2037	0.0000	50.4611

8.2 Waste by Land Use**Unmitigated**

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	5.06	1.0271	0.0607	0.0000	2.5447
City Park	0.23	0.0467	2.7600e-003	0.0000	0.1157
Condo/Townhouse	6.9	1.4006	0.0828	0.0000	3.4700
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Single Family Housing	88.15	17.8937	1.0575	0.0000	44.3308
Total		20.3681	1.2037	0.0000	50.4611

Beechwood SP - typical phase (mitigated) - San Luis Obispo County, Annual

8.2 Waste by Land Use**Mitigated**

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	5.06	1.0271	0.0607	0.0000	2.5447
City Park	0.23	0.0467	2.7600e-003	0.0000	0.1157
Condo/Townhouse	6.9	1.4006	0.0828	0.0000	3.4700
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Single Family Housing	88.15	17.8937	1.0575	0.0000	44.3308
Total		20.3681	1.2037	0.0000	50.4611

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
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10.0 Stationary Equipment**Fire Pumps and Emergency Generators**

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
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Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type
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Beechwood SP - typical phase (mitigated) - San Luis Obispo County, Annual

User Defined Equipment

Equipment Type	Number
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11.0 Vegetation

	Total CO2	CH4	N2O	CO2e
Category	MT			
Unmitigated	-86.6310	0.0000	0.0000	-86.6310

11.1 Vegetation Land Change**Vegetation Type**

	Initial/Final	Total CO2	CH4	N2O	CO2e
	Acres	MT			
Grassland	20.1 / 0	-86.6310	0.0000	0.0000	-86.6310
Total		-86.6310	0.0000	0.0000	-86.6310

Beechwood SP - typical phase (mitigated) - San Luis Obispo County, Winter

Beechwood SP - typical phase (mitigated)**San Luis Obispo County, Winter****1.0 Project Characteristics****1.1 Land Usage**

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Asphalt Surfaces	5.60	Acre	5.60	243,936.00	0
City Park	2.70	Acre	2.70	117,612.00	0
Apartments Mid Rise	11.00	Dwelling Unit	0.70	11,000.00	31
Condo/Townhouse	15.00	Dwelling Unit	1.50	15,000.00	43
Single Family Housing	75.00	Dwelling Unit	12.30	135,000.00	215

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	3.2	Precipitation Freq (Days)	44
Climate Zone	4			Operational Year	2021
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MWhr)	268.02	CH4 Intensity (lb/MWhr)	0.04	N2O Intensity (lb/MWhr)	0.006

1.3 User Entered Comments & Non-Default Data

Beechwood SP - typical phase (mitigated) - San Luis Obispo County, Winter

Project Characteristics - CO2 and CH4 insentisty factor updated to match PG&E 2021

Land Use - Lot acreage from project description

Construction Phase - No demo required

Off-road Equipment - No demo

Trips and VMT - no demo

Architectural Coating - VOC limit in compliance with SLO APCD Rule 433

Vehicle Trips - Trip rates obtained from Beechwood TIS Assumptions Memo (Central Coast Transportation Consulting, Aug 2018)

Woodstoves - SLOAPCD Rule 433

Consumer Products - all roads

Area Coating - Compliance with SLOAPCD Rule 433

Energy Use - Title-24 intensity adjusted to comply with the 2019 requirements

Land Use Change -

Construction Off-road Equipment Mitigation - Mitigation Measure AIR-1b and 1c

Mobile Land Use Mitigation -

Energy Mitigation -

Water Mitigation -

Area Mitigation -

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Nonresidential_Exterior	250.00	50.00
tblArchitecturalCoating	EF_Nonresidential_Interior	250.00	50.00
tblArchitecturalCoating	EF_Parking	150.00	50.00
tblArchitecturalCoating	EF_Residential_Exterior	250.00	50.00
tblArchitecturalCoating	EF_Residential_Interior	250.00	50.00
tblAreaCoating	Area_EF_Nonresidential_Exterior	250	100
tblAreaCoating	Area_EF_Nonresidential_Interior	250	100
tblAreaCoating	Area_EF_Parking	150	100

Beechwood SP - typical phase (mitigated) - San Luis Obispo County, Winter

[illegible]

Beechwood SP - typical phase (mitigated) - San Luis Obispo County, Winter

tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstructionPhase	NumDays	20.00	0.00
tblConsumerProducts	ROG_EF_Degreaser	3.542E-07	0
tblEnergyUse	T24E	332.81	309.51
tblEnergyUse	T24E	249.32	231.87
tblEnergyUse	T24E	325.76	302.96
tblEnergyUse	T24NG	5,484.45	5,100.54
tblEnergyUse	T24NG	15,568.01	14,478.25
tblEnergyUse	T24NG	25,910.09	24,096.38
tblLandUse	LotAcreage	0.29	0.70
tblLandUse	LotAcreage	0.94	1.50
tblLandUse	LotAcreage	24.35	12.30
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblProjectCharacteristics	CH4IntensityFactor	0.029	0.04
tblProjectCharacteristics	CO2IntensityFactor	641.35	268.02
tblVehicleTrips	WD_TR	6.65	7.40
tblVehicleTrips	WD_TR	5.81	7.40
tblVehicleTrips	WD_TR	9.52	9.20
tblWoodstoves	WoodstoveWoodMass	2,016.00	0.00
tblWoodstoves	WoodstoveWoodMass	2,016.00	0.00
tblWoodstoves	WoodstoveWoodMass	2,016.00	0.00

2.0 Emissions Summary

Beechwood SP - typical phase (mitigated) - San Luis Obispo County, Winter

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					
2020	4.5476	50.2785	32.6490	0.0638	18.2442	2.1986	20.4428	9.9779	2.0227	12.0006	0.0000	6,181.990 7	6,181.990 7	1.9482	0.0000	6,230.696 8
2021	52.4677	24.7222	24.8352	0.0574	2.2824	0.9904	3.2729	0.6128	0.9313	1.5440	0.0000	5,686.604 3	5,686.604 3	0.7574	0.0000	5,705.539 3
Maximum	52.4677	50.2785	32.6490	0.0638	18.2442	2.1986	20.4428	9.9779	2.0227	12.0006	0.0000	6,181.990 7	6,181.990 7	1.9482	0.0000	6,230.696 8

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					
2020	1.9077	30.0592	37.4133	0.0638	8.3078	1.3007	9.2551	4.5160	1.3006	5.4632	0.0000	6,181.990 7	6,181.990 7	1.9482	0.0000	6,230.696 8
2021	52.3082	21.5162	26.1337	0.0574	2.2824	0.9353	3.2178	0.6128	0.9335	1.5463	0.0000	5,686.604 3	5,686.604 3	0.7574	0.0000	5,705.539 3
Maximum	52.3082	30.0592	37.4133	0.0638	8.3078	1.3007	9.2551	4.5160	1.3006	5.4632	0.0000	6,181.990 7	6,181.990 7	1.9482	0.0000	6,230.696 8

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	4.91	31.23	-10.55	0.00	48.41	29.88	47.41	51.57	24.37	48.25	0.00	0.00	0.00	0.00	0.00	0.00

Beechwood SP - typical phase (mitigated) - San Luis Obispo County, Winter

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	4.2752	0.0964	8.3516	4.4000e-004		0.0460	0.0460		0.0460	0.0460	0.0000	15.0056	15.0056	0.0145	0.0000	15.3692
Energy	0.0709	0.6058	0.2578	3.8700e-003		0.0490	0.0490		0.0490	0.0490		773.3001	773.3001	0.0148	0.0142	777.8954
Mobile	1.8469	7.8003	21.4163	0.0577	5.3036	0.0622	5.3657	1.4172	0.0584	1.4755		5,814.6964	5,814.6964	0.2434		5,820.7807
Total	6.1930	8.5025	30.0257	0.0620	5.3036	0.1572	5.4607	1.4172	0.1534	1.5705	0.0000	6,603.0020	6,603.0020	0.2727	0.0142	6,614.0453

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	4.2752	0.0964	8.3516	4.4000e-004		0.0460	0.0460		0.0460	0.0460	0.0000	15.0056	15.0056	0.0145	0.0000	15.3692
Energy	0.0709	0.6058	0.2578	3.8700e-003		0.0490	0.0490		0.0490	0.0490		773.3001	773.3001	0.0148	0.0142	777.8954
Mobile	1.7846	7.2926	19.9453	0.0524	4.7865	0.0568	4.8433	1.2790	0.0534	1.3324		5,279.0694	5,279.0694	0.2258		5,284.7131
Total	6.1307	7.9948	28.5547	0.0567	4.7865	0.1518	4.9383	1.2790	0.1484	1.4274	0.0000	6,067.3750	6,067.3750	0.2551	0.0142	6,077.9778

Beechwood SP - typical phase (mitigated) - San Luis Obispo County, Winter

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	1.01	5.97	4.90	8.56	9.75	3.39	9.57	9.75	3.27	9.12	0.00	8.11	8.11	6.46	0.00	8.10

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	1/1/2020	1/14/2020	5	10	
2	Grading	Grading	1/15/2020	3/3/2020	5	35	
3	Building Construction	Building Construction	3/4/2020	8/3/2021	5	370	
4	Demolition	Demolition	1/1/2021	1/28/2020	5	0	
5	Paving	Paving	8/4/2021	8/31/2021	5	20	
6	Architectural Coating	Architectural Coating	9/1/2021	9/28/2021	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 87.5

Acres of Paving: 5.6

Residential Indoor: 326,025; Residential Outdoor: 108,675; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 14,636 (Architectural Coating – sqft)

OffRoad Equipment

Beechwood SP - typical phase (mitigated) - San Luis Obispo County, Winter

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	0	8.00	81	0.73
Demolition	Excavators	0	8.00	158	0.38
Demolition	Rubber Tired Dozers	0	8.00	247	0.40
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
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
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
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Beechwood SP - typical phase (mitigated) - San Luis Obispo County, Winter

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
Demolition	0	0.00	0.00	0.00	13.00	5.00	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	13.00	5.00	20.00	LD_Mix	HDT_Mix	HHDT
Grading	8	20.00	0.00	0.00	13.00	5.00	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	198.00	70.00	0.00	13.00	5.00	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	13.00	5.00	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	40.00	0.00	0.00	13.00	5.00	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

3.2 Site Preparation - 2020**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	4.0765	42.4173	21.5136	0.0380		2.1974	2.1974		2.0216	2.0216		3,685.1016	3,685.1016	1.1918		3,714.8975
Total	4.0765	42.4173	21.5136	0.0380	18.0663	2.1974	20.2637	9.9307	2.0216	11.9523		3,685.1016	3,685.1016	1.1918		3,714.8975

Beechwood SP - typical phase (mitigated) - San Luis Obispo County, Winter

3.2 Site Preparation - 2020**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	0.0878	0.0729	0.6216	1.5900e-003	0.1780	1.1400e-003	0.1791	0.0472	1.0500e-003	0.0483		158.5129	158.5129	5.2400e-003		158.6439
Total	0.0878	0.0729	0.6216	1.5900e-003	0.1780	1.1400e-003	0.1791	0.0472	1.0500e-003	0.0483		158.5129	158.5129	5.2400e-003		158.6439

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					8.1298	0.0000	8.1298	4.4688	0.0000	4.4688			0.0000			0.0000
Off-Road	0.9312	19.0656	22.9600	0.0380		0.9462	0.9462		0.9462	0.9462	0.0000	3,685.1016	3,685.1016	1.1918		3,714.8975
Total	0.9312	19.0656	22.9600	0.0380	8.1298	0.9462	9.0760	4.4688	0.9462	5.4150	0.0000	3,685.1016	3,685.1016	1.1918		3,714.8975

Beechwood SP - typical phase (mitigated) - San Luis Obispo County, Winter

3.2 Site Preparation - 2020**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	0.0878	0.0729	0.6216	1.5900e-003	0.1780	1.1400e-003	0.1791	0.0472	1.0500e-003	0.0483		158.5129	158.5129	5.2400e-003		158.6439
Total	0.0878	0.0729	0.6216	1.5900e-003	0.1780	1.1400e-003	0.1791	0.0472	1.0500e-003	0.0483		158.5129	158.5129	5.2400e-003		158.6439

3.3 Grading - 2020**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					8.6733	0.0000	8.6733	3.5965	0.0000	3.5965			0.0000			0.0000
Off-Road	4.4501	50.1975	31.9583	0.0620		2.1739	2.1739		2.0000	2.0000		6,005.8653	6,005.8653	1.9424		6,054.4257
Total	4.4501	50.1975	31.9583	0.0620	8.6733	2.1739	10.8472	3.5965	2.0000	5.5965		6,005.8653	6,005.8653	1.9424		6,054.4257

Beechwood SP - typical phase (mitigated) - San Luis Obispo County, Winter

3.3 Grading - 2020**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	0.0975	0.0810	0.6907	1.7700e-003	0.1977	1.2600e-003	0.1990	0.0524	1.1700e-003	0.0536		176.1254	176.1254	5.8200e-003		176.2710
Total	0.0975	0.0810	0.6907	1.7700e-003	0.1977	1.2600e-003	0.1990	0.0524	1.1700e-003	0.0536		176.1254	176.1254	5.8200e-003		176.2710

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					3.9030	0.0000	3.9030	1.6184	0.0000	1.6184			0.0000			0.0000
Off-Road	1.5231	29.9782	36.7226	0.0620		1.2994	1.2994		1.2994	1.2994	0.0000	6,005.8653	6,005.8653	1.9424		6,054.4257
Total	1.5231	29.9782	36.7226	0.0620	3.9030	1.2994	5.2024	1.6184	1.2994	2.9179	0.0000	6,005.8653	6,005.8653	1.9424		6,054.4257

Beechwood SP - typical phase (mitigated) - San Luis Obispo County, Winter

3.3 Grading - 2020**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	0.0975	0.0810	0.6907	1.7700e-003	0.1977	1.2600e-003	0.1990	0.0524	1.1700e-003	0.0536		176.1254	176.1254	5.8200e-003		176.2710
Total	0.0975	0.0810	0.6907	1.7700e-003	0.1977	1.2600e-003	0.1990	0.0524	1.1700e-003	0.0536		176.1254	176.1254	5.8200e-003		176.2710

3.4 Building Construction - 2020**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	2.1198	19.1860	16.8485	0.0269		1.1171	1.1171		1.0503	1.0503		2,553.0631	2,553.0631	0.6229		2,568.6345
Total	2.1198	19.1860	16.8485	0.0269		1.1171	1.1171		1.0503	1.0503		2,553.0631	2,553.0631	0.6229		2,568.6345

Beechwood SP - typical phase (mitigated) - San Luis Obispo County, Winter

3.4 Building Construction - 2020**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	0.2685	7.1884	2.3311	0.0137	0.3249	0.0405	0.3654	0.0936	0.0387	0.1323		1,458.174 5	1,458.174 5	0.0925		1,460.485 7
Worker	0.9654	0.8018	6.8378	0.0175	1.9575	0.0125	1.9700	0.5192	0.0116	0.5307		1,743.641 8	1,743.641 8	0.0577		1,745.083 2
Total	1.2338	7.9902	9.1689	0.0312	2.2824	0.0530	2.3354	0.6127	0.0502	0.6630		3,201.816 3	3,201.816 3	0.1501		3,205.568 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	0.6739	14.2261	17.8738	0.0269		0.9036	0.9036		0.9036	0.9036	0.0000	2,553.063 1	2,553.063 1	0.6229		2,568.634 5
Total	0.6739	14.2261	17.8738	0.0269		0.9036	0.9036		0.9036	0.9036	0.0000	2,553.063 1	2,553.063 1	0.6229		2,568.634 5

Beechwood SP - typical phase (mitigated) - San Luis Obispo County, Winter

3.4 Building Construction - 2020**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	0.2685	7.1884	2.3311	0.0137	0.3249	0.0405	0.3654	0.0936	0.0387	0.1323		1,458.174 5	1,458.174 5	0.0925		1,460.485 7
Worker	0.9654	0.8018	6.8378	0.0175	1.9575	0.0125	1.9700	0.5192	0.0116	0.5307		1,743.641 8	1,743.641 8	0.0577		1,745.083 2
Total	1.2338	7.9902	9.1689	0.0312	2.2824	0.0530	2.3354	0.6127	0.0502	0.6630		3,201.816 3	3,201.816 3	0.1501		3,205.568 9

3.4 Building Construction - 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					
Off-Road	1.9009	17.4321	16.5752	0.0269		0.9586	0.9586		0.9013	0.9013		2,553.363 9	2,553.363 9	0.6160		2,568.764 3
Total	1.9009	17.4321	16.5752	0.0269		0.9586	0.9586		0.9013	0.9013		2,553.363 9	2,553.363 9	0.6160		2,568.764 3

Beechwood SP - typical phase (mitigated) - San Luis Obispo County, Winter

3.4 Building Construction - 2021**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	0.2209	6.5732	2.0672	0.0136	0.3250	0.0197	0.3447	0.0936	0.0188	0.1124		1,449.024 9	1,449.024 9	0.0902		1,451.279 9
Worker	0.9009	0.7169	6.1928	0.0169	1.9575	0.0121	1.9696	0.5192	0.0112	0.5303		1,684.215 5	1,684.215 5	0.0512		1,685.495 2
Total	1.1218	7.2901	8.2600	0.0305	2.2824	0.0318	2.3142	0.6128	0.0300	0.6427		3,133.240 4	3,133.240 4	0.1414		3,136.775 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	0.6739	14.2261	17.8738	0.0269		0.9036	0.9036		0.9036	0.9036	0.0000	2,553.363 9	2,553.363 9	0.6160		2,568.764 3
Total	0.6739	14.2261	17.8738	0.0269		0.9036	0.9036		0.9036	0.9036	0.0000	2,553.363 9	2,553.363 9	0.6160		2,568.764 3

Beechwood SP - typical phase (mitigated) - San Luis Obispo County, Winter

3.4 Building Construction - 2021**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	0.2209	6.5732	2.0672	0.0136	0.3250	0.0197	0.3447	0.0936	0.0188	0.1124		1,449.0249	1,449.0249	0.0902		1,451.2799
Worker	0.9009	0.7169	6.1928	0.0169	1.9575	0.0121	1.9696	0.5192	0.0112	0.5303		1,684.2155	1,684.2155	0.0512		1,685.4952
Total	1.1218	7.2901	8.2600	0.0305	2.2824	0.0318	2.3142	0.6128	0.0300	0.6427		3,133.2404	3,133.2404	0.1414		3,136.7751

3.6 Paving - 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					
Off-Road	1.2556	12.9191	14.6532	0.0228		0.6777	0.6777		0.6235	0.6235		2,207.2109	2,207.2109	0.7139		2,225.0573
Paving	0.7336					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	1.9892	12.9191	14.6532	0.0228		0.6777	0.6777		0.6235	0.6235		2,207.2109	2,207.2109	0.7139		2,225.0573

Beechwood SP - typical phase (mitigated) - San Luis Obispo County, Winter

3.6 Paving - 2021**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	0.0683	0.0543	0.4692	1.2800e-003	0.1483	9.2000e-004	0.1492	0.0393	8.5000e-004	0.0402		127.5921	127.5921	3.8800e-003		127.6890
Total	0.0683	0.0543	0.4692	1.2800e-003	0.1483	9.2000e-004	0.1492	0.0393	8.5000e-004	0.0402		127.5921	127.5921	3.8800e-003		127.6890

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	0.5609	11.2952	17.2957	0.0228		0.6093	0.6093		0.6093	0.6093	0.0000	2,207.2109	2,207.2109	0.7139		2,225.0573
Paving	0.7336					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	1.2945	11.2952	17.2957	0.0228		0.6093	0.6093		0.6093	0.6093	0.0000	2,207.2109	2,207.2109	0.7139		2,225.0573

Beechwood SP - typical phase (mitigated) - San Luis Obispo County, Winter

3.6 Paving - 2021**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	0.0683	0.0543	0.4692	1.2800e-003	0.1483	9.2000e-004	0.1492	0.0393	8.5000e-004	0.0402		127.5921	127.5921	3.8800e-003		127.6890
Total	0.0683	0.0543	0.4692	1.2800e-003	0.1483	9.2000e-004	0.1492	0.0393	8.5000e-004	0.0402		127.5921	127.5921	3.8800e-003		127.6890

3.7 Architectural Coating - 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					
Archit. Coating	52.0668					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.2189	1.5268	1.8176	2.9700e-003		0.0941	0.0941		0.0941	0.0941		281.4481	281.4481	0.0193		281.9309
Total	52.2857	1.5268	1.8176	2.9700e-003		0.0941	0.0941		0.0941	0.0941		281.4481	281.4481	0.0193		281.9309

Beechwood SP - typical phase (mitigated) - San Luis Obispo County, Winter

3.7 Architectural Coating - 2021**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	0.1820	0.1448	1.2511	3.4200e-003	0.3955	2.4500e-003	0.3979	0.1049	2.2600e-003	0.1071		340.2456	340.2456	0.0103		340.5041
Total	0.1820	0.1448	1.2511	3.4200e-003	0.3955	2.4500e-003	0.3979	0.1049	2.2600e-003	0.1071		340.2456	340.2456	0.0103		340.5041

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	52.0668					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.0594	1.3570	1.8324	2.9700e-003		0.0951	0.0951		0.0951	0.0951	0.0000	281.4481	281.4481	0.0193		281.9309
Total	52.1262	1.3570	1.8324	2.9700e-003		0.0951	0.0951		0.0951	0.0951	0.0000	281.4481	281.4481	0.0193		281.9309

Beechwood SP - typical phase (mitigated) - San Luis Obispo County, Winter

3.7 Architectural Coating - 2021**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	0.1820	0.1448	1.2511	3.4200e-003	0.3955	2.4500e-003	0.3979	0.1049	2.2600e-003	0.1071		340.2456	340.2456	0.0103		340.5041
Total	0.1820	0.1448	1.2511	3.4200e-003	0.3955	2.4500e-003	0.3979	0.1049	2.2600e-003	0.1071		340.2456	340.2456	0.0103		340.5041

4.0 Operational Detail - Mobile**4.1 Mitigation Measures Mobile**

Increase Density

Improve Walkability Design

Improve Pedestrian Network

Provide Traffic Calming Measures

Beechwood SP - typical phase (mitigated) - San Luis Obispo County, Winter

	ROG	NOx	CO	SO2	Fugitive 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	1.7846	7.2926	19.9453	0.0524	4.7865	0.0568	4.8433	1.2790	0.0534	1.3324		5,279.069 4	5,279.069 4	0.2258		5,284.713 1
Unmitigated	1.8469	7.8003	21.4163	0.0577	5.3036	0.0622	5.3657	1.4172	0.0584	1.4755		5,814.696 4	5,814.696 4	0.2434		5,820.780 7

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	81.40	70.29	64.46	196,698	177,520
City Park	5.10	61.43	45.20	38,363	34,623
Condo/Townhouse	111.00	85.05	72.60	258,749	233,521
Other Asphalt Surfaces	0.00	0.00	0.00		
Single Family Housing	690.00	743.25	646.50	1,757,214	1,585,886
Total	887.50	960.02	828.76	2,251,025	2,031,550

4.3 Trip Type Information

Land Use	Miles			Trip %			Trip Purpose %		
	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	13.00	5.00	5.00	35.80	21.00	43.20	86	11	3
City Park	13.00	5.00	5.00	33.00	48.00	19.00	66	28	6
Condo/Townhouse	13.00	5.00	5.00	35.80	21.00	43.20	86	11	3
Other Asphalt Surfaces	13.00	5.00	5.00	0.00	0.00	0.00	0	0	0
Single Family Housing	13.00	5.00	5.00	35.80	21.00	43.20	86	11	3

Beechwood SP - typical phase (mitigated) - San Luis Obispo County, Winter

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Apartments Mid Rise	0.567875	0.030811	0.198391	0.124124	0.028385	0.006896	0.012949	0.019383	0.002368	0.001236	0.005232	0.000797	0.001552
City Park	0.567875	0.030811	0.198391	0.124124	0.028385	0.006896	0.012949	0.019383	0.002368	0.001236	0.005232	0.000797	0.001552
Condo/Townhouse	0.567875	0.030811	0.198391	0.124124	0.028385	0.006896	0.012949	0.019383	0.002368	0.001236	0.005232	0.000797	0.001552
Other Asphalt Surfaces	0.567875	0.030811	0.198391	0.124124	0.028385	0.006896	0.012949	0.019383	0.002368	0.001236	0.005232	0.000797	0.001552
Single Family Housing	0.567875	0.030811	0.198391	0.124124	0.028385	0.006896	0.012949	0.019383	0.002368	0.001236	0.005232	0.000797	0.001552

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Percent of Electricity Use Generated with Renewable Energy

Install Energy Efficient Appliances

	ROG	NOx	CO	SO2	Fugitive 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	0.0709	0.6058	0.2578	3.8700e-003		0.0490	0.0490		0.0490	0.0490		773.3001	773.3001	0.0148	0.0142	777.8954
NaturalGas Unmitigated	0.0709	0.6058	0.2578	3.8700e-003		0.0490	0.0490		0.0490	0.0490		773.3001	773.3001	0.0148	0.0142	777.8954

Beechwood SP - typical phase (mitigated) - San Luis Obispo County, Winter

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	248.797	2.6800e-003	0.0229	9.7600e-003	1.5000e-004		1.8500e-003	1.8500e-003		1.8500e-003	1.8500e-003		29.2702	29.2702	5.6000e-004	5.4000e-004	29.4442
City Park	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
Condo/Townhouse	724.654	7.8100e-003	0.0668	0.0284	4.3000e-004		5.4000e-003	5.4000e-003		5.4000e-003	5.4000e-003		85.2534	85.2534	1.6300e-003	1.5600e-003	85.7600
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
Single Family Housing	5599.6	0.0604	0.5160	0.2196	3.2900e-003		0.0417	0.0417		0.0417	0.0417		658.7764	658.7764	0.0126	0.0121	662.6912
Total		0.0709	0.6058	0.2578	3.8700e-003		0.0490	0.0490		0.0490	0.0490		773.3001	773.3001	0.0148	0.0142	777.8954

Beechwood SP - typical phase (mitigated) - San Luis Obispo County, Winter

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	0.248797	2.6800e-003	0.0229	9.7600e-003	1.5000e-004		1.8500e-003	1.8500e-003		1.8500e-003	1.8500e-003		29.2702	29.2702	5.6000e-004	5.4000e-004	29.4442
City Park	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
Condo/Townhouse	0.724654	7.8100e-003	0.0668	0.0284	4.3000e-004		5.4000e-003	5.4000e-003		5.4000e-003	5.4000e-003		85.2534	85.2534	1.6300e-003	1.5600e-003	85.7600
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
Single Family Housing	5.5996	0.0604	0.5160	0.2196	3.2900e-003		0.0417	0.0417		0.0417	0.0417		658.7764	658.7764	0.0126	0.0121	662.6912
Total		0.0709	0.6058	0.2578	3.8700e-003		0.0490	0.0490		0.0490	0.0490		773.3001	773.3001	0.0148	0.0142	777.8954

6.0 Area Detail**6.1 Mitigation Measures Area**

Beechwood SP - typical phase (mitigated) - San Luis Obispo County, Winter

	ROG	NOx	CO	SO2	Fugitive 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	4.2752	0.0964	8.3516	4.4000e-004		0.0460	0.0460		0.0460	0.0460	0.0000	15.0056	15.0056	0.0145	0.0000	15.3692
Unmitigated	4.2752	0.0964	8.3516	4.4000e-004		0.0460	0.0460		0.0460	0.0460	0.0000	15.0056	15.0056	0.0145	0.0000	15.3692

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	0.5706					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	3.4515					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	0.2531	0.0964	8.3516	4.4000e-004		0.0460	0.0460		0.0460	0.0460		15.0056	15.0056	0.0145		15.3692
Total	4.2752	0.0964	8.3516	4.4000e-004		0.0460	0.0460		0.0460	0.0460	0.0000	15.0056	15.0056	0.0145	0.0000	15.3692

Beechwood SP - typical phase (mitigated) - San Luis Obispo County, Winter

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	0.5706					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	3.4515					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	0.2531	0.0964	8.3516	4.4000e-004		0.0460	0.0460		0.0460	0.0460		15.0056	15.0056	0.0145		15.3692
Total	4.2752	0.0964	8.3516	4.4000e-004		0.0460	0.0460		0.0460	0.0460	0.0000	15.0056	15.0056	0.0145	0.0000	15.3692

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

8.0 Waste Detail**8.1 Mitigation Measures Waste****9.0 Operational Offroad**

Beechwood SP - typical phase (mitigated) - San Luis Obispo County, Winter

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
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10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
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Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type
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User Defined Equipment

Equipment Type	Number
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11.0 Vegetation

Commercial Mixed-Use Emissions (Unmitigated)

Beechwood SP - Retail - San Luis Obispo County, Annual

Beechwood SP - Retail
San Luis Obispo County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Regional Shopping Center	47.00	1000sqft	5.40	47,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	3.2	Precipitation Freq (Days)	44
Climate Zone	4			Operational Year	2022
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MW hr)	268.02	CH4 Intensity (lb/MW hr)	0.04	N2O Intensity (lb/MW hr)	0.006

1.3 User Entered Comments & Non-Default Data

Beechwood SP - Retail - San Luis Obispo County, Annual

Project Characteristics - CO2 and CH4 intensitiy factor updated to match PG&E 2021

Land Use - Lot acreage from project description

Construction Phase - No demo rq'd

Off-road Equipment - no demo

Trips and VMT - No demo

Architectural Coating - VOC limit compliant with SLO APCD Rule 433

Vehicle Trips - Trip rate obtained from TIS Assumption Memo (Central Coast Transportation Consulting, Aug 2018)

Woodstoves -

Consumer Products - all roads

Area Coating - SLOAPCD Rule 433

Energy Use - Intensity updated to meet 2019 Title 24 standards

Land Use Change -

Construction Off-road Equipment Mitigation - Mitigation Measure AIR-1c

Energy Mitigation -

Water Mitigation -

Off-road Equipment -

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Nonresidential_Exterior	250.00	100.00
tblArchitecturalCoating	EF_Nonresidential_Interior	250.00	100.00
tblArchitecturalCoating	EF_Parking	150.00	100.00
tblArchitecturalCoating	EF_Residential_Exterior	250.00	100.00
tblArchitecturalCoating	EF_Residential_Interior	250.00	100.00
tblAreaCoating	Area_EF_Nonresidential_Exterior	250	100
tblAreaCoating	Area_EF_Nonresidential_Interior	250	100
tblAreaCoating	Area_EF_Parking	150	100
tblAreaCoating	Area_EF_Residential_Exterior	250	100

Beechwood SP - Retail - San Luis Obispo County, Annual

tblAreaCoating	Area_EF_Residential_Interior	250	100
tblConstructionPhase	NumDays	20.00	0.00
tblConstructionPhase	PhaseEndDate	2/11/2021	1/14/2021
tblConstructionPhase	PhaseEndDate	1/28/2021	1/1/2021
tblConstructionPhase	PhaseEndDate	3/11/2021	2/11/2021
tblConstructionPhase	PhaseEndDate	1/27/2022	12/30/2021
tblConstructionPhase	PhaseStartDate	1/29/2021	1/1/2021
tblConstructionPhase	PhaseStartDate	1/1/2021	1/2/2021
tblConstructionPhase	PhaseStartDate	2/12/2021	1/15/2021
tblConstructionPhase	PhaseStartDate	3/12/2021	2/12/2021
tblConsumerProducts	ROG_EF_Degreaser	3.542E-07	0
tblEnergyUse	LightingElect	5.25	3.67
tblLandUse	LotAcreage	1.08	5.40
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblProjectCharacteristics	CH4IntensityFactor	0.029	0.04
tblProjectCharacteristics	CO2IntensityFactor	641.35	268.02
tblVehicleTrips	WD_TR	42.70	76.55

2.0 Emissions Summary

Beechwood SP - Retail - San Luis Obispo County, Annual

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	0.2718	2.5491	2.2574	3.9300e-003	0.1790	0.1324	0.3114	0.0896	0.1241	0.2136	0.0000	342.0350	342.0350	0.0796	0.0000	344.0250
2022	0.2316	0.1259	0.1691	2.7000e-004	1.7300e-003	6.5100e-003	8.2400e-003	4.6000e-004	6.0500e-003	6.5100e-003	0.0000	23.9311	23.9311	6.6800e-003	0.0000	24.0981
Maximum	0.2718	2.5491	2.2574	3.9300e-003	0.1790	0.1324	0.3114	0.0896	0.1241	0.2136	0.0000	342.0350	342.0350	0.0796	0.0000	344.0250

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	0.2718	2.5491	2.2574	3.9300e-003	0.0932	0.1324	0.2257	0.0437	0.1241	0.1678	0.0000	342.0346	342.0346	0.0796	0.0000	344.0246
2022	0.2316	0.1259	0.1691	2.7000e-004	1.7300e-003	6.5100e-003	8.2400e-003	4.6000e-004	6.0500e-003	6.5100e-003	0.0000	23.9311	23.9311	6.6800e-003	0.0000	24.0981
Maximum	0.2718	2.5491	2.2574	3.9300e-003	0.0932	0.1324	0.2257	0.0437	0.1241	0.1678	0.0000	342.0346	342.0346	0.0796	0.0000	344.0246

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	47.44	0.00	26.82	50.91	0.00	20.82	0.00	0.00	0.00	0.00	0.00	0.00

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Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	1-1-2021	3-31-2021	0.8410	0.8410
2	4-1-2021	6-30-2021	0.6572	0.6572
3	7-1-2021	9-30-2021	0.6644	0.6644
4	10-1-2021	12-31-2021	0.6575	0.6575
5	1-1-2022	3-31-2022	0.3576	0.3576
		Highest	0.8410	0.8410

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	0.2054	1.0000e-005	7.9000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.5400e-003	1.5400e-003	0.0000	0.0000	1.6400e-003
Energy	6.0000e-004	5.4600e-003	4.5900e-003	3.0000e-005		4.1000e-004	4.1000e-004		4.1000e-004	4.1000e-004	0.0000	57.9976	57.9976	7.8800e-003	1.2700e-003	58.5744
Mobile	0.7940	2.9242	7.4265	0.0189	1.6673	0.0203	1.6876	0.4464	0.0190	0.4654	0.0000	1,731.6813	1,731.6813	0.0773	0.0000	1,733.6138
Waste						0.0000	0.0000		0.0000	0.0000	10.0176	0.0000	10.0176	0.5920	0.0000	24.8182
Water						0.0000	0.0000		0.0000	0.0000	1.1045	3.1981	4.3026	0.1139	2.7500e-003	7.9701
Total	1.0000	2.9297	7.4319	0.0190	1.6673	0.0207	1.6880	0.4464	0.0194	0.4658	11.1221	1,792.8785	1,804.0006	0.7911	4.0200e-003	1,824.9781

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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	0.2054	1.0000e-005	7.9000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.5400e-003	1.5400e-003	0.0000	0.0000	1.6400e-003
Energy	6.0000e-004	5.4600e-003	4.5900e-003	3.0000e-005		4.1000e-004	4.1000e-004		4.1000e-004	4.1000e-004	0.0000	34.5736	34.5736	4.3900e-003	7.5000e-004	34.9067
Mobile	0.7940	2.9242	7.4265	0.0189	1.6673	0.0203	1.6876	0.4464	0.0190	0.4654	0.0000	1,731.6813	1,731.6813	0.0773	0.0000	1,733.6138
Waste						0.0000	0.0000		0.0000	0.0000	10.0176	0.0000	10.0176	0.5920	0.0000	24.8182
Water						0.0000	0.0000		0.0000	0.0000	0.8836	2.7401	3.6236	0.0912	2.2000e-003	6.5596
Total	1.0000	2.9297	7.4319	0.0190	1.6673	0.0207	1.6880	0.4464	0.0194	0.4658	10.9012	1,768.9964	1,779.8976	0.7649	2.9500e-003	1,799.8999

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	1.99	1.33	1.34	3.32	26.62	1.37

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2.3 Vegetation**Vegetation**

	CO2e
Category	MT
Vegetation Land Change	-23.2740
Total	-23.2740

3.0 Construction Detail**Construction Phase**

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/2/2021	1/1/2021	5	0	
2	Site Preparation	Site Preparation	1/1/2021	1/14/2021	5	10	
3	Grading	Grading	1/15/2021	2/11/2021	5	20	
4	Building Construction	Building Construction	2/12/2021	12/30/2021	5	230	
5	Paving	Paving	1/28/2022	2/24/2022	5	20	
6	Architectural Coating	Architectural Coating	2/25/2022	3/24/2022	5	20	

Acres of Grading (Site Preparation Phase): 0**Acres of Grading (Grading Phase): 10****Acres of Paving: 0**

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Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 70,500; Non-Residential Outdoor: 23,500; Striped Parking Area: 0
(Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	0	8.00	81	0.73
Demolition	Excavators	0	8.00	158	0.38
Demolition	Rubber Tired Dozers	0	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	1	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Tractors/Loaders/Backhoes	3	8.00	97	0.37
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
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
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

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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
Demolition	0	0.00	0.00	0.00	13.00	5.00	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	13.00	5.00	20.00	LD_Mix	HDT_Mix	HHDT
Grading	6	15.00	0.00	0.00	13.00	5.00	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	15.00	8.00	0.00	13.00	5.00	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	13.00	5.00	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	3.00	0.00	0.00	13.00	5.00	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Demolition - 2021

Unmitigated Construction On-Site

[illegible]

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3.2 Demolition - 2021

Unmitigated Construction Off-Site

[illegible]

Mitigated Construction On-Site

[illegible]

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3.2 Demolition - 2021**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

3.3 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					0.0903	0.0000	0.0903	0.0497	0.0000	0.0497	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0194	0.2025	0.1058	1.9000e-004		0.0102	0.0102		9.4000e-003	9.4000e-003	0.0000	16.7179	16.7179	5.4100e-003	0.0000	16.8530
Total	0.0194	0.2025	0.1058	1.9000e-004	0.0903	0.0102	0.1006	0.0497	9.4000e-003	0.0591	0.0000	16.7179	16.7179	5.4100e-003	0.0000	16.8530

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3.3 Site Preparation - 2021**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	3.7000e-004	3.2000e-004	2.8100e-003	1.0000e-005	8.7000e-004	1.0000e-005	8.7000e-004	2.3000e-004	1.0000e-005	2.4000e-004	0.0000	0.7002	0.7002	2.0000e-005	0.0000	0.7007
Total	3.7000e-004	3.2000e-004	2.8100e-003	1.0000e-005	8.7000e-004	1.0000e-005	8.7000e-004	2.3000e-004	1.0000e-005	2.4000e-004	0.0000	0.7002	0.7002	2.0000e-005	0.0000	0.7007

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					0.0407	0.0000	0.0407	0.0223	0.0000	0.0223	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0194	0.2025	0.1058	1.9000e-004		0.0102	0.0102		9.4000e-003	9.4000e-003	0.0000	16.7178	16.7178	5.4100e-003	0.0000	16.8530
Total	0.0194	0.2025	0.1058	1.9000e-004	0.0407	0.0102	0.0509	0.0223	9.4000e-003	0.0317	0.0000	16.7178	16.7178	5.4100e-003	0.0000	16.8530

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3.3 Site Preparation - 2021**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	3.7000e-004	3.2000e-004	2.8100e-003	1.0000e-005	8.7000e-004	1.0000e-005	8.7000e-004	2.3000e-004	1.0000e-005	2.4000e-004	0.0000	0.7002	0.7002	2.0000e-005	0.0000	0.7007
Total	3.7000e-004	3.2000e-004	2.8100e-003	1.0000e-005	8.7000e-004	1.0000e-005	8.7000e-004	2.3000e-004	1.0000e-005	2.4000e-004	0.0000	0.7002	0.7002	2.0000e-005	0.0000	0.7007

3.4 Grading - 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					0.0655	0.0000	0.0655	0.0337	0.0000	0.0337	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0229	0.2474	0.1586	3.0000e-004		0.0116	0.0116		0.0107	0.0107	0.0000	26.0537	26.0537	8.4300e-003	0.0000	26.2644
Total	0.0229	0.2474	0.1586	3.0000e-004	0.0655	0.0116	0.0771	0.0337	0.0107	0.0443	0.0000	26.0537	26.0537	8.4300e-003	0.0000	26.2644

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3.4 Grading - 2021**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	6.1000e-004	5.3000e-004	4.6800e-003	1.0000e-005	1.4400e-003	1.0000e-005	1.4500e-003	3.8000e-004	1.0000e-005	3.9000e-004	0.0000	1.1669	1.1669	4.0000e-005	0.0000	1.1678
Total	6.1000e-004	5.3000e-004	4.6800e-003	1.0000e-005	1.4400e-003	1.0000e-005	1.4500e-003	3.8000e-004	1.0000e-005	3.9000e-004	0.0000	1.1669	1.1669	4.0000e-005	0.0000	1.1678

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					0.0295	0.0000	0.0295	0.0152	0.0000	0.0152	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0229	0.2474	0.1586	3.0000e-004		0.0116	0.0116		0.0107	0.0107	0.0000	26.0537	26.0537	8.4300e-003	0.0000	26.2643
Total	0.0229	0.2474	0.1586	3.0000e-004	0.0295	0.0116	0.0411	0.0152	0.0107	0.0258	0.0000	26.0537	26.0537	8.4300e-003	0.0000	26.2643

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3.4 Grading - 2021**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	6.1000e-004	5.3000e-004	4.6800e-003	1.0000e-005	1.4400e-003	1.0000e-005	1.4500e-003	3.8000e-004	1.0000e-005	3.9000e-004	0.0000	1.1669	1.1669	4.0000e-005	0.0000	1.1678
Total	6.1000e-004	5.3000e-004	4.6800e-003	1.0000e-005	1.4400e-003	1.0000e-005	1.4500e-003	3.8000e-004	1.0000e-005	3.9000e-004	0.0000	1.1669	1.1669	4.0000e-005	0.0000	1.1678

3.5 Building Construction - 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					
Off-Road	0.2186	2.0047	1.9062	3.1000e-003		0.1102	0.1102		0.1037	0.1037	0.0000	266.3829	266.3829	0.0643	0.0000	267.9895
Total	0.2186	2.0047	1.9062	3.1000e-003		0.1102	0.1102		0.1037	0.1037	0.0000	266.3829	266.3829	0.0643	0.0000	267.9895

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3.5 Building Construction - 2021**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	2.8000e-003	0.0876	0.0257	1.8000e-004	4.1800e-003	2.5000e-004	4.4300e-003	1.2100e-003	2.4000e-004	1.4500e-003	0.0000	17.5936	17.5936	1.0400e-003	0.0000	17.6196
Worker	7.0300e-003	6.1300e-003	0.0538	1.5000e-004	0.0166	1.1000e-004	0.0167	4.4100e-003	1.0000e-004	4.5100e-003	0.0000	13.4198	13.4198	4.1000e-004	0.0000	13.4300
Total	9.8300e-003	0.0937	0.0794	3.3000e-004	0.0208	3.6000e-004	0.0211	5.6200e-003	3.4000e-004	5.9600e-003	0.0000	31.0134	31.0134	1.4500e-003	0.0000	31.0495

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	0.2186	2.0047	1.9062	3.1000e-003		0.1102	0.1102		0.1037	0.1037	0.0000	266.3826	266.3826	0.0643	0.0000	267.9892
Total	0.2186	2.0047	1.9062	3.1000e-003		0.1102	0.1102		0.1037	0.1037	0.0000	266.3826	266.3826	0.0643	0.0000	267.9892

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3.5 Building Construction - 2021**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	2.8000e-003	0.0876	0.0257	1.8000e-004	4.1800e-003	2.5000e-004	4.4300e-003	1.2100e-003	2.4000e-004	1.4500e-003	0.0000	17.5936	17.5936	1.0400e-003	0.0000	17.6196
Worker	7.0300e-003	6.1300e-003	0.0538	1.5000e-004	0.0166	1.1000e-004	0.0167	4.4100e-003	1.0000e-004	4.5100e-003	0.0000	13.4198	13.4198	4.1000e-004	0.0000	13.4300
Total	9.8300e-003	0.0937	0.0794	3.3000e-004	0.0208	3.6000e-004	0.0211	5.6200e-003	3.4000e-004	5.9600e-003	0.0000	31.0134	31.0134	1.4500e-003	0.0000	31.0495

3.6 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	0.0110	0.1113	0.1458	2.3000e-004		5.6800e-003	5.6800e-003		5.2200e-003	5.2200e-003	0.0000	20.0276	20.0276	6.4800e-003	0.0000	20.1895
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	0.0110	0.1113	0.1458	2.3000e-004		5.6800e-003	5.6800e-003		5.2200e-003	5.2200e-003	0.0000	20.0276	20.0276	6.4800e-003	0.0000	20.1895

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3.6 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	5.7000e-004	4.8000e-004	4.2800e-003	1.0000e-005	1.4400e-003	1.0000e-005	1.4500e-003	3.8000e-004	1.0000e-005	3.9000e-004	0.0000	1.1252	1.1252	3.0000e-005	0.0000	1.1260
Total	5.7000e-004	4.8000e-004	4.2800e-003	1.0000e-005	1.4400e-003	1.0000e-005	1.4500e-003	3.8000e-004	1.0000e-005	3.9000e-004	0.0000	1.1252	1.1252	3.0000e-005	0.0000	1.1260

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	0.0110	0.1113	0.1458	2.3000e-004		5.6800e-003	5.6800e-003		5.2200e-003	5.2200e-003	0.0000	20.0275	20.0275	6.4800e-003	0.0000	20.1895
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	0.0110	0.1113	0.1458	2.3000e-004		5.6800e-003	5.6800e-003		5.2200e-003	5.2200e-003	0.0000	20.0275	20.0275	6.4800e-003	0.0000	20.1895

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3.6 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	5.7000e-004	4.8000e-004	4.2800e-003	1.0000e-005	1.4400e-003	1.0000e-005	1.4500e-003	3.8000e-004	1.0000e-005	3.9000e-004	0.0000	1.1252	1.1252	3.0000e-005	0.0000	1.1260
Total	5.7000e-004	4.8000e-004	4.2800e-003	1.0000e-005	1.4400e-003	1.0000e-005	1.4500e-003	3.8000e-004	1.0000e-005	3.9000e-004	0.0000	1.1252	1.1252	3.0000e-005	0.0000	1.1260

3.7 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	0.2179					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.0500e-003	0.0141	0.0181	3.0000e-005		8.2000e-004	8.2000e-004		8.2000e-004	8.2000e-004	0.0000	2.5533	2.5533	1.7000e-004	0.0000	2.5574
Total	0.2199	0.0141	0.0181	3.0000e-005		8.2000e-004	8.2000e-004		8.2000e-004	8.2000e-004	0.0000	2.5533	2.5533	1.7000e-004	0.0000	2.5574

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3.7 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	1.1000e-004	1.0000e-004	8.6000e-004	0.0000	2.9000e-004	0.0000	2.9000e-004	8.0000e-005	0.0000	8.0000e-005	0.0000	0.2251	0.2251	1.0000e-005	0.0000	0.2252
Total	1.1000e-004	1.0000e-004	8.6000e-004	0.0000	2.9000e-004	0.0000	2.9000e-004	8.0000e-005	0.0000	8.0000e-005	0.0000	0.2251	0.2251	1.0000e-005	0.0000	0.2252

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	0.2179					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.0500e-003	0.0141	0.0181	3.0000e-005		8.2000e-004	8.2000e-004		8.2000e-004	8.2000e-004	0.0000	2.5533	2.5533	1.7000e-004	0.0000	2.5574
Total	0.2199	0.0141	0.0181	3.0000e-005		8.2000e-004	8.2000e-004		8.2000e-004	8.2000e-004	0.0000	2.5533	2.5533	1.7000e-004	0.0000	2.5574

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3.7 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	1.1000e-004	1.0000e-004	8.6000e-004	0.0000	2.9000e-004	0.0000	2.9000e-004	8.0000e-005	0.0000	8.0000e-005	0.0000	0.2251	0.2251	1.0000e-005	0.0000	0.2252
Total	1.1000e-004	1.0000e-004	8.6000e-004	0.0000	2.9000e-004	0.0000	2.9000e-004	8.0000e-005	0.0000	8.0000e-005	0.0000	0.2251	0.2251	1.0000e-005	0.0000	0.2252

4.0 Operational Detail - Mobile**4.1 Mitigation Measures Mobile**

Beechwood SP - Retail - San Luis Obispo County, Annual

	ROG	NOx	CO	SO2	Fugitive 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	0.7940	2.9242	7.4265	0.0189	1.6673	0.0203	1.6876	0.4464	0.0190	0.4654	0.0000	1,731.681 3	1,731.681 3	0.0773	0.0000	1,733.613 8
Unmitigated	0.7940	2.9242	7.4265	0.0189	1.6673	0.0203	1.6876	0.4464	0.0190	0.4654	0.0000	1,731.681 3	1,731.681 3	0.0773	0.0000	1,733.613 8

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Regional Shopping Center	3,597.85	2,348.59	1186.28	4,439,813	4,439,813
Total	3,597.85	2,348.59	1,186.28	4,439,813	4,439,813

4.3 Trip Type Information

Land Use	Miles			Trip %			Trip Purpose %		
	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
Regional Shopping Center	13.00	5.00	5.00	16.30	64.70	19.00	54	35	11

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Regional Shopping Center	0.575581	0.029595	0.198288	0.120539	0.026172	0.006482	0.012911	0.019591	0.002354	0.001214	0.005068	0.000784	0.001422

5.0 Energy Detail

Historical Energy Use: N

Beechwood SP - Retail - San Luis Obispo County, Annual

5.1 Mitigation Measures Energy

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	28.6294	28.6294	4.2700e-003	6.4000e-004	28.9272
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	52.0534	52.0534	7.7700e-003	1.1700e-003	52.5949
NaturalGas Mitigated	6.0000e-004	5.4600e-003	4.5900e-003	3.0000e-005		4.1000e-004	4.1000e-004		4.1000e-004	4.1000e-004	0.0000	5.9442	5.9442	1.1000e-004	1.1000e-004	5.9795
NaturalGas Unmitigated	6.0000e-004	5.4600e-003	4.5900e-003	3.0000e-005		4.1000e-004	4.1000e-004		4.1000e-004	4.1000e-004	0.0000	5.9442	5.9442	1.1000e-004	1.1000e-004	5.9795

Beechwood SP - Retail - San Luis Obispo County, Annual

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					
Regional Shopping Center	111390	6.0000e-004	5.4600e-003	4.5900e-003	3.0000e-005		4.1000e-004	4.1000e-004		4.1000e-004	4.1000e-004	0.0000	5.9442	5.9442	1.1000e-004	1.1000e-004	5.9795
Total		6.0000e-004	5.4600e-003	4.5900e-003	3.0000e-005		4.1000e-004	4.1000e-004		4.1000e-004	4.1000e-004	0.0000	5.9442	5.9442	1.1000e-004	1.1000e-004	5.9795

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					
Regional Shopping Center	111390	6.0000e-004	5.4600e-003	4.5900e-003	3.0000e-005		4.1000e-004	4.1000e-004		4.1000e-004	4.1000e-004	0.0000	5.9442	5.9442	1.1000e-004	1.1000e-004	5.9795
Total		6.0000e-004	5.4600e-003	4.5900e-003	3.0000e-005		4.1000e-004	4.1000e-004		4.1000e-004	4.1000e-004	0.0000	5.9442	5.9442	1.1000e-004	1.1000e-004	5.9795

Beechwood SP - Retail - San Luis Obispo County, Annual

5.3 Energy by Land Use - Electricity**Unmitigated**

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Regional Shopping Center	428170	52.0534	7.7700e-003	1.1700e-003	52.5949
Total		52.0534	7.7700e-003	1.1700e-003	52.5949

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Regional Shopping Center	235494	28.6294	4.2700e-003	6.4000e-004	28.9272
Total		28.6294	4.2700e-003	6.4000e-004	28.9272

6.0 Area Detail**6.1 Mitigation Measures Area**

Beechwood SP - Retail - San Luis Obispo County, Annual

	ROG	NOx	CO	SO2	Fugitive 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	0.2054	1.0000e-005	7.9000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.5400e-003	1.5400e-003	0.0000	0.0000	1.6400e-003
Unmitigated	0.2054	1.0000e-005	7.9000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.5400e-003	1.5400e-003	0.0000	0.0000	1.6400e-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	0.0218					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.1836					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	7.0000e-005	1.0000e-005	7.9000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.5400e-003	1.5400e-003	0.0000	0.0000	1.6400e-003
Total	0.2054	1.0000e-005	7.9000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.5400e-003	1.5400e-003	0.0000	0.0000	1.6400e-003

Beechwood SP - Retail - San Luis Obispo County, Annual

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	0.0218					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.1836					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	7.0000e-005	1.0000e-005	7.9000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.5400e-003	1.5400e-003	0.0000	0.0000	1.6400e-003
Total	0.2054	1.0000e-005	7.9000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.5400e-003	1.5400e-003	0.0000	0.0000	1.6400e-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

Beechwood SP - Retail - San Luis Obispo County, Annual

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	3.6236	0.0912	2.2000e-003	6.5596
Unmitigated	4.3026	0.1139	2.7500e-003	7.9701

7.2 Water by Land Use

Unmitigated

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Regional Shopping Center	3.48141 / 2.13377	4.3026	0.1139	2.7500e-003	7.9701
Total		4.3026	0.1139	2.7500e-003	7.9701

Beechwood SP - Retail - San Luis Obispo County, Annual

7.2 Water by Land Use**Mitigated**

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Regional Shopping Center	2.78513 / 2.13377	3.6236	0.0912	2.2000e-003	6.5596
Total		3.6236	0.0912	2.2000e-003	6.5596

8.0 Waste Detail**8.1 Mitigation Measures Waste****Category/Year**

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	10.0176	0.5920	0.0000	24.8182
Unmitigated	10.0176	0.5920	0.0000	24.8182

Beechwood SP - Retail - San Luis Obispo County, Annual

8.2 Waste by Land Use**Unmitigated**

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Regional Shopping Center	49.35	10.0176	0.5920	0.0000	24.8182
Total		10.0176	0.5920	0.0000	24.8182

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Regional Shopping Center	49.35	10.0176	0.5920	0.0000	24.8182
Total		10.0176	0.5920	0.0000	24.8182

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
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Beechwood SP - Retail - San Luis Obispo County, Annual

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
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Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type
----------------	--------	----------------	-----------------	---------------	-----------

User Defined Equipment

Equipment Type	Number
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11.0 Vegetation

Beechwood SP - Retail - San Luis Obispo County, Annual

	Total CO2	CH4	N2O	CO2e
Category	MT			
Unmitigated	-23.2740	0.0000	0.0000	-23.2740

11.1 Vegetation Land Change

Vegetation Type

	Initial/Final	Total CO2	CH4	N2O	CO2e
	Acres	MT			
Grassland	5.4 / 0	-23.2740	0.0000	0.0000	-23.2740
Total		-23.2740	0.0000	0.0000	-23.2740

Beechwood SP - Retail - San Luis Obispo County, Winter

Beechwood SP - Retail
San Luis Obispo County, Winter**1.0 Project Characteristics**

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Regional Shopping Center	47.00	1000sqft	5.40	47,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	3.2	Precipitation Freq (Days)	44
Climate Zone	4			Operational Year	2022
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MW hr)	268.02	CH4 Intensity (lb/MW hr)	0.04	N2O Intensity (lb/MW hr)	0.006

1.3 User Entered Comments & Non-Default Data

Beechwood SP - Retail - San Luis Obispo County, Winter

Project Characteristics - CO2 and CH4 intensitiy factor updated to match PG&E 2021

Land Use - Lot acreage from project description

Construction Phase - No demo rq'd

Off-road Equipment - no demo

Trips and VMT - No demo

Architectural Coating - VOC limit compliant with SLO APCD Rule 433

Vehicle Trips - Trip rate obtained from TIS Assumption Memo (Central Coast Transportation Consulting, Aug 2018)

Woodstoves -

Consumer Products - all roads

Area Coating - SLOAPCD Rule 433

Energy Use - Intensity updated to meet 2019 Title 24 standards

Land Use Change -

Construction Off-road Equipment Mitigation - Mitigation Measure AIR-1c

Energy Mitigation -

Water Mitigation -

Off-road Equipment -

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Nonresidential_Exterior	250.00	100.00
tblArchitecturalCoating	EF_Nonresidential_Interior	250.00	100.00
tblArchitecturalCoating	EF_Parking	150.00	100.00
tblArchitecturalCoating	EF_Residential_Exterior	250.00	100.00
tblArchitecturalCoating	EF_Residential_Interior	250.00	100.00
tblAreaCoating	Area_EF_Nonresidential_Exterior	250	100
tblAreaCoating	Area_EF_Nonresidential_Interior	250	100
tblAreaCoating	Area_EF_Parking	150	100
tblAreaCoating	Area_EF_Residential_Exterior	250	100

Beechwood SP - Retail - San Luis Obispo County, Winter

tblAreaCoating	Area_EF_Residential_Interior	250	100
tblConstructionPhase	NumDays	20.00	0.00
tblConstructionPhase	PhaseEndDate	2/11/2021	1/14/2021
tblConstructionPhase	PhaseEndDate	1/28/2021	1/1/2021
tblConstructionPhase	PhaseEndDate	3/11/2021	2/11/2021
tblConstructionPhase	PhaseEndDate	1/27/2022	12/30/2021
tblConstructionPhase	PhaseStartDate	1/29/2021	1/1/2021
tblConstructionPhase	PhaseStartDate	1/1/2021	1/2/2021
tblConstructionPhase	PhaseStartDate	2/12/2021	1/15/2021
tblConstructionPhase	PhaseStartDate	3/12/2021	2/12/2021
tblConsumerProducts	ROG_EF_Degreaser	3.542E-07	0
tblEnergyUse	LightingElect	5.25	3.67
tblLandUse	LotAcreage	1.08	5.40
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblProjectCharacteristics	CH4IntensityFactor	0.029	0.04
tblProjectCharacteristics	CO2IntensityFactor	641.35	268.02
tblVehicleTrips	WD_TR	42.70	76.55

2.0 Emissions Summary

Beechwood SP - Retail - San Luis Obispo County, Winter

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	3.9701	40.5623	21.7173	0.0396	18.2442	2.0456	20.2898	9.9779	1.8819	11.8598	0.0000	3,838.767 4	3,838.767 4	1.1967	0.0000	3,868.684 1
2022	22.0019	11.1737	15.0100	0.0240	0.1483	0.5688	0.7171	0.0393	0.5233	0.5626	0.0000	2,330.692 0	2,330.692 0	0.7175	0.0000	2,348.628 9
Maximum	22.0019	40.5623	21.7173	0.0396	18.2442	2.0456	20.2898	9.9779	1.8819	11.8598	0.0000	3,838.767 4	3,838.767 4	1.1967	0.0000	3,868.684 1

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	3.9701	40.5623	21.7173	0.0396	8.3078	2.0456	10.3533	4.5160	1.8819	6.3979	0.0000	3,838.767 4	3,838.767 4	1.1967	0.0000	3,868.684 1
2022	22.0019	11.1737	15.0100	0.0240	0.1483	0.5688	0.7171	0.0393	0.5233	0.5626	0.0000	2,330.692 0	2,330.692 0	0.7175	0.0000	2,348.628 9
Maximum	22.0019	40.5623	21.7173	0.0396	8.3078	2.0456	10.3533	4.5160	1.8819	6.3979	0.0000	3,838.767 4	3,838.767 4	1.1967	0.0000	3,868.684 1

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.00	0.00	0.00	0.00	54.02	0.00	47.30	54.52	0.00	43.97	0.00	0.00	0.00	0.00	0.00	0.00

Beechwood SP - Retail - San Luis Obispo County, Winter

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	1.1256	4.0000e-005	4.8100e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005		0.0103	0.0103	3.0000e-005		0.0110
Energy	3.2900e-003	0.0299	0.0251	1.8000e-004		2.2700e-003	2.2700e-003		2.2700e-003	2.2700e-003		35.9033	35.9033	6.9000e-004	6.6000e-004	36.1167
Mobile	5.2298	18.7502	49.1473	0.1206	11.0036	0.1317	11.1353	2.9395	0.1235	3.0630		12,162.1184	12,162.1184	0.5587		12,176.0853
Total	6.3587	18.7802	49.1772	0.1207	11.0036	0.1340	11.1376	2.9395	0.1258	3.0653		12,198.0320	12,198.0320	0.5594	6.6000e-004	12,212.2129

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	1.1256	4.0000e-005	4.8100e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005		0.0103	0.0103	3.0000e-005		0.0110
Energy	3.2900e-003	0.0299	0.0251	1.8000e-004		2.2700e-003	2.2700e-003		2.2700e-003	2.2700e-003		35.9033	35.9033	6.9000e-004	6.6000e-004	36.1167
Mobile	5.2298	18.7502	49.1473	0.1206	11.0036	0.1317	11.1353	2.9395	0.1235	3.0630		12,162.1184	12,162.1184	0.5587		12,176.0853
Total	6.3587	18.7802	49.1772	0.1207	11.0036	0.1340	11.1376	2.9395	0.1258	3.0653		12,198.0320	12,198.0320	0.5594	6.6000e-004	12,212.2129

Beechwood SP - Retail - San Luis Obispo County, Winter

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	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	Demolition	Demolition	1/2/2021	1/1/2021	5	0	
2	Site Preparation	Site Preparation	1/1/2021	1/14/2021	5	10	
3	Grading	Grading	1/15/2021	2/11/2021	5	20	
4	Building Construction	Building Construction	2/12/2021	12/30/2021	5	230	
5	Paving	Paving	1/28/2022	2/24/2022	5	20	
6	Architectural Coating	Architectural Coating	2/25/2022	3/24/2022	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 10

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 70,500; Non-Residential Outdoor: 23,500; Striped Parking Area: 0
(Architectural Coating – sqft)

OffRoad Equipment

Beechwood SP - Retail - San Luis Obispo County, Winter

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	0	8.00	81	0.73
Demolition	Excavators	0	8.00	158	0.38
Demolition	Rubber Tired Dozers	0	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Grading	Excavators	1	8.00	158	0.38
Grading	Graders	1	8.00	187	0.41
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Grading	Tractors/Loaders/Backhoes	3	8.00	97	0.37
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
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
Architectural Coating	Air Compressors	1	6.00	78	0.48

Trips and VMT

Beechwood SP - Retail - San Luis Obispo County, Winter

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
Demolition	0	0.00	0.00	0.00	13.00	5.00	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	13.00	5.00	20.00	LD_Mix	HDT_Mix	HHDT
Grading	6	15.00	0.00	0.00	13.00	5.00	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	15.00	8.00	0.00	13.00	5.00	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	13.00	5.00	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	3.00	0.00	0.00	13.00	5.00	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Water Exposed Area

3.2 Demolition - 2021

Unmitigated Construction On-Site

[illegible]

Beechwood SP - Retail - San Luis Obispo County, Winter

3.2 Demolition - 2021

Unmitigated Construction Off-Site

[illegible]

Mitigated Construction On-Site

[illegible]

Beechwood SP - Retail - San Luis Obispo County, Winter

3.2 Demolition - 2021**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	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

3.3 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					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	3.8882	40.4971	21.1543	0.0380		2.0445	2.0445		1.8809	1.8809		3,685.6569	3,685.6569	1.1920		3,715.4573
Total	3.8882	40.4971	21.1543	0.0380	18.0663	2.0445	20.1107	9.9307	1.8809	11.8116		3,685.6569	3,685.6569	1.1920		3,715.4573

Beechwood SP - Retail - San Luis Obispo County, Winter

3.3 Site Preparation - 2021**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	0.0819	0.0652	0.5630	1.5400e-003	0.1780	1.1000e-003	0.1791	0.0472	1.0200e-003	0.0482		153.1105	153.1105	4.6500e-003		153.2268
Total	0.0819	0.0652	0.5630	1.5400e-003	0.1780	1.1000e-003	0.1791	0.0472	1.0200e-003	0.0482		153.1105	153.1105	4.6500e-003		153.2268

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					8.1298	0.0000	8.1298	4.4688	0.0000	4.4688			0.0000			0.0000
Off-Road	3.8882	40.4971	21.1543	0.0380		2.0445	2.0445		1.8809	1.8809	0.0000	3,685.6569	3,685.6569	1.1920		3,715.4573
Total	3.8882	40.4971	21.1543	0.0380	8.1298	2.0445	10.1743	4.4688	1.8809	6.3497	0.0000	3,685.6569	3,685.6569	1.1920		3,715.4573

Beechwood SP - Retail - San Luis Obispo County, Winter

3.3 Site Preparation - 2021**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	0.0819	0.0652	0.5630	1.5400e-003	0.1780	1.1000e-003	0.1791	0.0472	1.0200e-003	0.0482		153.1105	153.1105	4.6500e-003		153.2268
Total	0.0819	0.0652	0.5630	1.5400e-003	0.1780	1.1000e-003	0.1791	0.0472	1.0200e-003	0.0482		153.1105	153.1105	4.6500e-003		153.2268

3.4 Grading - 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					6.5523	0.0000	6.5523	3.3675	0.0000	3.3675			0.0000			0.0000
Off-Road	2.2903	24.7367	15.8575	0.0296		1.1599	1.1599		1.0671	1.0671		2,871.9285	2,871.9285	0.9288		2,895,1495
Total	2.2903	24.7367	15.8575	0.0296	6.5523	1.1599	7.7123	3.3675	1.0671	4.4346		2,871.9285	2,871.9285	0.9288		2,895,1495

Beechwood SP - Retail - San Luis Obispo County, Winter

3.4 Grading - 2021**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	0.0683	0.0543	0.4692	1.2800e-003	0.1483	9.2000e-004	0.1492	0.0393	8.5000e-004	0.0402		127.5921	127.5921	3.8800e-003		127.6890
Total	0.0683	0.0543	0.4692	1.2800e-003	0.1483	9.2000e-004	0.1492	0.0393	8.5000e-004	0.0402		127.5921	127.5921	3.8800e-003		127.6890

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					2.9486	0.0000	2.9486	1.5154	0.0000	1.5154			0.0000			0.0000
Off-Road	2.2903	24.7367	15.8575	0.0296		1.1599	1.1599		1.0671	1.0671	0.0000	2,871.9285	2,871.9285	0.9288		2,895,1495
Total	2.2903	24.7367	15.8575	0.0296	2.9486	1.1599	4.1085	1.5154	1.0671	2.5825	0.0000	2,871.9285	2,871.9285	0.9288		2,895,1495

Beechwood SP - Retail - San Luis Obispo County, Winter

3.4 Grading - 2021**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	0.0683	0.0543	0.4692	1.2800e-003	0.1483	9.2000e-004	0.1492	0.0393	8.5000e-004	0.0402		127.5921	127.5921	3.8800e-003		127.6890
Total	0.0683	0.0543	0.4692	1.2800e-003	0.1483	9.2000e-004	0.1492	0.0393	8.5000e-004	0.0402		127.5921	127.5921	3.8800e-003		127.6890

3.5 Building Construction - 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					
Off-Road	1.9009	17.4321	16.5752	0.0269		0.9586	0.9586		0.9013	0.9013		2,553.3639	2,553.3639	0.6160		2,568.7643
Total	1.9009	17.4321	16.5752	0.0269		0.9586	0.9586		0.9013	0.9013		2,553.3639	2,553.3639	0.6160		2,568.7643

Beechwood SP - Retail - San Luis Obispo County, Winter

3.5 Building Construction - 2021**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	0.0253	0.7512	0.2363	1.5500e-003	0.0371	2.2500e-003	0.0394	0.0107	2.1500e-003	0.0129		165.6028	165.6028	0.0103		165.8606
Worker	0.0683	0.0543	0.4692	1.2800e-003	0.1483	9.2000e-004	0.1492	0.0393	8.5000e-004	0.0402		127.5921	127.5921	3.8800e-003		127.6890
Total	0.0935	0.8055	0.7054	2.8300e-003	0.1854	3.1700e-003	0.1886	0.0500	3.0000e-003	0.0530		293.1949	293.1949	0.0142		293.5496

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	1.9009	17.4321	16.5752	0.0269		0.9586	0.9586		0.9013	0.9013	0.0000	2,553.3639	2,553.3639	0.6160		2,568.7643
Total	1.9009	17.4321	16.5752	0.0269		0.9586	0.9586		0.9013	0.9013	0.0000	2,553.3639	2,553.3639	0.6160		2,568.7643

Beechwood SP - Retail - San Luis Obispo County, Winter

3.5 Building Construction - 2021**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	0.0253	0.7512	0.2363	1.5500e-003	0.0371	2.2500e-003	0.0394	0.0107	2.1500e-003	0.0129		165.6028	165.6028	0.0103		165.8606
Worker	0.0683	0.0543	0.4692	1.2800e-003	0.1483	9.2000e-004	0.1492	0.0393	8.5000e-004	0.0402		127.5921	127.5921	3.8800e-003		127.6890
Total	0.0935	0.8055	0.7054	2.8300e-003	0.1854	3.1700e-003	0.1886	0.0500	3.0000e-003	0.0530		293.1949	293.1949	0.0142		293.5496

3.6 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	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	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

Beechwood SP - Retail - San Luis Obispo County, Winter

3.6 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	0.0642	0.0488	0.4295	1.2300e-003	0.1483	8.9000e-004	0.1492	0.0393	8.2000e-004	0.0402		123.0317	123.0317	3.4700e-003		123.1185
Total	0.0642	0.0488	0.4295	1.2300e-003	0.1483	8.9000e-004	0.1492	0.0393	8.2000e-004	0.0402		123.0317	123.0317	3.4700e-003		123.1185

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	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	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

Beechwood SP - Retail - San Luis Obispo County, Winter

3.6 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	0.0642	0.0488	0.4295	1.2300e-003	0.1483	8.9000e-004	0.1492	0.0393	8.2000e-004	0.0402		123.0317	123.0317	3.4700e-003		123.1185
Total	0.0642	0.0488	0.4295	1.2300e-003	0.1483	8.9000e-004	0.1492	0.0393	8.2000e-004	0.0402		123.0317	123.0317	3.4700e-003		123.1185

3.7 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	21.7845					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	21.9890	1.4085	1.8136	2.9700e-003		0.0817	0.0817		0.0817	0.0817		281.4481	281.4481	0.0183		281.9062

Beechwood SP - Retail - San Luis Obispo County, Winter

3.7 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	0.0128	9.7700e-003	0.0859	2.5000e-004	0.0297	1.8000e-004	0.0298	7.8700e-003	1.6000e-004	8.0300e-003		24.6063	24.6063	6.9000e-004		24.6237
Total	0.0128	9.7700e-003	0.0859	2.5000e-004	0.0297	1.8000e-004	0.0298	7.8700e-003	1.6000e-004	8.0300e-003		24.6063	24.6063	6.9000e-004		24.6237

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	21.7845					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	21.9890	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

Beechwood SP - Retail - San Luis Obispo County, Winter

3.7 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	0.0128	9.7700e-003	0.0859	2.5000e-004	0.0297	1.8000e-004	0.0298	7.8700e-003	1.6000e-004	8.0300e-003		24.6063	24.6063	6.9000e-004		24.6237
Total	0.0128	9.7700e-003	0.0859	2.5000e-004	0.0297	1.8000e-004	0.0298	7.8700e-003	1.6000e-004	8.0300e-003		24.6063	24.6063	6.9000e-004		24.6237

4.0 Operational Detail - Mobile**4.1 Mitigation Measures Mobile**

Beechwood SP - Retail - San Luis Obispo County, Winter

	ROG	NOx	CO	SO2	Fugitive 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	5.2298	18.7502	49.1473	0.1206	11.0036	0.1317	11.1353	2.9395	0.1235	3.0630		12,162.1184	12,162.1184	0.5587		12,176.0853
Unmitigated	5.2298	18.7502	49.1473	0.1206	11.0036	0.1317	11.1353	2.9395	0.1235	3.0630		12,162.1184	12,162.1184	0.5587		12,176.0853

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Regional Shopping Center	3,597.85	2,348.59	1186.28	4,439,813	4,439,813
Total	3,597.85	2,348.59	1,186.28	4,439,813	4,439,813

4.3 Trip Type Information

Land Use	Miles			Trip %			Trip Purpose %		
	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
Regional Shopping Center	13.00	5.00	5.00	16.30	64.70	19.00	54	35	11

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Regional Shopping Center	0.575581	0.029595	0.198288	0.120539	0.026172	0.006482	0.012911	0.019591	0.002354	0.001214	0.005068	0.000784	0.001422

5.0 Energy Detail

Historical Energy Use: N

Beechwood SP - Retail - San Luis Obispo County, Winter

5.1 Mitigation Measures Energy

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	3.2900e-003	0.0299	0.0251	1.8000e-004		2.2700e-003	2.2700e-003		2.2700e-003	2.2700e-003		35.9033	35.9033	6.9000e-004	6.6000e-004	36.1167
NaturalGas Unmitigated	3.2900e-003	0.0299	0.0251	1.8000e-004		2.2700e-003	2.2700e-003		2.2700e-003	2.2700e-003		35.9033	35.9033	6.9000e-004	6.6000e-004	36.1167

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					
Regional Shopping Center	305.178	3.2900e-003	0.0299	0.0251	1.8000e-004		2.2700e-003	2.2700e-003		2.2700e-003	2.2700e-003		35.9033	35.9033	6.9000e-004	6.6000e-004	36.1167
Total		3.2900e-003	0.0299	0.0251	1.8000e-004		2.2700e-003	2.2700e-003		2.2700e-003	2.2700e-003		35.9033	35.9033	6.9000e-004	6.6000e-004	36.1167

Beechwood SP - Retail - San Luis Obispo County, Winter

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					
Regional Shopping Center	0.305178	3.2900e-003	0.0299	0.0251	1.8000e-004		2.2700e-003	2.2700e-003		2.2700e-003	2.2700e-003		35.9033	35.9033	6.9000e-004	6.6000e-004	36.1167
Total		3.2900e-003	0.0299	0.0251	1.8000e-004		2.2700e-003	2.2700e-003		2.2700e-003	2.2700e-003		35.9033	35.9033	6.9000e-004	6.6000e-004	36.1167

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	1.1256	4.0000e-005	4.8100e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005		0.0103	0.0103	3.0000e-005		0.0110
Unmitigated	1.1256	4.0000e-005	4.8100e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005		0.0103	0.0103	3.0000e-005		0.0110

Beechwood SP - Retail - San Luis Obispo County, Winter

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	0.1194					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.0058					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	4.5000e-004	4.0000e-005	4.8100e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005		0.0103	0.0103	3.0000e-005		0.0110
Total	1.1256	4.0000e-005	4.8100e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005		0.0103	0.0103	3.0000e-005		0.0110

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	0.1194					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.0058					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	4.5000e-004	4.0000e-005	4.8100e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005		0.0103	0.0103	3.0000e-005		0.0110
Total	1.1256	4.0000e-005	4.8100e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005		0.0103	0.0103	3.0000e-005		0.0110

7.0 Water Detail

Beechwood SP - Retail - San Luis Obispo County, Winter

7.1 Mitigation Measures Water

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

Install Low Flow Toilet

Install Low Flow Shower

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
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10.0 Stationary Equipment**Fire Pumps and Emergency Generators**

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
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Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type
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User Defined Equipment

Equipment Type	Number
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11.0 Vegetation

Commercial Mixed-Use Emissions (Mitigated)

Beechwood SP - Retail (mitigated) 20181219 - San Luis Obispo County, Annual

Beechwood SP - Retail (mitigated) 20181219
San Luis Obispo County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Regional Shopping Center	47.00	1000sqft	5.40	47,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	3.2	Precipitation Freq (Days)	44
Climate Zone	4			Operational Year	2022
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MW hr)	268.02	CH4 Intensity (lb/MW hr)	0.04	N2O Intensity (lb/MW hr)	0.006

1.3 User Entered Comments & Non-Default Data

Beechwood SP - Retail (mitigated) 20181219 - San Luis Obispo County, Annual

Project Characteristics - CO2 and CH4 intensity factor updated to match PG&E 2021

Land Use - Lot acreage from PD

Construction Phase - No demo

Off-road Equipment - No Demo

Trips and VMT - no demo

Architectural Coating - MM AIR 7

Vehicle Trips - weekday trip rate from TIS

Land Use Change -

Construction Off-road Equipment Mitigation - MM AIR 3 and 4

Energy Mitigation -

Energy Use - Intensity updated to meet 2019 Title 24 standards

Mobile Land Use Mitigation -

Water Mitigation -

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Nonresidential_Exterior	250.00	50.00
tblArchitecturalCoating	EF_Nonresidential_Interior	250.00	50.00
tblArchitecturalCoating	EF_Parking	150.00	50.00
tblArchitecturalCoating	EF_Residential_Exterior	250.00	50.00
tblArchitecturalCoating	EF_Residential_Interior	250.00	50.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00

Beechwood SP - Retail (mitigated) 20181219 - San Luis Obispo County, Annual

tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	10.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstructionPhase	NumDays	20.00	0.00
tblConstructionPhase	PhaseEndDate	1/28/2021	1/1/2021
tblConstructionPhase	PhaseEndDate	3/11/2021	2/11/2021
tblConstructionPhase	PhaseEndDate	2/11/2021	1/14/2021
tblConstructionPhase	PhaseStartDate	1/1/2021	1/2/2021
tblConstructionPhase	PhaseStartDate	2/12/2021	1/15/2021
tblConstructionPhase	PhaseStartDate	1/29/2021	1/1/2021
tblEnergyUse	LightingElect	5.25	3.68
tblLandUse	LotAcreage	1.08	5.40

Beechwood SP - Retail (mitigated) 20181219 - San Luis Obispo County, Annual

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblProjectCharacteristics	CH4IntensityFactor	0.029	0.04
tblProjectCharacteristics	CO2IntensityFactor	641.35	268.02
tblVehicleTrips	WD_TR	42.70	76.55

2.0 Emissions Summary

Beechwood SP - Retail (mitigated) 20181219 - San Luis Obispo County, Annual

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	0.2529	2.3758	2.0934	3.6500e-003	0.1772	0.1233	0.3005	0.0891	0.1155	0.2046	0.0000	317.4674	317.4674	0.0742	0.0000	319.3217
2022	0.1397	0.2816	0.3306	5.6000e-004	3.4500e-003	0.0142	0.0177	9.2000e-004	0.0133	0.0142	0.0000	48.4574	48.4574	0.0121	0.0000	48.7592
Maximum	0.2529	2.3758	2.0934	3.6500e-003	0.1772	0.1233	0.3005	0.0891	0.1155	0.2046	0.0000	317.4674	317.4674	0.0742	0.0000	319.3217

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	0.0930	1.8314	2.2708	3.6500e-003	0.0915	0.1080	0.1995	0.0433	0.1079	0.1512	0.0000	317.4671	317.4671	0.0742	0.0000	319.3214
2022	0.1230	0.2696	0.3723	5.6000e-004	3.4500e-003	0.0157	0.0191	9.2000e-004	0.0157	0.0166	0.0000	48.4574	48.4574	0.0121	0.0000	48.7591
Maximum	0.1230	1.8314	2.2708	3.6500e-003	0.0915	0.1080	0.1995	0.0433	0.1079	0.1512	0.0000	317.4671	317.4671	0.0742	0.0000	319.3214

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	44.97	20.94	-9.04	0.00	47.44	10.11	31.30	50.91	4.04	23.32	0.00	0.00	0.00	0.00	0.00	0.00

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Quarter	Start Date	End Date	Maximum Unmitigated ROG + NOX (tons/quarter)	Maximum Mitigated ROG + NOX (tons/quarter)
1	1-1-2021	3-31-2021	0.6387	0.3705
2	4-1-2021	6-30-2021	0.6572	0.5131
3	7-1-2021	9-30-2021	0.6644	0.5187
4	10-1-2021	12-31-2021	0.6648	0.5191
5	1-1-2022	3-31-2022	0.4239	0.3949
		Highest	0.6648	0.5191

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	0.2381	1.0000e-005	7.9000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.5400e-003	1.5400e-003	0.0000	0.0000	1.6400e-003
Energy	6.0000e-004	5.4600e-003	4.5900e-003	3.0000e-005		4.1000e-004	4.1000e-004		4.1000e-004	4.1000e-004	0.0000	58.0262	58.0262	7.8900e-003	1.2700e-003	58.6033
Mobile	0.7940	2.9242	7.4265	0.0189	1.6673	0.0203	1.6876	0.4464	0.0190	0.4654	0.0000	1,731.6813	1,731.6813	0.0773	0.0000	1,733.6138
Waste						0.0000	0.0000		0.0000	0.0000	10.0176	0.0000	10.0176	0.5920	0.0000	24.8182
Water						0.0000	0.0000		0.0000	0.0000	1.1045	3.1981	4.3026	0.1139	2.7500e-003	7.9701
Total	1.0327	2.9297	7.4319	0.0190	1.6673	0.0207	1.6880	0.4464	0.0194	0.4658	11.1221	1,792.9071	1,804.0292	0.7911	4.0200e-003	1,825.0070

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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	0.2381	1.0000e-005	7.9000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.5400e-003	1.5400e-003	0.0000	0.0000	1.6400e-003
Energy	6.0000e-004	5.4600e-003	4.5900e-003	3.0000e-005		4.1000e-004	4.1000e-004		4.1000e-004	4.1000e-004	0.0000	34.5893	34.5893	4.3900e-003	7.5000e-004	34.9226
Mobile	0.7758	2.7774	6.9920	0.0173	1.5048	0.0187	1.5234	0.4029	0.0175	0.4204	0.0000	1,579.3713	1,579.3713	0.0725	0.0000	1,581.1840
Waste						0.0000	0.0000		0.0000	0.0000	10.0176	0.0000	10.0176	0.5920	0.0000	24.8182
Water						0.0000	0.0000		0.0000	0.0000	0.8836	2.7401	3.6236	0.0912	2.2000e-003	6.5596
Total	1.0145	2.7829	6.9974	0.0173	1.5048	0.0191	1.5239	0.4029	0.0179	0.4208	10.9012	1,616.7022	1,627.6034	0.7601	2.9500e-003	1,647.4859

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	1.76	5.01	5.85	8.81	9.75	7.74	9.73	9.75	7.72	9.67	1.99	9.83	9.78	3.93	26.62	9.73

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2.3 Vegetation**Vegetation**

	CO2e
Category	MT
Vegetation Land Change	-23.2740
Total	-23.2740

3.0 Construction Detail**Construction Phase**

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/2/2021	1/1/2021	5	0	
2	Site Preparation	Site Preparation	1/1/2021	1/14/2021	5	10	
3	Grading	Grading	1/15/2021	2/11/2021	5	20	
4	Building Construction	Building Construction	3/12/2021	1/27/2022	5	230	
5	Paving	Paving	1/28/2022	2/24/2022	5	20	
6	Architectural Coating	Architectural Coating	2/25/2022	3/24/2022	5	20	

Acres of Grading (Site Preparation Phase): 0**Acres of Grading (Grading Phase): 10****Acres of Paving: 0**

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Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 70,500; Non-Residential Outdoor: 23,500; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48
Demolition	Excavators	0	8.00	158	0.38
Demolition	Concrete/Industrial Saws	0	8.00	81	0.73
Grading	Excavators	1	8.00	158	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
Paving	Pavers	2	8.00	130	0.42
Paving	Rollers	2	8.00	80	0.38
Demolition	Rubber Tired Dozers	0	8.00	247	0.40
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Grading	Graders	1	8.00	187	0.41
Grading	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Paving	Paving Equipment	2	8.00	132	0.36
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Building Construction	Welders	1	8.00	46	0.45

Trips and VMT

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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
Demolition	0	0.00	0.00	0.00	13.00	5.00	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	13.00	5.00	20.00	LD_Mix	HDT_Mix	HHDT
Grading	6	15.00	0.00	0.00	13.00	5.00	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	15.00	8.00	0.00	13.00	5.00	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	13.00	5.00	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	3.00	0.00	0.00	13.00	5.00	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

3.2 Demolition - 2021

Unmitigated Construction On-Site

[illegible]

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3.2 Demolition - 2021

Unmitigated Construction Off-Site

[illegible]

Mitigated Construction On-Site

[illegible]

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3.2 Demolition - 2021**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

3.3 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					0.0903	0.0000	0.0903	0.0497	0.0000	0.0497	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0194	0.2025	0.1058	1.9000e-004		0.0102	0.0102		9.4000e-003	9.4000e-003	0.0000	16.7179	16.7179	5.4100e-003	0.0000	16.8530
Total	0.0194	0.2025	0.1058	1.9000e-004	0.0903	0.0102	0.1006	0.0497	9.4000e-003	0.0591	0.0000	16.7179	16.7179	5.4100e-003	0.0000	16.8530

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3.3 Site Preparation - 2021**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	3.7000e-004	3.2000e-004	2.8100e-003	1.0000e-005	8.7000e-004	1.0000e-005	8.7000e-004	2.3000e-004	1.0000e-005	2.4000e-004	0.0000	0.7002	0.7002	2.0000e-005	0.0000	0.7007
Total	3.7000e-004	3.2000e-004	2.8100e-003	1.0000e-005	8.7000e-004	1.0000e-005	8.7000e-004	2.3000e-004	1.0000e-005	2.4000e-004	0.0000	0.7002	0.7002	2.0000e-005	0.0000	0.7007

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					0.0407	0.0000	0.0407	0.0223	0.0000	0.0223	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	4.6600e-003	0.0953	0.1148	1.9000e-004		4.7300e-003	4.7300e-003		4.7300e-003	4.7300e-003	0.0000	16.7178	16.7178	5.4100e-003	0.0000	16.8530
Total	4.6600e-003	0.0953	0.1148	1.9000e-004	0.0407	4.7300e-003	0.0454	0.0223	4.7300e-003	0.0271	0.0000	16.7178	16.7178	5.4100e-003	0.0000	16.8530

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3.3 Site Preparation - 2021**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	3.7000e-004	3.2000e-004	2.8100e-003	1.0000e-005	8.7000e-004	1.0000e-005	8.7000e-004	2.3000e-004	1.0000e-005	2.4000e-004	0.0000	0.7002	0.7002	2.0000e-005	0.0000	0.7007
Total	3.7000e-004	3.2000e-004	2.8100e-003	1.0000e-005	8.7000e-004	1.0000e-005	8.7000e-004	2.3000e-004	1.0000e-005	2.4000e-004	0.0000	0.7002	0.7002	2.0000e-005	0.0000	0.7007

3.4 Grading - 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					0.0655	0.0000	0.0655	0.0337	0.0000	0.0337	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	0.0229	0.2474	0.1586	3.0000e-004		0.0116	0.0116		0.0107	0.0107	0.0000	26.0537	26.0537	8.4300e-003	0.0000	26.2644
Total	0.0229	0.2474	0.1586	3.0000e-004	0.0655	0.0116	0.0771	0.0337	0.0107	0.0443	0.0000	26.0537	26.0537	8.4300e-003	0.0000	26.2644

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3.4 Grading - 2021**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	6.1000e-004	5.3000e-004	4.6800e-003	1.0000e-005	1.4400e-003	1.0000e-005	1.4500e-003	3.8000e-004	1.0000e-005	3.9000e-004	0.0000	1.1669	1.1669	4.0000e-005	0.0000	1.1678
Total	6.1000e-004	5.3000e-004	4.6800e-003	1.0000e-005	1.4400e-003	1.0000e-005	1.4500e-003	3.8000e-004	1.0000e-005	3.9000e-004	0.0000	1.1669	1.1669	4.0000e-005	0.0000	1.1678

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					0.0295	0.0000	0.0295	0.0152	0.0000	0.0152	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	7.2600e-003	0.1484	0.1899	3.0000e-004		7.5600e-003	7.5600e-003		7.5600e-003	7.5600e-003	0.0000	26.0537	26.0537	8.4300e-003	0.0000	26.2643
Total	7.2600e-003	0.1484	0.1899	3.0000e-004	0.0295	7.5600e-003	0.0371	0.0152	7.5600e-003	0.0227	0.0000	26.0537	26.0537	8.4300e-003	0.0000	26.2643

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3.4 Grading - 2021**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	6.1000e-004	5.3000e-004	4.6800e-003	1.0000e-005	1.4400e-003	1.0000e-005	1.4500e-003	3.8000e-004	1.0000e-005	3.9000e-004	0.0000	1.1669	1.1669	4.0000e-005	0.0000	1.1678
Total	6.1000e-004	5.3000e-004	4.6800e-003	1.0000e-005	1.4400e-003	1.0000e-005	1.4500e-003	3.8000e-004	1.0000e-005	3.9000e-004	0.0000	1.1669	1.1669	4.0000e-005	0.0000	1.1678

3.5 Building Construction - 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					
Off-Road	0.2006	1.8391	1.7487	2.8400e-003		0.1011	0.1011		0.0951	0.0951	0.0000	244.3773	244.3773	0.0590	0.0000	245.8513
Total	0.2006	1.8391	1.7487	2.8400e-003		0.1011	0.1011		0.0951	0.0951	0.0000	244.3773	244.3773	0.0590	0.0000	245.8513

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3.5 Building Construction - 2021**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	2.5700e-003	0.0803	0.0235	1.7000e-004	3.8300e-003	2.3000e-004	4.0600e-003	1.1100e-003	2.2000e-004	1.3300e-003	0.0000	16.1403	16.1403	9.5000e-004	0.0000	16.1641
Worker	6.4500e-003	5.6200e-003	0.0493	1.4000e-004	0.0152	1.0000e-004	0.0153	4.0500e-003	9.0000e-005	4.1400e-003	0.0000	12.3112	12.3112	3.7000e-004	0.0000	12.3205
Total	9.0200e-003	0.0860	0.0729	3.1000e-004	0.0191	3.3000e-004	0.0194	5.1600e-003	3.1000e-004	5.4700e-003	0.0000	28.4515	28.4515	1.3200e-003	0.0000	28.4846

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	0.0711	1.5009	1.8857	2.8400e-003		0.0953	0.0953		0.0953	0.0953	0.0000	244.3770	244.3770	0.0590	0.0000	245.8510
Total	0.0711	1.5009	1.8857	2.8400e-003		0.0953	0.0953		0.0953	0.0953	0.0000	244.3770	244.3770	0.0590	0.0000	245.8510

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3.5 Building Construction - 2021**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	2.5700e-003	0.0803	0.0235	1.7000e-004	3.8300e-003	2.3000e-004	4.0600e-003	1.1100e-003	2.2000e-004	1.3300e-003	0.0000	16.1403	16.1403	9.5000e-004	0.0000	16.1641
Worker	6.4500e-003	5.6200e-003	0.0493	1.4000e-004	0.0152	1.0000e-004	0.0153	4.0500e-003	9.0000e-005	4.1400e-003	0.0000	12.3112	12.3112	3.7000e-004	0.0000	12.3205
Total	9.0200e-003	0.0860	0.0729	3.1000e-004	0.0191	3.3000e-004	0.0194	5.1600e-003	3.1000e-004	5.4700e-003	0.0000	28.4515	28.4515	1.3200e-003	0.0000	28.4846

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	0.0162	0.1484	0.1555	2.6000e-004		7.6900e-003	7.6900e-003		7.2300e-003	7.2300e-003	0.0000	22.0139	22.0139	5.2700e-003	0.0000	22.1458
Total	0.0162	0.1484	0.1555	2.6000e-004		7.6900e-003	7.6900e-003		7.2300e-003	7.2300e-003	0.0000	22.0139	22.0139	5.2700e-003	0.0000	22.1458

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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	2.1000e-004	6.8700e-003	1.9600e-003	1.0000e-005	3.5000e-004	2.0000e-005	3.6000e-004	1.0000e-004	2.0000e-005	1.2000e-004	0.0000	1.4435	1.4435	8.0000e-005	0.0000	1.4456
Worker	5.5000e-004	4.6000e-004	4.0700e-003	1.0000e-005	1.3700e-003	1.0000e-005	1.3800e-003	3.6000e-004	1.0000e-005	3.7000e-004	0.0000	1.0690	1.0690	3.0000e-005	0.0000	1.0697
Total	7.6000e-004	7.3300e-003	6.0300e-003	2.0000e-005	1.7200e-003	3.0000e-005	1.7400e-003	4.6000e-004	3.0000e-005	4.9000e-004	0.0000	2.5125	2.5125	1.1000e-004	0.0000	2.5153

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	6.4000e-003	0.1352	0.1698	2.6000e-004		8.5800e-003	8.5800e-003		8.5800e-003	8.5800e-003	0.0000	22.0139	22.0139	5.2700e-003	0.0000	22.1457
Total	6.4000e-003	0.1352	0.1698	2.6000e-004		8.5800e-003	8.5800e-003		8.5800e-003	8.5800e-003	0.0000	22.0139	22.0139	5.2700e-003	0.0000	22.1457

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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	2.1000e-004	6.8700e-003	1.9600e-003	1.0000e-005	3.5000e-004	2.0000e-005	3.6000e-004	1.0000e-004	2.0000e-005	1.2000e-004	0.0000	1.4435	1.4435	8.0000e-005	0.0000	1.4456
Worker	5.5000e-004	4.6000e-004	4.0700e-003	1.0000e-005	1.3700e-003	1.0000e-005	1.3800e-003	3.6000e-004	1.0000e-005	3.7000e-004	0.0000	1.0690	1.0690	3.0000e-005	0.0000	1.0697
Total	7.6000e-004	7.3300e-003	6.0300e-003	2.0000e-005	1.7200e-003	3.0000e-005	1.7400e-003	4.6000e-004	3.0000e-005	4.9000e-004	0.0000	2.5125	2.5125	1.1000e-004	0.0000	2.5153

3.6 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	0.0110	0.1113	0.1458	2.3000e-004		5.6800e-003	5.6800e-003		5.2200e-003	5.2200e-003	0.0000	20.0276	20.0276	6.4800e-003	0.0000	20.1895
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	0.0110	0.1113	0.1458	2.3000e-004		5.6800e-003	5.6800e-003		5.2200e-003	5.2200e-003	0.0000	20.0276	20.0276	6.4800e-003	0.0000	20.1895

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3.6 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	5.7000e-004	4.8000e-004	4.2800e-003	1.0000e-005	1.4400e-003	1.0000e-005	1.4500e-003	3.8000e-004	1.0000e-005	3.9000e-004	0.0000	1.1252	1.1252	3.0000e-005	0.0000	1.1260
Total	5.7000e-004	4.8000e-004	4.2800e-003	1.0000e-005	1.4400e-003	1.0000e-005	1.4500e-003	3.8000e-004	1.0000e-005	3.9000e-004	0.0000	1.1252	1.1252	3.0000e-005	0.0000	1.1260

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	5.6100e-003	0.1130	0.1730	2.3000e-004		6.0900e-003	6.0900e-003		6.0900e-003	6.0900e-003	0.0000	20.0275	20.0275	6.4800e-003	0.0000	20.1895
Paving	0.0000					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Total	5.6100e-003	0.1130	0.1730	2.3000e-004		6.0900e-003	6.0900e-003		6.0900e-003	6.0900e-003	0.0000	20.0275	20.0275	6.4800e-003	0.0000	20.1895

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3.6 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	5.7000e-004	4.8000e-004	4.2800e-003	1.0000e-005	1.4400e-003	1.0000e-005	1.4500e-003	3.8000e-004	1.0000e-005	3.9000e-004	0.0000	1.1252	1.1252	3.0000e-005	0.0000	1.1260
Total	5.7000e-004	4.8000e-004	4.2800e-003	1.0000e-005	1.4400e-003	1.0000e-005	1.4500e-003	3.8000e-004	1.0000e-005	3.9000e-004	0.0000	1.1252	1.1252	3.0000e-005	0.0000	1.1260

3.7 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	0.1089					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	2.0500e-003	0.0141	0.0181	3.0000e-005		8.2000e-004	8.2000e-004		8.2000e-004	8.2000e-004	0.0000	2.5533	2.5533	1.7000e-004	0.0000	2.5574
Total	0.1110	0.0141	0.0181	3.0000e-005		8.2000e-004	8.2000e-004		8.2000e-004	8.2000e-004	0.0000	2.5533	2.5533	1.7000e-004	0.0000	2.5574

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3.7 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	1.1000e-004	1.0000e-004	8.6000e-004	0.0000	2.9000e-004	0.0000	2.9000e-004	8.0000e-005	0.0000	8.0000e-005	0.0000	0.2251	0.2251	1.0000e-005	0.0000	0.2252
Total	1.1000e-004	1.0000e-004	8.6000e-004	0.0000	2.9000e-004	0.0000	2.9000e-004	8.0000e-005	0.0000	8.0000e-005	0.0000	0.2251	0.2251	1.0000e-005	0.0000	0.2252

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	0.1089					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Off-Road	5.9000e-004	0.0136	0.0183	3.0000e-005		9.5000e-004	9.5000e-004		9.5000e-004	9.5000e-004	0.0000	2.5533	2.5533	1.7000e-004	0.0000	2.5574
Total	0.1095	0.0136	0.0183	3.0000e-005		9.5000e-004	9.5000e-004		9.5000e-004	9.5000e-004	0.0000	2.5533	2.5533	1.7000e-004	0.0000	2.5574

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3.7 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	1.1000e-004	1.0000e-004	8.6000e-004	0.0000	2.9000e-004	0.0000	2.9000e-004	8.0000e-005	0.0000	8.0000e-005	0.0000	0.2251	0.2251	1.0000e-005	0.0000	0.2252
Total	1.1000e-004	1.0000e-004	8.6000e-004	0.0000	2.9000e-004	0.0000	2.9000e-004	8.0000e-005	0.0000	8.0000e-005	0.0000	0.2251	0.2251	1.0000e-005	0.0000	0.2252

4.0 Operational Detail - Mobile**4.1 Mitigation Measures Mobile**

Increase Density

Improve Walkability Design

Improve Pedestrian Network

Provide Traffic Calming Measures

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	ROG	NOx	CO	SO2	Fugitive 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	0.7758	2.7774	6.9920	0.0173	1.5048	0.0187	1.5234	0.4029	0.0175	0.4204	0.0000	1,579.371 3	1,579.371 3	0.0725	0.0000	1,581.184 0
Unmitigated	0.7940	2.9242	7.4265	0.0189	1.6673	0.0203	1.6876	0.4464	0.0190	0.4654	0.0000	1,731.681 3	1,731.681 3	0.0773	0.0000	1,733.613 8

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Regional Shopping Center	3,597.85	2,348.59	1186.28	4,439,813	4,006,931
Total	3,597.85	2,348.59	1,186.28	4,439,813	4,006,931

4.3 Trip Type Information

Land Use	Miles			Trip %			Trip Purpose %		
	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
Regional Shopping Center	13.00	5.00	5.00	16.30	64.70	19.00	54	35	11

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Regional Shopping Center	0.575581	0.029595	0.198288	0.120539	0.026172	0.006482	0.012911	0.019591	0.002354	0.001214	0.005068	0.000784	0.001422

5.0 Energy Detail

Historical Energy Use: N

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5.1 Mitigation Measures Energy

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	28.6451	28.6451	4.2800e-003	6.4000e-004	28.9431
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	52.0820	52.0820	7.7700e-003	1.1700e-003	52.6238
NaturalGas Mitigated	6.0000e-004	5.4600e-003	4.5900e-003	3.0000e-005		4.1000e-004	4.1000e-004		4.1000e-004	4.1000e-004	0.0000	5.9442	5.9442	1.1000e-004	1.1000e-004	5.9795
NaturalGas Unmitigated	6.0000e-004	5.4600e-003	4.5900e-003	3.0000e-005		4.1000e-004	4.1000e-004		4.1000e-004	4.1000e-004	0.0000	5.9442	5.9442	1.1000e-004	1.1000e-004	5.9795

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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					
Regional Shopping Center	111390	6.0000e-004	5.4600e-003	4.5900e-003	3.0000e-005		4.1000e-004	4.1000e-004		4.1000e-004	4.1000e-004	0.0000	5.9442	5.9442	1.1000e-004	1.1000e-004	5.9795
Total		6.0000e-004	5.4600e-003	4.5900e-003	3.0000e-005		4.1000e-004	4.1000e-004		4.1000e-004	4.1000e-004	0.0000	5.9442	5.9442	1.1000e-004	1.1000e-004	5.9795

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					
Regional Shopping Center	111390	6.0000e-004	5.4600e-003	4.5900e-003	3.0000e-005		4.1000e-004	4.1000e-004		4.1000e-004	4.1000e-004	0.0000	5.9442	5.9442	1.1000e-004	1.1000e-004	5.9795
Total		6.0000e-004	5.4600e-003	4.5900e-003	3.0000e-005		4.1000e-004	4.1000e-004		4.1000e-004	4.1000e-004	0.0000	5.9442	5.9442	1.1000e-004	1.1000e-004	5.9795

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5.3 Energy by Land Use - Electricity**Unmitigated**

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Regional Shopping Center	428405	52.0820	7.7700e-003	1.1700e-003	52.6238
Total		52.0820	7.7700e-003	1.1700e-003	52.6238

Mitigated

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Regional Shopping Center	235623	28.6451	4.2800e-003	6.4000e-004	28.9431
Total		28.6451	4.2800e-003	6.4000e-004	28.9431

6.0 Area Detail**6.1 Mitigation Measures Area**

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	ROG	NOx	CO	SO2	Fugitive 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	0.2381	1.0000e-005	7.9000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.5400e-003	1.5400e-003	0.0000	0.0000	1.6400e-003
Unmitigated	0.2381	1.0000e-005	7.9000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.5400e-003	1.5400e-003	0.0000	0.0000	1.6400e-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	0.0545					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.1836					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	7.0000e-005	1.0000e-005	7.9000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.5400e-003	1.5400e-003	0.0000	0.0000	1.6400e-003
Total	0.2381	1.0000e-005	7.9000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.5400e-003	1.5400e-003	0.0000	0.0000	1.6400e-003

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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	0.0545					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	0.1836					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Landscaping	7.0000e-005	1.0000e-005	7.9000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.5400e-003	1.5400e-003	0.0000	0.0000	1.6400e-003
Total	0.2381	1.0000e-005	7.9000e-004	0.0000		0.0000	0.0000		0.0000	0.0000	0.0000	1.5400e-003	1.5400e-003	0.0000	0.0000	1.6400e-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

Beechwood SP - Retail (mitigated) 20181219 - San Luis Obispo County, Annual

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	3.6236	0.0912	2.2000e-003	6.5596
Unmitigated	4.3026	0.1139	2.7500e-003	7.9701

7.2 Water by Land Use**Unmitigated**

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Regional Shopping Center	3.48141 / 2.13377	4.3026	0.1139	2.7500e-003	7.9701
Total		4.3026	0.1139	2.7500e-003	7.9701

Beechwood SP - Retail (mitigated) 20181219 - San Luis Obispo County, Annual

7.2 Water by Land Use**Mitigated**

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Regional Shopping Center	2.78513 / 2.13377	3.6236	0.0912	2.2000e-003	6.5596
Total		3.6236	0.0912	2.2000e-003	6.5596

8.0 Waste Detail**8.1 Mitigation Measures Waste****Category/Year**

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	10.0176	0.5920	0.0000	24.8182
Unmitigated	10.0176	0.5920	0.0000	24.8182

Beechwood SP - Retail (mitigated) 20181219 - San Luis Obispo County, Annual

8.2 Waste by Land Use**Unmitigated**

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Regional Shopping Center	49.35	10.0176	0.5920	0.0000	24.8182
Total		10.0176	0.5920	0.0000	24.8182

Mitigated

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Regional Shopping Center	49.35	10.0176	0.5920	0.0000	24.8182
Total		10.0176	0.5920	0.0000	24.8182

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
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Beechwood SP - Retail (mitigated) 20181219 - San Luis Obispo County, Annual

10.0 Stationary Equipment

Fire Pumps and Emergency Generators

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
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Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type
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User Defined Equipment

Equipment Type	Number
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11.0 Vegetation

Beechwood SP - Retail (mitigated) 20181219 - San Luis Obispo County, Annual

	Total CO2	CH4	N2O	CO2e
Category	MT			
Unmitigated	-23.2740	0.0000	0.0000	-23.2740

11.1 Vegetation Land Change**Vegetation Type**

	Initial/Final	Total CO2	CH4	N2O	CO2e
	Acres	MT			
Grassland	5.4 / 0	-23.2740	0.0000	0.0000	-23.2740
Total		-23.2740	0.0000	0.0000	-23.2740

Beechwood SP - Retail (mitigated) 20181219 - San Luis Obispo County, Winter

Beechwood SP - Retail (mitigated) 20181219**San Luis Obispo County, Winter****1.0 Project Characteristics**

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Regional Shopping Center	47.00	1000sqft	5.40	47,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	3.2	Precipitation Freq (Days)	44
Climate Zone	4			Operational Year	2022
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MW hr)	268.02	CH4 Intensity (lb/MW hr)	0.04	N2O Intensity (lb/MW hr)	0.006

1.3 User Entered Comments & Non-Default Data

Beechwood SP - Retail (mitigated) 20181219 - San Luis Obispo County, Winter

Project Characteristics - CO2 and CH4 intensity factor updated to match PG&E 2021

Land Use - Lot acreage from PD

Construction Phase - No demo

Off-road Equipment - No Demo

Trips and VMT - no demo

Architectural Coating - MM AIR 7

Vehicle Trips - weekday trip rate from TIS

Land Use Change -

Construction Off-road Equipment Mitigation - MM AIR 3 and 4

Energy Mitigation -

Energy Use - Intensity updated to meet 2019 Title 24 standards

Mobile Land Use Mitigation -

Water Mitigation -

Table Name	Column Name	Default Value	New Value
tblArchitecturalCoating	EF_Nonresidential_Exterior	250.00	50.00
tblArchitecturalCoating	EF_Nonresidential_Interior	250.00	50.00
tblArchitecturalCoating	EF_Parking	150.00	50.00
tblArchitecturalCoating	EF_Residential_Exterior	250.00	50.00
tblArchitecturalCoating	EF_Residential_Interior	250.00	50.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	3.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00

Beechwood SP - Retail (mitigated) 20181219 - San Luis Obispo County, Winter

tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	4.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	10.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	2.00
tblConstEquipMitigation	NumberOfEquipmentMitigated	0.00	1.00
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstEquipMitigation	Tier	No Change	Tier 3
tblConstructionPhase	NumDays	20.00	0.00
tblConstructionPhase	PhaseEndDate	1/28/2021	1/1/2021
tblConstructionPhase	PhaseEndDate	3/11/2021	2/11/2021
tblConstructionPhase	PhaseEndDate	2/11/2021	1/14/2021
tblConstructionPhase	PhaseStartDate	1/1/2021	1/2/2021
tblConstructionPhase	PhaseStartDate	2/12/2021	1/15/2021
tblConstructionPhase	PhaseStartDate	1/29/2021	1/1/2021
tblEnergyUse	LightingElect	5.25	3.68
tblLandUse	LotAcreage	1.08	5.40

Beechwood SP - Retail (mitigated) 20181219 - San Luis Obispo County, Winter

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblProjectCharacteristics	CH4IntensityFactor	0.029	0.04
tblProjectCharacteristics	CO2IntensityFactor	641.35	268.02
tblVehicleTrips	WD_TR	42.70	76.55

2.0 Emissions Summary

Beechwood SP - Retail (mitigated) 20181219 - San Luis Obispo County, Winter

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	3.9701	40.5623	21.7173	0.0396	18.2442	2.0456	20.2898	9.9779	1.8819	11.8598	0.0000	3,838.767 4	3,838.767 4	1.1967	0.0000	3,868.684 1
2022	11.1096	16.3783	17.0113	0.0297	0.1854	0.8119	0.9973	0.0500	0.7639	0.8139	0.0000	2,841.792 8	2,841.792 8	0.7175	0.0000	2,857.432 9
Maximum	11.1096	40.5623	21.7173	0.0396	18.2442	2.0456	20.2898	9.9779	1.8819	11.8598	0.0000	3,838.767 4	3,838.767 4	1.1967	0.0000	3,868.684 1

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	1.0131	19.1308	23.5230	0.0396	8.3078	0.9473	9.2550	4.5160	0.9472	5.4632	0.0000	3,838.767 4	3,838.767 4	1.1967	0.0000	3,868.684 1
2022	10.9645	14.9888	18.5216	0.0297	0.1854	0.9064	1.0919	0.0500	0.9063	0.9563	0.0000	2,841.792 8	2,841.792 8	0.7175	0.0000	2,857.432 9
Maximum	10.9645	19.1308	23.5230	0.0396	8.3078	0.9473	9.2550	4.5160	0.9472	5.4632	0.0000	3,838.767 4	3,838.767 4	1.1967	0.0000	3,868.684 1

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio- CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	20.57	40.08	-8.56	0.00	53.92	35.13	51.39	54.47	29.95	49.35	0.00	0.00	0.00	0.00	0.00	0.00

Beechwood SP - Retail (mitigated) 20181219 - San Luis Obispo County, Winter

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	1.3047	4.0000e-005	4.8100e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005		0.0103	0.0103	3.0000e-005		0.0110
Energy	3.2900e-003	0.0299	0.0251	1.8000e-004		2.2700e-003	2.2700e-003		2.2700e-003	2.2700e-003		35.9033	35.9033	6.9000e-004	6.6000e-004	36.1167
Mobile	5.2298	18.7502	49.1473	0.1206	11.0036	0.1317	11.1353	2.9395	0.1235	3.0630		12,162.1184	12,162.1184	0.5587		12,176.0853
Total	6.5377	18.7802	49.1772	0.1207	11.0036	0.1340	11.1376	2.9395	0.1258	3.0653		12,198.0320	12,198.0320	0.5594	6.6000e-004	12,212.2129

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	1.3047	4.0000e-005	4.8100e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005		0.0103	0.0103	3.0000e-005		0.0110
Energy	3.2900e-003	0.0299	0.0251	1.8000e-004		2.2700e-003	2.2700e-003		2.2700e-003	2.2700e-003		35.9033	35.9033	6.9000e-004	6.6000e-004	36.1167
Mobile	5.1128	17.8063	46.3694	0.1099	9.9308	0.1214	10.0521	2.6529	0.1138	2.7667		11,088.3221	11,088.3221	0.5248		11,101.4430
Total	6.4207	17.8362	46.3993	0.1101	9.9308	0.1237	10.0544	2.6529	0.1161	2.7690		11,124.2357	11,124.2357	0.5256	6.6000e-004	11,137.5706

Beechwood SP - Retail (mitigated) 20181219 - San Luis Obispo County, Winter

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	1.79	5.03	5.65	8.81	9.75	7.69	9.73	9.75	7.69	9.67	0.00	8.80	8.80	6.05	0.00	8.80

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/2/2021	1/1/2021	5	0	
2	Site Preparation	Site Preparation	1/1/2021	1/14/2021	5	10	
3	Grading	Grading	1/15/2021	2/11/2021	5	20	
4	Building Construction	Building Construction	3/12/2021	1/27/2022	5	230	
5	Paving	Paving	1/28/2022	2/24/2022	5	20	
6	Architectural Coating	Architectural Coating	2/25/2022	3/24/2022	5	20	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 10

Acres of Paving: 0

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 70,500; Non-Residential Outdoor: 23,500; Striped Parking Area: 0
(Architectural Coating – sqft)

OffRoad Equipment

Beechwood SP - Retail (mitigated) 20181219 - San Luis Obispo County, Winter

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Architectural Coating	Air Compressors	1	6.00	78	0.48
Demolition	Excavators	0	8.00	158	0.38
Demolition	Concrete/Industrial Saws	0	8.00	81	0.73
Grading	Excavators	1	8.00	158	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
Paving	Pavers	2	8.00	130	0.42
Paving	Rollers	2	8.00	80	0.38
Demolition	Rubber Tired Dozers	0	8.00	247	0.40
Grading	Rubber Tired Dozers	1	8.00	247	0.40
Building Construction	Tractors/Loaders/Backhoes	3	7.00	97	0.37
Grading	Graders	1	8.00	187	0.41
Grading	Tractors/Loaders/Backhoes	3	8.00	97	0.37
Paving	Paving Equipment	2	8.00	132	0.36
Site Preparation	Tractors/Loaders/Backhoes	4	8.00	97	0.37
Site Preparation	Rubber Tired Dozers	3	8.00	247	0.40
Building Construction	Welders	1	8.00	46	0.45

Trips and VMT

Beechwood SP - Retail (mitigated) 20181219 - San Luis Obispo County, Winter

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
Demolition	0	0.00	0.00	0.00	13.00	5.00	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	7	18.00	0.00	0.00	13.00	5.00	20.00	LD_Mix	HDT_Mix	HHDT
Grading	6	15.00	0.00	0.00	13.00	5.00	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	9	15.00	8.00	0.00	13.00	5.00	20.00	LD_Mix	HDT_Mix	HHDT
Paving	6	15.00	0.00	0.00	13.00	5.00	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	1	3.00	0.00	0.00	13.00	5.00	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

Use Cleaner Engines for Construction Equipment

Water Exposed Area

3.2 Demolition - 2021

Unmitigated Construction On-Site

[illegible]

Beechwood SP - Retail (mitigated) 20181219 - San Luis Obispo County, Winter

3.2 Demolition - 2021

Unmitigated Construction Off-Site

[illegible]

Mitigated Construction On-Site

[illegible]

Beechwood SP - Retail (mitigated) 20181219 - San Luis Obispo County, Winter

3.2 Demolition - 2021**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	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

3.3 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					18.0663	0.0000	18.0663	9.9307	0.0000	9.9307			0.0000			0.0000
Off-Road	3.8882	40.4971	21.1543	0.0380		2.0445	2.0445		1.8809	1.8809		3,685.6569	3,685.6569	1.1920		3,715.4573
Total	3.8882	40.4971	21.1543	0.0380	18.0663	2.0445	20.1107	9.9307	1.8809	11.8116		3,685.6569	3,685.6569	1.1920		3,715.4573

Beechwood SP - Retail (mitigated) 20181219 - San Luis Obispo County, Winter

3.3 Site Preparation - 2021**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	0.0819	0.0652	0.5630	1.5400e-003	0.1780	1.1000e-003	0.1791	0.0472	1.0200e-003	0.0482		153.1105	153.1105	4.6500e-003		153.2268
Total	0.0819	0.0652	0.5630	1.5400e-003	0.1780	1.1000e-003	0.1791	0.0472	1.0200e-003	0.0482		153.1105	153.1105	4.6500e-003		153.2268

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					8.1298	0.0000	8.1298	4.4688	0.0000	4.4688			0.0000			0.0000
Off-Road	0.9312	19.0656	22.9600	0.0380		0.9462	0.9462		0.9462	0.9462	0.0000	3,685.6569	3,685.6569	1.1920		3,715.4573
Total	0.9312	19.0656	22.9600	0.0380	8.1298	0.9462	9.0760	4.4688	0.9462	5.4150	0.0000	3,685.6569	3,685.6569	1.1920		3,715.4573

Beechwood SP - Retail (mitigated) 20181219 - San Luis Obispo County, Winter

3.3 Site Preparation - 2021**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	0.0819	0.0652	0.5630	1.5400e-003	0.1780	1.1000e-003	0.1791	0.0472	1.0200e-003	0.0482		153.1105	153.1105	4.6500e-003		153.2268
Total	0.0819	0.0652	0.5630	1.5400e-003	0.1780	1.1000e-003	0.1791	0.0472	1.0200e-003	0.0482		153.1105	153.1105	4.6500e-003		153.2268

3.4 Grading - 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					6.5523	0.0000	6.5523	3.3675	0.0000	3.3675			0.0000			0.0000
Off-Road	2.2903	24.7367	15.8575	0.0296		1.1599	1.1599		1.0671	1.0671		2,871.9285	2,871.9285	0.9288		2,895,1495
Total	2.2903	24.7367	15.8575	0.0296	6.5523	1.1599	7.7123	3.3675	1.0671	4.4346		2,871.9285	2,871.9285	0.9288		2,895,1495

Beechwood SP - Retail (mitigated) 20181219 - San Luis Obispo County, Winter

3.4 Grading - 2021**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	0.0683	0.0543	0.4692	1.2800e-003	0.1483	9.2000e-004	0.1492	0.0393	8.5000e-004	0.0402		127.5921	127.5921	3.8800e-003		127.6890
Total	0.0683	0.0543	0.4692	1.2800e-003	0.1483	9.2000e-004	0.1492	0.0393	8.5000e-004	0.0402		127.5921	127.5921	3.8800e-003		127.6890

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					2.9486	0.0000	2.9486	1.5154	0.0000	1.5154			0.0000			0.0000
Off-Road	0.7263	14.8397	18.9906	0.0296		0.7555	0.7555		0.7555	0.7555	0.0000	2,871.9285	2,871.9285	0.9288		2,895,1495
Total	0.7263	14.8397	18.9906	0.0296	2.9486	0.7555	3.7041	1.5154	0.7555	2.2709	0.0000	2,871.9285	2,871.9285	0.9288		2,895,1495

Beechwood SP - Retail (mitigated) 20181219 - San Luis Obispo County, Winter

3.4 Grading - 2021**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	0.0683	0.0543	0.4692	1.2800e-003	0.1483	9.2000e-004	0.1492	0.0393	8.5000e-004	0.0402		127.5921	127.5921	3.8800e-003		127.6890
Total	0.0683	0.0543	0.4692	1.2800e-003	0.1483	9.2000e-004	0.1492	0.0393	8.5000e-004	0.0402		127.5921	127.5921	3.8800e-003		127.6890

3.5 Building Construction - 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					
Off-Road	1.9009	17.4321	16.5752	0.0269		0.9586	0.9586		0.9013	0.9013		2,553.3639	2,553.3639	0.6160		2,568.7643
Total	1.9009	17.4321	16.5752	0.0269		0.9586	0.9586		0.9013	0.9013		2,553.3639	2,553.3639	0.6160		2,568.7643

Beechwood SP - Retail (mitigated) 20181219 - San Luis Obispo County, Winter

3.5 Building Construction - 2021**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	0.0253	0.7512	0.2363	1.5500e-003	0.0371	2.2500e-003	0.0394	0.0107	2.1500e-003	0.0129		165.6028	165.6028	0.0103		165.8606
Worker	0.0683	0.0543	0.4692	1.2800e-003	0.1483	9.2000e-004	0.1492	0.0393	8.5000e-004	0.0402		127.5921	127.5921	3.8800e-003		127.6890
Total	0.0935	0.8055	0.7054	2.8300e-003	0.1854	3.1700e-003	0.1886	0.0500	3.0000e-003	0.0530		293.1949	293.1949	0.0142		293.5496

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	0.6739	14.2261	17.8738	0.0269		0.9036	0.9036		0.9036	0.9036	0.0000	2,553.3639	2,553.3639	0.6160		2,568.7643
Total	0.6739	14.2261	17.8738	0.0269		0.9036	0.9036		0.9036	0.9036	0.0000	2,553.3639	2,553.3639	0.6160		2,568.7643

Beechwood SP - Retail (mitigated) 20181219 - San Luis Obispo County, Winter

3.5 Building Construction - 2021**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	0.0253	0.7512	0.2363	1.5500e-003	0.0371	2.2500e-003	0.0394	0.0107	2.1500e-003	0.0129		165.6028	165.6028	0.0103		165.8606
Worker	0.0683	0.0543	0.4692	1.2800e-003	0.1483	9.2000e-004	0.1492	0.0393	8.5000e-004	0.0402		127.5921	127.5921	3.8800e-003		127.6890
Total	0.0935	0.8055	0.7054	2.8300e-003	0.1854	3.1700e-003	0.1886	0.0500	3.0000e-003	0.0530		293.1949	293.1949	0.0142		293.5496

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

Beechwood SP - Retail (mitigated) 20181219 - San Luis Obispo County, Winter

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	0.0234	0.7139	0.2184	1.5400e-003	0.0372	1.9800e-003	0.0391	0.0107	1.8900e-003	0.0126		164.4275	164.4275	0.0102		164.6821
Worker	0.0642	0.0488	0.4295	1.2300e-003	0.1483	8.9000e-004	0.1492	0.0393	8.2000e-004	0.0402		123.0317	123.0317	3.4700e-003		123.1185
Total	0.0875	0.7627	0.6479	2.7700e-003	0.1854	2.8700e-003	0.1883	0.0500	2.7100e-003	0.0527		287.4592	287.4592	0.0137		287.8006

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	0.6739	14.2261	17.8738	0.0269		0.9036	0.9036		0.9036	0.9036	0.0000	2,554.3336	2,554.3336	0.6120		2,569.6322
Total	0.6739	14.2261	17.8738	0.0269		0.9036	0.9036		0.9036	0.9036	0.0000	2,554.3336	2,554.3336	0.6120		2,569.6322

Beechwood SP - Retail (mitigated) 20181219 - San Luis Obispo County, Winter

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	0.0234	0.7139	0.2184	1.5400e-003	0.0372	1.9800e-003	0.0391	0.0107	1.8900e-003	0.0126		164.4275	164.4275	0.0102		164.6821
Worker	0.0642	0.0488	0.4295	1.2300e-003	0.1483	8.9000e-004	0.1492	0.0393	8.2000e-004	0.0402		123.0317	123.0317	3.4700e-003		123.1185
Total	0.0875	0.7627	0.6479	2.7700e-003	0.1854	2.8700e-003	0.1883	0.0500	2.7100e-003	0.0527		287.4592	287.4592	0.0137		287.8006

3.6 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	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	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

Beechwood SP - Retail (mitigated) 20181219 - San Luis Obispo County, Winter

3.6 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	0.0642	0.0488	0.4295	1.2300e-003	0.1483	8.9000e-004	0.1492	0.0393	8.2000e-004	0.0402		123.0317	123.0317	3.4700e-003		123.1185
Total	0.0642	0.0488	0.4295	1.2300e-003	0.1483	8.9000e-004	0.1492	0.0393	8.2000e-004	0.0402		123.0317	123.0317	3.4700e-003		123.1185

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	0.5609	11.2952	17.2957	0.0228		0.6093	0.6093		0.6093	0.6093	0.0000	2,207.6603	2,207.6603	0.7140		2,225.5104
Paving	0.0000					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Total	0.5609	11.2952	17.2957	0.0228		0.6093	0.6093		0.6093	0.6093	0.0000	2,207.6603	2,207.6603	0.7140		2,225.5104

Beechwood SP - Retail (mitigated) 20181219 - San Luis Obispo County, Winter

3.6 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	0.0642	0.0488	0.4295	1.2300e-003	0.1483	8.9000e-004	0.1492	0.0393	8.2000e-004	0.0402		123.0317	123.0317	3.4700e-003		123.1185
Total	0.0642	0.0488	0.4295	1.2300e-003	0.1483	8.9000e-004	0.1492	0.0393	8.2000e-004	0.0402		123.0317	123.0317	3.4700e-003		123.1185

3.7 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	10.8923					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	11.0968	1.4085	1.8136	2.9700e-003		0.0817	0.0817		0.0817	0.0817		281.4481	281.4481	0.0183		281.9062

Beechwood SP - Retail (mitigated) 20181219 - San Luis Obispo County, Winter

3.7 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	0.0128	9.7700e-003	0.0859	2.5000e-004	0.0297	1.8000e-004	0.0298	7.8700e-003	1.6000e-004	8.0300e-003		24.6063	24.6063	6.9000e-004		24.6237
Total	0.0128	9.7700e-003	0.0859	2.5000e-004	0.0297	1.8000e-004	0.0298	7.8700e-003	1.6000e-004	8.0300e-003		24.6063	24.6063	6.9000e-004		24.6237

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	10.8923					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Off-Road	0.0594	1.3570	1.8324	2.9700e-003		0.0951	0.0951		0.0951	0.0951	0.0000	281.4481	281.4481	0.0183		281.9062
Total	10.9517	1.3570	1.8324	2.9700e-003		0.0951	0.0951		0.0951	0.0951	0.0000	281.4481	281.4481	0.0183		281.9062

Beechwood SP - Retail (mitigated) 20181219 - San Luis Obispo County, Winter

3.7 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	0.0128	9.7700e-003	0.0859	2.5000e-004	0.0297	1.8000e-004	0.0298	7.8700e-003	1.6000e-004	8.0300e-003		24.6063	24.6063	6.9000e-004		24.6237
Total	0.0128	9.7700e-003	0.0859	2.5000e-004	0.0297	1.8000e-004	0.0298	7.8700e-003	1.6000e-004	8.0300e-003		24.6063	24.6063	6.9000e-004		24.6237

4.0 Operational Detail - Mobile**4.1 Mitigation Measures Mobile**

Increase Density

Improve Walkability Design

Improve Pedestrian Network

Provide Traffic Calming Measures

Beechwood SP - Retail (mitigated) 20181219 - San Luis Obispo County, Winter

	ROG	NOx	CO	SO2	Fugitive 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	5.1128	17.8063	46.3694	0.1099	9.9308	0.1214	10.0521	2.6529	0.1138	2.7667		11,088.3221	11,088.3221	0.5248		11,101.4430
Unmitigated	5.2298	18.7502	49.1473	0.1206	11.0036	0.1317	11.1353	2.9395	0.1235	3.0630		12,162.1184	12,162.1184	0.5587		12,176.0853

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Regional Shopping Center	3,597.85	2,348.59	1186.28	4,439,813	4,006,931
Total	3,597.85	2,348.59	1,186.28	4,439,813	4,006,931

4.3 Trip Type Information

Land Use	Miles			Trip %			Trip Purpose %		
	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
Regional Shopping Center	13.00	5.00	5.00	16.30	64.70	19.00	54	35	11

4.4 Fleet Mix

Land Use	LDA	LDT1	LDT2	MDV	LHD1	LHD2	MHD	HHD	OBUS	UBUS	MCY	SBUS	MH
Regional Shopping Center	0.575581	0.029595	0.198288	0.120539	0.026172	0.006482	0.012911	0.019591	0.002354	0.001214	0.005068	0.000784	0.001422

5.0 Energy Detail

Historical Energy Use: N

Beechwood SP - Retail (mitigated) 20181219 - San Luis Obispo County, Winter

5.1 Mitigation Measures Energy

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	3.2900e-003	0.0299	0.0251	1.8000e-004		2.2700e-003	2.2700e-003		2.2700e-003	2.2700e-003		35.9033	35.9033	6.9000e-004	6.6000e-004	36.1167
NaturalGas Unmitigated	3.2900e-003	0.0299	0.0251	1.8000e-004		2.2700e-003	2.2700e-003		2.2700e-003	2.2700e-003		35.9033	35.9033	6.9000e-004	6.6000e-004	36.1167

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					
Regional Shopping Center	305.178	3.2900e-003	0.0299	0.0251	1.8000e-004		2.2700e-003	2.2700e-003		2.2700e-003	2.2700e-003		35.9033	35.9033	6.9000e-004	6.6000e-004	36.1167
Total		3.2900e-003	0.0299	0.0251	1.8000e-004		2.2700e-003	2.2700e-003		2.2700e-003	2.2700e-003		35.9033	35.9033	6.9000e-004	6.6000e-004	36.1167

Beechwood SP - Retail (mitigated) 20181219 - San Luis Obispo County, Winter

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					
Regional Shopping Center	0.305178	3.2900e-003	0.0299	0.0251	1.8000e-004		2.2700e-003	2.2700e-003		2.2700e-003	2.2700e-003		35.9033	35.9033	6.9000e-004	6.6000e-004	36.1167
Total		3.2900e-003	0.0299	0.0251	1.8000e-004		2.2700e-003	2.2700e-003		2.2700e-003	2.2700e-003		35.9033	35.9033	6.9000e-004	6.6000e-004	36.1167

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	1.3047	4.0000e-005	4.8100e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005		0.0103	0.0103	3.0000e-005		0.0110
Unmitigated	1.3047	4.0000e-005	4.8100e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005		0.0103	0.0103	3.0000e-005		0.0110

Beechwood SP - Retail (mitigated) 20181219 - San Luis Obispo County, Winter

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	0.2984					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.0058					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	4.5000e-004	4.0000e-005	4.8100e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005		0.0103	0.0103	3.0000e-005		0.0110
Total	1.3047	4.0000e-005	4.8100e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005		0.0103	0.0103	3.0000e-005		0.0110

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	0.2984					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	1.0058					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Landscaping	4.5000e-004	4.0000e-005	4.8100e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005		0.0103	0.0103	3.0000e-005		0.0110
Total	1.3047	4.0000e-005	4.8100e-003	0.0000		2.0000e-005	2.0000e-005		2.0000e-005	2.0000e-005		0.0103	0.0103	3.0000e-005		0.0110

7.0 Water Detail

Beechwood SP - Retail (mitigated) 20181219 - San Luis Obispo County, Winter

7.1 Mitigation Measures Water

Install Low Flow Bathroom Faucet

Install Low Flow Kitchen Faucet

Install Low Flow Toilet

Install Low Flow Shower

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
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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

BSP Buildout Emissions (Mitigated)

Beechwood SP Buildout - San Luis Obispo County, Annual

Beechwood SP Buildout

San Luis Obispo County, Annual

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Asphalt Surfaces	50.60	Acre	50.60	2,204,136.00	0
City Park	7.00	Acre	7.00	304,920.00	0
User Defined Recreational	17.40	User Defined Unit	17.40	0.00	0
Apartments Mid Rise	100.00	Dwelling Unit	6.20	100,000.00	286
Condo/Townhouse	135.00	Dwelling Unit	13.60	135,000.00	386
Single Family Housing	676.00	Dwelling Unit	110.00	1,216,800.00	1933
Regional Shopping Center	47.00	1000sqft	5.40	47,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	3.2	Precipitation Freq (Days)	44
Climate Zone	4			Operational Year	2030
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MW hr)	156.59	CH4 Intensity (lb/MW hr)	0.04	N2O Intensity (lb/MW hr)	0

1.3 User Entered Comments & Non-Default Data

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Project Characteristics - PG&E 2030 GHG intensity factors

Land Use - Lot acreage from project description

Construction Phase - Not modeling construction

Off-road Equipment - Not modeling construction

Off-road Equipment - Not modeling construction

Off-road Equipment - Not modeling construction

Off-road Equipment - Not modeling construction

Off-road Equipment - Not modeling construction

Off-road Equipment - Not modeling construction

Trips and VMT - Not modeling construction

Grading - Not modeling construction

Architectural Coating - Not modeling construction

Vehicle Trips - Trip rates obtained from TIS

Woodstoves -

Consumer Products - all roads

Area Coating - Consistent with SLOAPCD Rule 433

Energy Use - Consistent with Title 24 2019

Reduced residential title-24 intensities by 7% and commercial lighting energy intensity by 30%

Land Use Change -

Construction Off-road Equipment Mitigation -

Mobile Land Use Mitigation -

Area Mitigation -

Energy Mitigation - Energy efficient appliances for apartment du

Water Mitigation -

Table Name	Column Name	Default Value	New Value
tblApplianceMitigation	PercentImprovement	30.00	0.00
tblApplianceMitigation	PercentImprovement	30.00	0.00

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tblApplianceMitigation	PercentImprovement	15.00	0.00
tblApplianceMitigation	PercentImprovement	15.00	0.00
tblApplianceMitigation	PercentImprovement	50.00	0.00
tblApplianceMitigation	PercentImprovement	50.00	0.00
tblApplianceMitigation	PercentImprovement	15.00	0.00
tblApplianceMitigation	PercentImprovement	15.00	0.00
tblArchitecturalCoating	ConstArea_Nonresidential_Exterior	23,500.00	0.00
tblArchitecturalCoating	ConstArea_Nonresidential_Interior	70,500.00	0.00
tblArchitecturalCoating	ConstArea_Parking	132,248.00	0.00
tblArchitecturalCoating	ConstArea_Residential_Exterior	979,965.00	0.00
tblArchitecturalCoating	ConstArea_Residential_Interior	2,939,895.00	0.00
tblArchitecturalCoating	EF_Nonresidential_Exterior	250.00	0.00
tblArchitecturalCoating	EF_Nonresidential_Interior	250.00	0.00
tblArchitecturalCoating	EF_Parking	150.00	0.00
tblArchitecturalCoating	EF_Residential_Exterior	250.00	0.00
tblArchitecturalCoating	EF_Residential_Interior	250.00	0.00
tblAreaCoating	Area_EF_Nonresidential_Exterior	250	100
tblAreaCoating	Area_EF_Nonresidential_Interior	250	100
tblAreaCoating	Area_EF_Parking	150	100
tblAreaCoating	Area_EF_Residential_Exterior	250	100
tblAreaCoating	Area_EF_Residential_Interior	250	100
tblConstructionPhase	NumDays	300.00	0.00
tblConstructionPhase	NumDays	180.00	0.00
tblConstructionPhase	NumDays	465.00	0.00
tblConstructionPhase	NumDays	4,650.00	0.00
tblConstructionPhase	NumDays	330.00	0.00
tblConstructionPhase	NumDays	330.00	0.00

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tblConstructionPhase	PhaseEndDate	2/23/2021	1/1/2020
tblConstructionPhase	PhaseEndDate	11/2/2021	1/30/2020
tblConstructionPhase	PhaseEndDate	8/15/2023	8/15/2020
tblConstructionPhase	PhaseEndDate	6/11/2041	6/11/2020
tblConstructionPhase	PhaseEndDate	9/16/2042	1/16/2020
tblConstructionPhase	PhaseEndDate	12/22/2043	1/22/2020
tblConstructionPhase	PhaseStartDate	1/1/2020	1/7/2020
tblConstructionPhase	PhaseStartDate	2/24/2021	2/24/2020
tblConstructionPhase	PhaseStartDate	11/3/2021	11/3/2020
tblConstructionPhase	PhaseStartDate	8/16/2023	8/16/2020
tblConstructionPhase	PhaseStartDate	6/12/2041	6/12/2020
tblConstructionPhase	PhaseStartDate	9/17/2042	9/17/2020
tblConsumerProducts	ROG_EF_Degreaser	3.542E-07	0
tblEnergyUse	LightingElect	5.25	3.67
tblEnergyUse	T24E	332.81	309.51
tblEnergyUse	T24E	249.32	231.87
tblEnergyUse	T24E	325.76	302.96
tblEnergyUse	T24NG	5,484.45	5,100.54
tblEnergyUse	T24NG	15,568.01	14,478.25
tblEnergyUse	T24NG	25,910.09	24,096.38
tblLandUse	LotAcreage	0.00	17.40
tblLandUse	LotAcreage	2.63	6.20
tblLandUse	LotAcreage	8.44	13.60
tblLandUse	LotAcreage	219.48	110.00
tblLandUse	LotAcreage	1.08	5.40
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00

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tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
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tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
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tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblProjectCharacteristics	CH4IntensityFactor	0.029	0.04
tblProjectCharacteristics	CO2IntensityFactor	641.35	156.59
tblProjectCharacteristics	N2OIntensityFactor	0.006	0
tblTripsAndVMT	VendorTripNumber	516.00	0.00
tblTripsAndVMT	WorkerTripNumber	1,481.00	0.00
tblTripsAndVMT	WorkerTripNumber	296.00	0.00
tblVehicleTrips	WD_TR	6.65	7.40
tblVehicleTrips	WD_TR	5.81	7.40
tblVehicleTrips	WD_TR	42.70	76.55
tblVehicleTrips	WD_TR	9.52	8.90

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2.0 Emissions Summary

2.1 Overall Construction

Unmitigated Construction

[illegible]

Mitigated Construction

[illegible]

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	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	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	7.1874	0.1426	12.3705	6.5000e-004		0.0688	0.0688		0.0688	0.0688	0.0000	20.2611	20.2611	0.0193	0.0000	20.7439
Energy	0.1172	1.0020	0.4287	6.3900e-003		0.0810	0.0810		0.0810	0.0810	0.0000	1,655.2505	1,655.2505	0.1487	0.0213	1,665.3065
Mobile	1.8567	7.5795	19.9546	0.0771	9.0385	0.0564	9.0949	2.4163	0.0525	2.4688	0.0000	7,094.5603	7,094.5603	0.2324	0.0000	7,100.3705
Waste						0.0000	0.0000		0.0000	0.0000	192.9592	0.0000	192.9592	11.4036	0.0000	478.0481
Water						0.0000	0.0000		0.0000	0.0000	19.9352	36.0565	55.9917	2.0568	0.0484	121.8177
Total	9.1613	8.7241	32.7537	0.0841	9.0385	0.2061	9.2447	2.4163	0.2023	2.6186	212.8943	8,806.1284	9,019.0228	13.8608	0.0696	9,386.2867

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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	7.1874	0.1426	12.3705	6.5000e-004		0.0688	0.0688		0.0688	0.0688	0.0000	20.2611	20.2611	0.0193	0.0000	20.7439
Energy	0.1172	1.0020	0.4287	6.3900e-003		0.0810	0.0810		0.0810	0.0810	0.0000	1,432.0160	1,432.0160	0.0917	0.0213	1,440.6464
Mobile	1.7928	7.1787	18.3479	0.0692	8.0345	0.0511	8.0856	2.1479	0.0476	2.1955	0.0000	6,365.2668	6,365.2668	0.2135	0.0000	6,370.6040
Waste						0.0000	0.0000		0.0000	0.0000	192.9592	0.0000	192.9592	11.4036	0.0000	478.0481
Water						0.0000	0.0000		0.0000	0.0000	15.9482	31.2265	47.1746	1.6460	0.0387	99.8506
Total	9.0974	8.3234	31.1470	0.0762	8.0345	0.2009	8.2354	2.1479	0.1973	2.3453	208.9073	7,848.7703	8,057.6776	13.3741	0.0600	8,409.8929

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.70	4.59	4.91	9.44	11.11	2.56	10.92	11.11	2.43	10.44	1.87	10.87	10.66	3.51	13.89	10.40

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2.3 Vegetation**Vegetation**

	CO2e
Category	MT
Vegetation Land Change	-804.2460
Total	-804.2460

3.0 Construction Detail**Construction Phase**

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/7/2020	1/1/2020	5	0	
2	Site Preparation	Site Preparation	2/24/2020	1/30/2020	5	0	
3	Grading	Grading	11/3/2020	8/15/2020	5	0	
4	Building Construction	Building Construction	8/16/2020	6/11/2020	5	0	
5	Paving	Paving	6/12/2020	1/16/2020	5	0	
6	Architectural Coating	Architectural Coating	9/17/2020	1/22/2020	5	0	

Acres of Grading (Site Preparation Phase): 0**Acres of Grading (Grading Phase): 0****Acres of Paving: 50.6**

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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
Demolition	Concrete/Industrial Saws	0	8.00	81	0.73
Demolition	Excavators	0	8.00	158	0.38
Demolition	Rubber Tired Dozers	0	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	0	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Grading	Excavators	0	8.00	158	0.38
Grading	Graders	0	8.00	187	0.41
Grading	Rubber Tired Dozers	0	8.00	247	0.40
Grading	Scrapers	0	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Building Construction	Cranes	0	7.00	231	0.29
Building Construction	Forklifts	0	8.00	89	0.20
Building Construction	Generator Sets	0	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	0	7.00	97	0.37
Building Construction	Welders	0	8.00	46	0.45
Paving	Pavers	0	8.00	130	0.42
Paving	Paving Equipment	0	8.00	132	0.36
Paving	Rollers	0	8.00	80	0.38
Architectural Coating	Air Compressors	0	6.00	78	0.48

Trips and VMT

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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
Demolition	0	0.00	0.00	0.00	13.00	5.00	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	0	0.00	0.00	0.00	13.00	5.00	20.00	LD_Mix	HDT_Mix	HHDT
Grading	0	0.00	0.00	0.00	13.00	5.00	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	0	0.00	0.00	0.00	13.00	5.00	20.00	LD_Mix	HDT_Mix	HHDT
Paving	0	0.00	0.00	0.00	13.00	5.00	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	0	0.00	0.00	0.00	13.00	5.00	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2020

Unmitigated Construction On-Site

[illegible]

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3.2 Demolition - 2020

Unmitigated Construction Off-Site

[illegible]

Mitigated Construction On-Site

[illegible]

Beechwood SP Buildout - San Luis Obispo County, Annual

3.2 Demolition - 2020

Mitigated Construction Off-Site

[illegible]

3.3 Site Preparation - 2020

Unmitigated Construction On-Site

[illegible]

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3.3 Site Preparation - 2020

Unmitigated Construction Off-Site

[illegible]

Mitigated Construction On-Site

[illegible]

Beechwood SP Buildout - San Luis Obispo County, Annual

3.3 Site Preparation - 2020

Mitigated Construction Off-Site

[illegible]

3.4 Grading - 2020

Unmitigated Construction On-Site

[illegible]

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3.4 Grading - 2020

Unmitigated Construction Off-Site

[illegible]

Mitigated Construction On-Site

[illegible]

Beechwood SP Buildout - San Luis Obispo County, Annual

3.4 Grading - 2020

Mitigated Construction Off-Site

[illegible]

3.5 Building Construction - 2020

Unmitigated Construction On-Site

[illegible]

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3.5 Building Construction - 2020

Unmitigated Construction Off-Site

[illegible]

Mitigated Construction On-Site

[illegible]

Beechwood SP Buildout - San Luis Obispo County, Annual

3.5 Building Construction - 2020

Mitigated Construction Off-Site

[illegible]

3.6 Paving - 2020

Unmitigated Construction On-Site

[illegible]

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3.6 Paving - 2020

Unmitigated Construction Off-Site

[illegible]

Mitigated Construction On-Site

[illegible]

Beechwood SP Buildout - San Luis Obispo County, Annual

3.6 Paving - 2020

Mitigated Construction Off-Site

[illegible]

3.7 Architectural Coating - 2020

Unmitigated Construction On-Site

[illegible]

Beechwood SP Buildout - San Luis Obispo County, Annual

3.7 Architectural Coating - 2020

Unmitigated Construction Off-Site

[illegible]

Mitigated Construction On-Site

[illegible]

Beechwood SP Buildout - San Luis Obispo County, Annual

3.7 Architectural Coating - 2020**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**

Increase Density

Improve Walkability Design

Improve Pedestrian Network

Provide Traffic Calming Measures

Beechwood SP Buildout - San Luis Obispo County, Annual

	ROG	NOx	CO	SO2	Fugitive 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	1.7928	7.1787	18.3479	0.0692	8.0345	0.0511	8.0856	2.1479	0.0476	2.1955	0.0000	6,365.2668	6,365.2668	0.2135	0.0000	6,370.6040
Unmitigated	1.8567	7.5795	19.9546	0.0771	9.0385	0.0564	9.0949	2.4163	0.0525	2.4688	0.0000	7,094.5603	7,094.5603	0.2324	0.0000	7,100.3705

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	740.00	639.00	586.00	1,788,167	1,589,533
City Park	13.23	159.25	117.18	99,460	88,412
Condo/Townhouse	999.00	765.45	653.40	2,328,738	2,070,056
Other Asphalt Surfaces	0.00	0.00	0.00		
Regional Shopping Center	3,597.85	2,348.59	1186.28	4,439,813	3,946,627
Single Family Housing	6,016.40	6,699.16	5827.12	15,470,197	13,751,727
User Defined Recreational	0.00	0.00	0.00		
Total	11,366.48	10,611.45	8,369.98	24,126,375	21,446,354

4.3 Trip Type Information

Beechwood SP Buildout - San Luis Obispo County, Annual

Land Use	Miles			Trip %			Trip Purpose %		
	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	13.00	5.00	5.00	35.80	21.00	43.20	86	11	3
City Park	13.00	5.00	5.00	33.00	48.00	19.00	66	28	6
Condo/Townhouse	13.00	5.00	5.00	35.80	21.00	43.20	86	11	3
Other Asphalt Surfaces	13.00	5.00	5.00	0.00	0.00	0.00	0	0	0
Regional Shopping Center	13.00	5.00	5.00	16.30	64.70	19.00	54	35	11
Single Family Housing	13.00	5.00	5.00	35.80	21.00	43.20	86	11	3
User Defined Recreational	13.00	5.00	5.00	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	0.610645	0.025081	0.199254	0.104456	0.014638	0.004440	0.012550	0.019914	0.002247	0.001059	0.004248	0.000708	0.000759
City Park	0.610645	0.025081	0.199254	0.104456	0.014638	0.004440	0.012550	0.019914	0.002247	0.001059	0.004248	0.000708	0.000759
Condo/Townhouse	0.610645	0.025081	0.199254	0.104456	0.014638	0.004440	0.012550	0.019914	0.002247	0.001059	0.004248	0.000708	0.000759
Other Asphalt Surfaces	0.610645	0.025081	0.199254	0.104456	0.014638	0.004440	0.012550	0.019914	0.002247	0.001059	0.004248	0.000708	0.000759
Regional Shopping Center	0.610645	0.025081	0.199254	0.104456	0.014638	0.004440	0.012550	0.019914	0.002247	0.001059	0.004248	0.000708	0.000759
Single Family Housing	0.610645	0.025081	0.199254	0.104456	0.014638	0.004440	0.012550	0.019914	0.002247	0.001059	0.004248	0.000708	0.000759
User Defined Recreational	0.610645	0.025081	0.199254	0.104456	0.014638	0.004440	0.012550	0.019914	0.002247	0.001059	0.004248	0.000708	0.000759

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Percent of Electricity Use Generated with Renewable Energy

Install Energy Efficient Appliances

Beechwood SP Buildout - San Luis Obispo County, Annual

	ROG	NOx	CO	SO2	Fugitive 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	271.9207	271.9207	0.0695	0.0000	273.6572
Electricity Unmitigated						0.0000	0.0000		0.0000	0.0000	0.0000	495.1552	495.1552	0.1265	0.0000	498.3173
NaturalGas Mitigated	0.1172	1.0020	0.4287	6.3900e-003		0.0810	0.0810		0.0810	0.0810	0.0000	1,160.0953	1,160.0953	0.0222	0.0213	1,166.9892
NaturalGas Unmitigated	0.1172	1.0020	0.4287	6.3900e-003		0.0810	0.0810		0.0810	0.0810	0.0000	1,160.0953	1,160.0953	0.0222	0.0213	1,166.9892

Beechwood SP Buildout - San Luis Obispo County, Annual

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	825554	4.4500e-003	0.0380	0.0162	2.4000e-004		3.0800e-003	3.0800e-003		3.0800e-003	3.0800e-003	0.0000	44.0547	44.0547	8.4000e-004	8.1000e-004	44.3165
City Park	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
Condo/Townhouse	2.38049e+006	0.0128	0.1097	0.0467	7.0000e-004		8.8700e-003	8.8700e-003		8.8700e-003	8.8700e-003	0.0000	127.0320	127.0320	2.4300e-003	2.3300e-003	127.7868
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
Regional Shopping Center	111390	6.0000e-004	5.4600e-003	4.5900e-003	3.0000e-005		4.1000e-004	4.1000e-004		4.1000e-004	4.1000e-004	0.0000	5.9442	5.9442	1.1000e-004	1.1000e-004	5.9795
Single Family Housing	1.84219e+007	0.0993	0.8489	0.3612	5.4200e-003		0.0686	0.0686		0.0686	0.0686	0.0000	983.0645	983.0645	0.0188	0.0180	988.9064
User Defined Recreational	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		0.1172	1.0020	0.4287	6.3900e-003		0.0810	0.0810		0.0810	0.0810	0.0000	1,160.0953	1,160.0953	0.0222	0.0213	1,166.9892

Beechwood SP Buildout - San Luis Obispo County, Annual

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	825554	4.4500e-003	0.0380	0.0162	2.4000e-004		3.0800e-003	3.0800e-003		3.0800e-003	3.0800e-003	0.0000	44.0547	44.0547	8.4000e-004	8.1000e-004	44.3165
City Park	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
Condo/Townhouse	2.38049e+006	0.0128	0.1097	0.0467	7.0000e-004		8.8700e-003	8.8700e-003		8.8700e-003	8.8700e-003	0.0000	127.0320	127.0320	2.4300e-003	2.3300e-003	127.7868
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
Regional Shopping Center	111390	6.0000e-004	5.4600e-003	4.5900e-003	3.0000e-005		4.1000e-004	4.1000e-004		4.1000e-004	4.1000e-004	0.0000	5.9442	5.9442	1.1000e-004	1.1000e-004	5.9795
Single Family Housing	1.84219e+007	0.0993	0.8489	0.3612	5.4200e-003		0.0686	0.0686		0.0686	0.0686	0.0000	983.0645	983.0645	0.0188	0.0180	988.9064
User Defined Recreational	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		0.1172	1.0020	0.4287	6.3900e-003		0.0810	0.0810		0.0810	0.0810	0.0000	1,160.0953	1,160.0953	0.0222	0.0213	1,166.9892

Beechwood SP Buildout - San Luis Obispo County, Annual

5.3 Energy by Land Use - Electricity**Unmitigated**

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	410505	29.1574	7.4500e-003	0.0000	29.3436
City Park	0	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse	678777	48.2122	0.0123	0.0000	48.5201
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	428170	30.4121	7.7700e-003	0.0000	30.6063
Single Family Housing	5.45381e+006	387.3736	0.0990	0.0000	389.8474
User Defined Recreational	0	0.0000	0.0000	0.0000	0.0000
Total		495.1552	0.1265	0.0000	498.3173

Beechwood SP Buildout - San Luis Obispo County, Annual

5.3 Energy by Land Use - Electricity**Mitigated**

	Electricity Use	Total CO2	CH4	N2O	CO2e
Land Use	kWh/yr	MT/yr			
Apartments Mid Rise	219939	15.6218	3.9900e-003	0.0000	15.7216
City Park	0	0.0000	0.0000	0.0000	0.0000
Condo/Townhouse	373328	26.5167	6.7700e-003	0.0000	26.6861
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	235494	16.7266	4.2700e-003	0.0000	16.8335
Single Family Housing	2.9996e+006	213.0555	0.0544	0.0000	214.4161
User Defined Recreational	0	0.0000	0.0000	0.0000	0.0000
Total		271.9207	0.0695	0.0000	273.6572

6.0 Area Detail**6.1 Mitigation Measures Area**

Beechwood SP Buildout - San Luis Obispo County, Annual

	ROG	NOx	CO	SO2	Fugitive 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	7.1874	0.1426	12.3705	6.5000e-004		0.0688	0.0688		0.0688	0.0688	0.0000	20.2611	20.2611	0.0193	0.0000	20.7439
Unmitigated	7.1874	0.1426	12.3705	6.5000e-004		0.0688	0.0688		0.0688	0.0688	0.0000	20.2611	20.2611	0.0193	0.0000	20.7439

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	0.9609					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	5.8564					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	0.3701	0.1426	12.3705	6.5000e-004		0.0688	0.0688		0.0688	0.0688	0.0000	20.2611	20.2611	0.0193	0.0000	20.7439
Total	7.1874	0.1426	12.3705	6.5000e-004		0.0688	0.0688		0.0688	0.0688	0.0000	20.2611	20.2611	0.0193	0.0000	20.7439

Beechwood SP Buildout - San Luis Obispo County, Annual

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	0.9609					0.0000	0.0000		0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Consumer Products	5.8564					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	0.3701	0.1426	12.3705	6.5000e-004		0.0688	0.0688		0.0688	0.0688	0.0000	20.2611	20.2611	0.0193	0.0000	20.7439
Total	7.1874	0.1426	12.3705	6.5000e-004		0.0688	0.0688		0.0688	0.0688	0.0000	20.2611	20.2611	0.0193	0.0000	20.7439

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

Beechwood SP Buildout - San Luis Obispo County, Annual

	Total CO2	CH4	N2O	CO2e
Category	MT/yr			
Mitigated	47.1746	1.6460	0.0387	99.8506
Unmitigated	55.9917	2.0568	0.0484	121.8177

Beechwood SP Buildout - San Luis Obispo County, Annual

7.2 Water by Land Use**Unmitigated**

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	6.5154 / 4.10754	5.5922	0.2132	5.0100e-003	12.4162
City Park	0 / 8.34037	2.0734	5.3000e-004	0.0000	2.0866
Condo/Townhouse	8.79579 / 5.54517	7.5495	0.2878	6.7700e-003	16.7619
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	3.48141 / 2.13377	2.9730	0.1139	2.6800e-003	6.6192
Single Family Housing	44.0441 / 27.7669	37.8036	1.4413	0.0339	83.9337
User Defined Recreational	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		55.9917	2.0568	0.0484	121.8177

Beechwood SP Buildout - San Luis Obispo County, Annual

7.2 Water by Land Use**Mitigated**

	Indoor/Outdoor Use	Total CO2	CH4	N2O	CO2e
Land Use	Mgal	MT/yr			
Apartments Mid Rise	5.21232 / 4.10754	4.6780	0.1706	4.0100e-003	10.1385
City Park	0 / 8.34037	2.0734	5.3000e-004	0.0000	2.0866
Condo/Townhouse	7.03663 / 5.54517	6.3153	0.2303	5.4100e-003	13.6870
Other Asphalt Surfaces	0 / 0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	2.78513 / 2.13377	2.4845	0.0912	2.1400e-003	5.4021
Single Family Housing	35.2353 / 27.7669	31.6234	1.1534	0.0271	68.5364
User Defined Recreational	0 / 0	0.0000	0.0000	0.0000	0.0000
Total		47.1746	1.6460	0.0387	99.8506

8.0 Waste Detail**8.1 Mitigation Measures Waste**

Beechwood SP Buildout - San Luis Obispo County, Annual

Category/Year

	Total CO2	CH4	N2O	CO2e
	MT/yr			
Mitigated	192.9592	11.4036	0.0000	478.0481
Unmitigated	192.9592	11.4036	0.0000	478.0481

Beechwood SP Buildout - San Luis Obispo County, Annual

8.2 Waste by Land Use**Unmitigated**

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	46	9.3376	0.5518	0.0000	23.1335
City Park	0.6	0.1218	7.2000e-003	0.0000	0.3017
Condo/Townhouse	62.1	12.6057	0.7450	0.0000	31.2302
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	49.35	10.0176	0.5920	0.0000	24.8182
Single Family Housing	792.53	160.8764	9.5075	0.0000	398.5645
User Defined Recreational	0	0.0000	0.0000	0.0000	0.0000
Total		192.9591	11.4036	0.0000	478.0481

Beechwood SP Buildout - San Luis Obispo County, Annual

8.2 Waste by Land Use**Mitigated**

	Waste Disposed	Total CO2	CH4	N2O	CO2e
Land Use	tons	MT/yr			
Apartments Mid Rise	46	9.3376	0.5518	0.0000	23.1335
City Park	0.6	0.1218	7.2000e-003	0.0000	0.3017
Condo/Townhouse	62.1	12.6057	0.7450	0.0000	31.2302
Other Asphalt Surfaces	0	0.0000	0.0000	0.0000	0.0000
Regional Shopping Center	49.35	10.0176	0.5920	0.0000	24.8182
Single Family Housing	792.53	160.8764	9.5075	0.0000	398.5645
User Defined Recreational	0	0.0000	0.0000	0.0000	0.0000
Total		192.9591	11.4036	0.0000	478.0481

9.0 Operational Offroad

Equipment Type	Number	Hours/Day	Days/Year	Horse Power	Load Factor	Fuel Type
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10.0 Stationary Equipment**Fire Pumps and Emergency Generators**

Equipment Type	Number	Hours/Day	Hours/Year	Horse Power	Load Factor	Fuel Type
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Beechwood SP Buildout - San Luis Obispo County, Annual

Boilers

Equipment Type	Number	Heat Input/Day	Heat Input/Year	Boiler Rating	Fuel Type
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User Defined Equipment

Equipment Type	Number
----------------	--------

11.0 Vegetation

Beechwood SP Buildout - San Luis Obispo County, Annual

	Total CO2	CH4	N2O	CO2e
Category	MT			
Unmitigated	-804.2460	0.0000	0.0000	-804.2460

11.1 Vegetation Land Change

Vegetation Type

	Initial/Final	Total CO2	CH4	N2O	CO2e
	Acres	MT			
Grassland	186.6 / 0	-804.2460	0.0000	0.0000	-804.2460
Total		-804.2460	0.0000	0.0000	-804.2460

Beechwood SP Buildout - San Luis Obispo County, Winter

Beechwood SP Buildout

San Luis Obispo County, Winter

1.0 Project Characteristics

1.1 Land Usage

Land Uses	Size	Metric	Lot Acreage	Floor Surface Area	Population
Other Asphalt Surfaces	50.60	Acre	50.60	2,204,136.00	0
City Park	7.00	Acre	7.00	304,920.00	0
User Defined Recreational	17.40	User Defined Unit	17.40	0.00	0
Apartments Mid Rise	100.00	Dwelling Unit	6.20	100,000.00	286
Condo/Townhouse	135.00	Dwelling Unit	13.60	135,000.00	386
Single Family Housing	676.00	Dwelling Unit	110.00	1,216,800.00	1933
Regional Shopping Center	47.00	1000sqft	5.40	47,000.00	0

1.2 Other Project Characteristics

Urbanization	Urban	Wind Speed (m/s)	3.2	Precipitation Freq (Days)	44
Climate Zone	4			Operational Year	2030
Utility Company	Pacific Gas & Electric Company				
CO2 Intensity (lb/MW hr)	156.59	CH4 Intensity (lb/MW hr)	0.04	N2O Intensity (lb/MW hr)	0

1.3 User Entered Comments & Non-Default Data

Beechwood SP Buildout - San Luis Obispo County, Winter

Project Characteristics - PG&E 2030 GHG intensity factors

Land Use - Lot acreage from project description

Construction Phase - Not modeling construction

Off-road Equipment - Not modeling construction

Off-road Equipment - Not modeling construction

Off-road Equipment - Not modeling construction

Off-road Equipment - Not modeling construction

Off-road Equipment - Not modeling construction

Off-road Equipment - Not modeling construction

Trips and VMT - Not modeling construction

Grading - Not modeling construction

Architectural Coating - Not modeling construction

Vehicle Trips - Trip rates obtained from TIS

Woodstoves -

Consumer Products - all roads

Area Coating - Consistent with SLOAPCD Rule 433

Energy Use - Consistent with Title 24 2019

Reduced residential title-24 intensities by 7% and commercial lighting energy intensity by 30%

Land Use Change -

Construction Off-road Equipment Mitigation -

Mobile Land Use Mitigation -

Area Mitigation -

Energy Mitigation - Energy efficient appliances for apartment du

Water Mitigation -

Table Name	Column Name	Default Value	New Value
tblApplianceMitigation	PercentImprovement	30.00	0.00
tblApplianceMitigation	PercentImprovement	30.00	0.00

Beechwood SP Buildout - San Luis Obispo County, Winter

tblApplianceMitigation	PercentImprovement	15.00	0.00
tblApplianceMitigation	PercentImprovement	15.00	0.00
tblApplianceMitigation	PercentImprovement	50.00	0.00
tblApplianceMitigation	PercentImprovement	50.00	0.00
tblApplianceMitigation	PercentImprovement	15.00	0.00
tblApplianceMitigation	PercentImprovement	15.00	0.00
tblArchitecturalCoating	ConstArea_Nonresidential_Exterior	23,500.00	0.00
tblArchitecturalCoating	ConstArea_Nonresidential_Interior	70,500.00	0.00
tblArchitecturalCoating	ConstArea_Parking	132,248.00	0.00
tblArchitecturalCoating	ConstArea_Residential_Exterior	979,965.00	0.00
tblArchitecturalCoating	ConstArea_Residential_Interior	2,939,895.00	0.00
tblArchitecturalCoating	EF_Nonresidential_Exterior	250.00	0.00
tblArchitecturalCoating	EF_Nonresidential_Interior	250.00	0.00
tblArchitecturalCoating	EF_Parking	150.00	0.00
tblArchitecturalCoating	EF_Residential_Exterior	250.00	0.00
tblArchitecturalCoating	EF_Residential_Interior	250.00	0.00
tblAreaCoating	Area_EF_Nonresidential_Exterior	250	100
tblAreaCoating	Area_EF_Nonresidential_Interior	250	100
tblAreaCoating	Area_EF_Parking	150	100
tblAreaCoating	Area_EF_Residential_Exterior	250	100
tblAreaCoating	Area_EF_Residential_Interior	250	100
tblConstructionPhase	NumDays	300.00	0.00
tblConstructionPhase	NumDays	180.00	0.00
tblConstructionPhase	NumDays	465.00	0.00
tblConstructionPhase	NumDays	4,650.00	0.00
tblConstructionPhase	NumDays	330.00	0.00
tblConstructionPhase	NumDays	330.00	0.00

Beechwood SP Buildout - San Luis Obispo County, Winter

tblConstructionPhase	PhaseEndDate	2/23/2021	1/1/2020
tblConstructionPhase	PhaseEndDate	11/2/2021	1/30/2020
tblConstructionPhase	PhaseEndDate	8/15/2023	8/15/2020
tblConstructionPhase	PhaseEndDate	6/11/2041	6/11/2020
tblConstructionPhase	PhaseEndDate	9/16/2042	1/16/2020
tblConstructionPhase	PhaseEndDate	12/22/2043	1/22/2020
tblConstructionPhase	PhaseStartDate	1/1/2020	1/7/2020
tblConstructionPhase	PhaseStartDate	2/24/2021	2/24/2020
tblConstructionPhase	PhaseStartDate	11/3/2021	11/3/2020
tblConstructionPhase	PhaseStartDate	8/16/2023	8/16/2020
tblConstructionPhase	PhaseStartDate	6/12/2041	6/12/2020
tblConstructionPhase	PhaseStartDate	9/17/2042	9/17/2020
tblConsumerProducts	ROG_EF_Degreaser	3.542E-07	0
tblEnergyUse	LightingElect	5.25	3.67
tblEnergyUse	T24E	332.81	309.51
tblEnergyUse	T24E	249.32	231.87
tblEnergyUse	T24E	325.76	302.96
tblEnergyUse	T24NG	5,484.45	5,100.54
tblEnergyUse	T24NG	15,568.01	14,478.25
tblEnergyUse	T24NG	25,910.09	24,096.38
tblLandUse	LotAcreage	0.00	17.40
tblLandUse	LotAcreage	2.63	6.20
tblLandUse	LotAcreage	8.44	13.60
tblLandUse	LotAcreage	219.48	110.00
tblLandUse	LotAcreage	1.08	5.40
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00

Beechwood SP Buildout - San Luis Obispo County, Winter

tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	3.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	2.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	4.00	0.00
tblOffRoadEquipment	OffRoadEquipmentUnitAmount	1.00	0.00
tblProjectCharacteristics	CH4IntensityFactor	0.029	0.04
tblProjectCharacteristics	CO2IntensityFactor	641.35	156.59
tblProjectCharacteristics	N2OIntensityFactor	0.006	0
tblTripsAndVMT	VendorTripNumber	516.00	0.00
tblTripsAndVMT	WorkerTripNumber	1,481.00	0.00
tblTripsAndVMT	WorkerTripNumber	296.00	0.00
tblVehicleTrips	WD_TR	6.65	7.40
tblVehicleTrips	WD_TR	5.81	7.40
tblVehicleTrips	WD_TR	42.70	76.55
tblVehicleTrips	WD_TR	9.52	8.90

Beechwood SP Buildout - San Luis Obispo County, Winter

2.0 Emissions Summary

2.1 Overall Construction (Maximum Daily Emission)

Unmitigated Construction

[illegible]

Mitigated Construction

[illegible]

Beechwood SP Buildout - San Luis Obispo County, Winter

[illegible]

Beechwood SP Buildout - San Luis Obispo County, Winter

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	39.5983	0.8643	74.9724	3.9700e-003		0.4169	0.4169		0.4169	0.4169	0.0000	135.3579	135.3579	0.1290	0.0000	138.5830
Energy	0.6423	5.4907	2.3489	0.0350		0.4438	0.4438		0.4438	0.4438		7,007.0478	7,007.0478	0.1343	0.1285	7,048.6871
Mobile	11.6659	46.5783	124.9876	0.4699	56.9805	0.3476	57.3281	15.2007	0.3237	15.5244		47,649.3569	47,649.3569	1.6014		47,689.3924
Total	51.9065	52.9332	202.3088	0.5089	56.9805	1.2082	58.1887	15.2007	1.1843	16.3850	0.0000	54,791.7625	54,791.7625	1.8647	0.1285	54,876.6625

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	39.5983	0.8643	74.9724	3.9700e-003		0.4169	0.4169		0.4169	0.4169	0.0000	135.3579	135.3579	0.1290	0.0000	138.5830
Energy	0.6423	5.4907	2.3489	0.0350		0.4438	0.4438		0.4438	0.4438		7,007.0478	7,007.0478	0.1343	0.1285	7,048.6871
Mobile	11.2730	44.1147	115.1785	0.4214	50.6509	0.3152	50.9661	13.5122	0.2935	13.8056		42,737.6194	42,737.6194	1.4736		42,774.4586
Total	51.5135	50.4696	192.4998	0.4604	50.6509	1.1758	51.8268	13.5122	1.1541	14.6663	0.0000	49,880.0250	49,880.0250	1.7369	0.1285	49,961.7287

Beechwood SP Buildout - San Luis Obispo County, Winter

	ROG	NOx	CO	SO2	Fugitive PM10	Exhaust PM10	PM10 Total	Fugitive PM2.5	Exhaust PM2.5	PM2.5 Total	Bio- CO2	NBio-CO2	Total CO2	CH4	N2O	CO2e
Percent Reduction	0.76	4.65	4.85	9.53	11.11	2.68	10.93	11.11	2.55	10.49	0.00	8.96	8.96	6.86	0.00	8.96

3.0 Construction Detail

Construction Phase

Phase Number	Phase Name	Phase Type	Start Date	End Date	Num Days Week	Num Days	Phase Description
1	Demolition	Demolition	1/7/2020	1/1/2020	5	0	
2	Site Preparation	Site Preparation	2/24/2020	1/30/2020	5	0	
3	Grading	Grading	11/3/2020	8/15/2020	5	0	
4	Building Construction	Building Construction	8/16/2020	6/11/2020	5	0	
5	Paving	Paving	6/12/2020	1/16/2020	5	0	
6	Architectural Coating	Architectural Coating	9/17/2020	1/22/2020	5	0	

Acres of Grading (Site Preparation Phase): 0

Acres of Grading (Grading Phase): 0

Acres of Paving: 50.6

Residential Indoor: 0; Residential Outdoor: 0; Non-Residential Indoor: 0; Non-Residential Outdoor: 0; Striped Parking Area: 0 (Architectural Coating – sqft)

OffRoad Equipment

Beechwood SP Buildout - San Luis Obispo County, Winter

Phase Name	Offroad Equipment Type	Amount	Usage Hours	Horse Power	Load Factor
Demolition	Concrete/Industrial Saws	0	8.00	81	0.73
Demolition	Excavators	0	8.00	158	0.38
Demolition	Rubber Tired Dozers	0	8.00	247	0.40
Site Preparation	Rubber Tired Dozers	0	8.00	247	0.40
Site Preparation	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Grading	Excavators	0	8.00	158	0.38
Grading	Graders	0	8.00	187	0.41
Grading	Rubber Tired Dozers	0	8.00	247	0.40
Grading	Scrapers	0	8.00	367	0.48
Grading	Tractors/Loaders/Backhoes	0	8.00	97	0.37
Building Construction	Cranes	0	7.00	231	0.29
Building Construction	Forklifts	0	8.00	89	0.20
Building Construction	Generator Sets	0	8.00	84	0.74
Building Construction	Tractors/Loaders/Backhoes	0	7.00	97	0.37
Building Construction	Welders	0	8.00	46	0.45
Paving	Pavers	0	8.00	130	0.42
Paving	Paving Equipment	0	8.00	132	0.36
Paving	Rollers	0	8.00	80	0.38
Architectural Coating	Air Compressors	0	6.00	78	0.48

Trips and VMT

Beechwood SP Buildout - San Luis Obispo County, Winter

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
Demolition	0	0.00	0.00	0.00	13.00	5.00	20.00	LD_Mix	HDT_Mix	HHDT
Site Preparation	0	0.00	0.00	0.00	13.00	5.00	20.00	LD_Mix	HDT_Mix	HHDT
Grading	0	0.00	0.00	0.00	13.00	5.00	20.00	LD_Mix	HDT_Mix	HHDT
Building Construction	0	0.00	0.00	0.00	13.00	5.00	20.00	LD_Mix	HDT_Mix	HHDT
Paving	0	0.00	0.00	0.00	13.00	5.00	20.00	LD_Mix	HDT_Mix	HHDT
Architectural Coating	0	0.00	0.00	0.00	13.00	5.00	20.00	LD_Mix	HDT_Mix	HHDT

3.1 Mitigation Measures Construction

3.2 Demolition - 2020

Unmitigated Construction On-Site

[illegible]

Beechwood SP Buildout - San Luis Obispo County, Winter

3.2 Demolition - 2020

Unmitigated Construction Off-Site

[illegible]

Mitigated Construction On-Site

[illegible]

Beechwood SP Buildout - San Luis Obispo County, Winter

3.2 Demolition - 2020

Mitigated Construction Off-Site

[illegible]

3.3 Site Preparation - 2020

Unmitigated Construction On-Site

[illegible]

Beechwood SP Buildout - San Luis Obispo County, Winter

3.3 Site Preparation - 2020

Unmitigated Construction Off-Site

[illegible]

Mitigated Construction On-Site

[illegible]

Beechwood SP Buildout - San Luis Obispo County, Winter

3.3 Site Preparation - 2020

Mitigated Construction Off-Site

[illegible]

3.4 Grading - 2020

Unmitigated Construction On-Site

[illegible]

Beechwood SP Buildout - San Luis Obispo County, Winter

3.4 Grading - 2020

Unmitigated Construction Off-Site

[illegible]

Mitigated Construction On-Site

[illegible]

Beechwood SP Buildout - San Luis Obispo County, Winter

3.4 Grading - 2020

Mitigated Construction Off-Site

[illegible]

3.5 Building Construction - 2020

Unmitigated Construction On-Site

[illegible]

Beechwood SP Buildout - San Luis Obispo County, Winter

3.5 Building Construction - 2020

Unmitigated Construction Off-Site

[illegible]

Mitigated Construction On-Site

[illegible]

Beechwood SP Buildout - San Luis Obispo County, Winter

3.5 Building Construction - 2020

Mitigated Construction Off-Site

[illegible]

3.6 Paving - 2020

Unmitigated Construction On-Site

[illegible]

Beechwood SP Buildout - San Luis Obispo County, Winter

3.6 Paving - 2020

Unmitigated Construction Off-Site

[illegible]

Mitigated Construction On-Site

[illegible]

Beechwood SP Buildout - San Luis Obispo County, Winter

3.6 Paving - 2020

Mitigated Construction Off-Site

[illegible]

3.7 Architectural Coating - 2020

Unmitigated Construction On-Site

[illegible]

Beechwood SP Buildout - San Luis Obispo County, Winter

3.7 Architectural Coating - 2020

Unmitigated Construction Off-Site

[illegible]

Mitigated Construction On-Site

[illegible]

Beechwood SP Buildout - San Luis Obispo County, Winter

3.7 Architectural Coating - 2020**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	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**

Increase Density

Improve Walkability Design

Improve Pedestrian Network

Provide Traffic Calming Measures

Beechwood SP Buildout - San Luis Obispo County, Winter

	ROG	NOx	CO	SO2	Fugitive 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	11.2730	44.1147	115.1785	0.4214	50.6509	0.3152	50.9661	13.5122	0.2935	13.8056		42,737.61 94	42,737.61 94	1.4736		42,774.45 86
Unmitigated	11.6659	46.5783	124.9876	0.4699	56.9805	0.3476	57.3281	15.2007	0.3237	15.5244		47,649.35 69	47,649.35 69	1.6014		47,689.39 24

4.2 Trip Summary Information

Land Use	Average Daily Trip Rate			Unmitigated	Mitigated
	Weekday	Saturday	Sunday	Annual VMT	Annual VMT
Apartments Mid Rise	740.00	639.00	586.00	1,788,167	1,589,533
City Park	13.23	159.25	117.18	99,460	88,412
Condo/Townhouse	999.00	765.45	653.40	2,328,738	2,070,056
Other Asphalt Surfaces	0.00	0.00	0.00		
Regional Shopping Center	3,597.85	2,348.59	1186.28	4,439,813	3,946,627
Single Family Housing	6,016.40	6,699.16	5827.12	15,470,197	13,751,727
User Defined Recreational	0.00	0.00	0.00		
Total	11,366.48	10,611.45	8,369.98	24,126,375	21,446,354

4.3 Trip Type Information

Beechwood SP Buildout - San Luis Obispo County, Winter

Land Use	Miles			Trip %			Trip Purpose %		
	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	13.00	5.00	5.00	35.80	21.00	43.20	86	11	3
City Park	13.00	5.00	5.00	33.00	48.00	19.00	66	28	6
Condo/Townhouse	13.00	5.00	5.00	35.80	21.00	43.20	86	11	3
Other Asphalt Surfaces	13.00	5.00	5.00	0.00	0.00	0.00	0	0	0
Regional Shopping Center	13.00	5.00	5.00	16.30	64.70	19.00	54	35	11
Single Family Housing	13.00	5.00	5.00	35.80	21.00	43.20	86	11	3
User Defined Recreational	13.00	5.00	5.00	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	0.610645	0.025081	0.199254	0.104456	0.014638	0.004440	0.012550	0.019914	0.002247	0.001059	0.004248	0.000708	0.000759
City Park	0.610645	0.025081	0.199254	0.104456	0.014638	0.004440	0.012550	0.019914	0.002247	0.001059	0.004248	0.000708	0.000759
Condo/Townhouse	0.610645	0.025081	0.199254	0.104456	0.014638	0.004440	0.012550	0.019914	0.002247	0.001059	0.004248	0.000708	0.000759
Other Asphalt Surfaces	0.610645	0.025081	0.199254	0.104456	0.014638	0.004440	0.012550	0.019914	0.002247	0.001059	0.004248	0.000708	0.000759
Regional Shopping Center	0.610645	0.025081	0.199254	0.104456	0.014638	0.004440	0.012550	0.019914	0.002247	0.001059	0.004248	0.000708	0.000759
Single Family Housing	0.610645	0.025081	0.199254	0.104456	0.014638	0.004440	0.012550	0.019914	0.002247	0.001059	0.004248	0.000708	0.000759
User Defined Recreational	0.610645	0.025081	0.199254	0.104456	0.014638	0.004440	0.012550	0.019914	0.002247	0.001059	0.004248	0.000708	0.000759

5.0 Energy Detail

Historical Energy Use: N

5.1 Mitigation Measures Energy

Percent of Electricity Use Generated with Renewable Energy

Install Energy Efficient Appliances

Beechwood SP Buildout - San Luis Obispo County, Winter

	ROG	NOx	CO	SO2	Fugitive 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	0.6423	5.4907	2.3489	0.0350		0.4438	0.4438		0.4438	0.4438		7,007.0478	7,007.0478	0.1343	0.1285	7,048.6871
NaturalGas Unmitigated	0.6423	5.4907	2.3489	0.0350		0.4438	0.4438		0.4438	0.4438		7,007.0478	7,007.0478	0.1343	0.1285	7,048.6871

Beechwood SP Buildout - San Luis Obispo County, Winter

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	2261.79	0.0244	0.2084	0.0887	1.3300e-003		0.0169	0.0169		0.0169	0.0169		266.0932	266.0932	5.1000e-003	4.8800e-003	267.6744
City Park	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
Condo/Townhouse	6521.89	0.0703	0.6010	0.2558	3.8400e-003		0.0486	0.0486		0.0486	0.0486		767.2808	767.2808	0.0147	0.0141	771.8404
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
Regional Shopping Center	305.178	3.2900e-003	0.0299	0.0251	1.8000e-004		2.2700e-003	2.2700e-003		2.2700e-003	2.2700e-003		35.9033	35.9033	6.9000e-004	6.6000e-004	36.1167
Single Family Housing	50471	0.5443	4.6513	1.9793	0.0297		0.3761	0.3761		0.3761	0.3761		5,937.7705	5,937.7705	0.1138	0.1089	5,973.0557
User Defined Recreational	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		0.6423	5.4907	2.3489	0.0350		0.4438	0.4438		0.4438	0.4438		7,007.0477	7,007.0477	0.1343	0.1285	7,048.6871

Beechwood SP Buildout - San Luis Obispo County, Winter

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	2.26179	0.0244	0.2084	0.0887	1.3300e-003		0.0169	0.0169		0.0169	0.0169		266.0932	266.0932	5.1000e-003	4.8800e-003	267.6744
City Park	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
Condo/Townhouse	6.52189	0.0703	0.6010	0.2558	3.8400e-003		0.0486	0.0486		0.0486	0.0486		767.2808	767.2808	0.0147	0.0141	771.8404
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
Regional Shopping Center	0.305178	3.2900e-003	0.0299	0.0251	1.8000e-004		2.2700e-003	2.2700e-003		2.2700e-003	2.2700e-003		35.9033	35.9033	6.9000e-004	6.6000e-004	36.1167
Single Family Housing	50.471	0.5443	4.6513	1.9793	0.0297		0.3761	0.3761		0.3761	0.3761		5,937.7705	5,937.7705	0.1138	0.1089	5,973.0557
User Defined Recreational	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		0.6423	5.4907	2.3489	0.0350		0.4438	0.4438		0.4438	0.4438		7,007.0477	7,007.0477	0.1343	0.1285	7,048.6871

6.0 Area Detail**6.1 Mitigation Measures Area**

Beechwood SP Buildout - San Luis Obispo County, Winter

	ROG	NOx	CO	SO2	Fugitive 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	39.5983	0.8643	74.9724	3.9700e-003		0.4169	0.4169		0.4169	0.4169	0.0000	135.3579	135.3579	0.1290	0.0000	138.5830
Unmitigated	39.5983	0.8643	74.9724	3.9700e-003		0.4169	0.4169		0.4169	0.4169	0.0000	135.3579	135.3579	0.1290	0.0000	138.5830

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	5.2650					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	32.0900					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	2.2433	0.8643	74.9724	3.9700e-003		0.4169	0.4169		0.4169	0.4169		135.3579	135.3579	0.1290		138.5830
Total	39.5983	0.8643	74.9724	3.9700e-003		0.4169	0.4169		0.4169	0.4169	0.0000	135.3579	135.3579	0.1290	0.0000	138.5830

Beechwood SP Buildout - San Luis Obispo County, Winter

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	5.2650					0.0000	0.0000		0.0000	0.0000			0.0000			0.0000
Consumer Products	32.0900					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	2.2433	0.8643	74.9724	3.9700e-003		0.4169	0.4169		0.4169	0.4169		135.3579	135.3579	0.1290		138.5830
Total	39.5983	0.8643	74.9724	3.9700e-003		0.4169	0.4169		0.4169	0.4169	0.0000	135.3579	135.3579	0.1290	0.0000	138.5830

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

8.0 Waste Detail**8.1 Mitigation Measures Waste****9.0 Operational Offroad**

Beechwood SP Buildout - San Luis Obispo County, Winter

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

Appendix F

Beechwood Specific Plan:

- Drainage Study
- Stormwater Control Plan
- Water Supply Assessment

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BEECHWOOD SPECIFIC PLAN

City of Paso Robles, California

Public Review Draft | January 2020



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Beechwood Specific Plan

City of Paso Robles, California

Public Review Draft | January 2020

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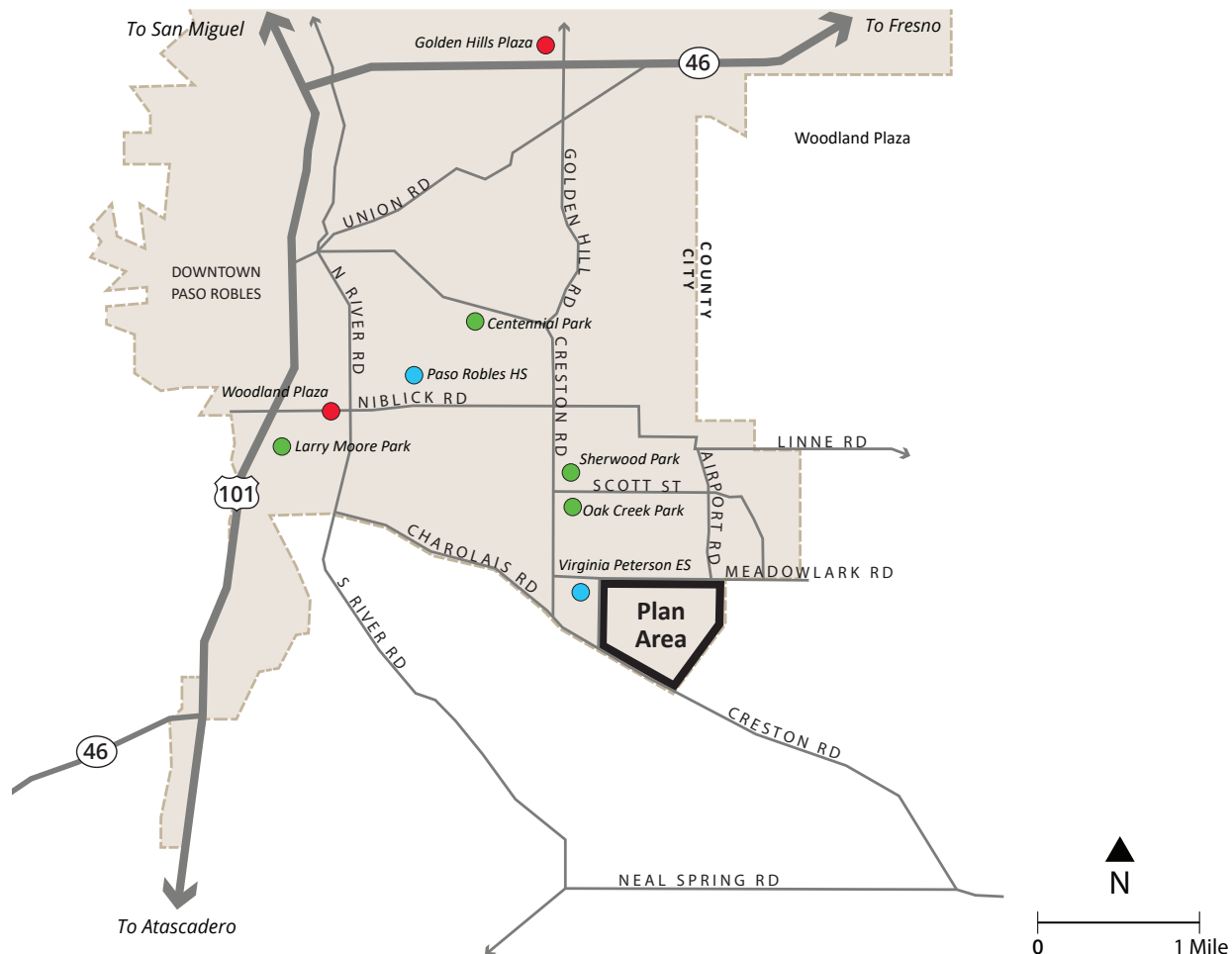
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1 Introduction

The Beechwood Specific Plan (Plan) guides development of the Specific Plan Area (Plan Area). Located in the southeast portion of the City of Paso Robles (City), the existing Plan Area is a greenfield site that abuts uninhabited rural areas (to the east and south) and existing Paso Robles neighborhoods to the north and west. The Plan Area lies approximately 3.5 miles from Downtown Paso Robles.

The Plan provides an overall strategy to achieve the community's vision of a diverse, healthy, and connected community by defining land uses and development standards, delineating a multi-modal circulation system, integrating public open space, and establishing new development regulations to guide quality urban design for this new neighborhood at the City's edge. The Plan is designed to create a sense of place by preserving and enhancing natural resources and open space and setting the framework for development and investment in the City. The Plan also describes required public infrastructure facilities, suggests financing scenarios, and provides an implementation and maintenance strategy.

FIGURE 1A: PROJECT LOCATION



1.1 Plan Area

The 234-acre Beechwood Master Planned Community (community) was annexed into the City on October 21, 2004, by action of the San Luis Obispo County Local Agency Formation Commission (LAFCO). The property had been brought into the City's sphere of influence years earlier and the annexation process formalized the inclusion of the property into the City. In order to accommodate the orderly development of the property and mitigate potential negative impacts from development, the City placed a Specific Plan Overlay on the property, namely, the Beechwood Area Specific Plan.

At the time of annexation, the City had designated the property for 674 residential units and 4.6 acres of commercial retail. A conceptual plan that the City endorsed in 2013 as the basis for the Plan (referred to as the Studio 81 Plan) indicated that the Plan Area would support a total of 1,011 residential units. After further modifications to the land use plan, the City Council officially authorized 237 Surplus Density Units beyond the 674 already designated in the 2003 General Plan, increasing the total number of dwelling units allocated to the Beechwood Specific Plan area to 911¹. The Plan is designed to support these 911 residential units, which includes 253 multi-family units, as well as 47,000 square feet of commercial uses. This program will be analyzed in an Environmental Impact Report (EIR) pursuant to the California Environmental Quality Act (CEQA).

FIGURE 1B: PLAN AREA



1 City Council Resolution NO. 18-067, May 15, 2018

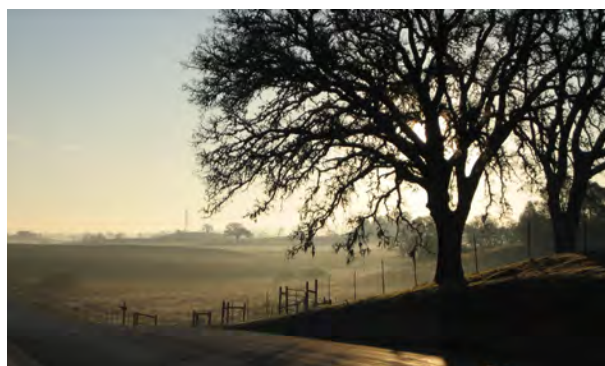
1.2 Existing Site Conditions

The Plan Area is located at the southeast corner of the City. It is bounded on the north by Meadowlark Road and the low density residential neighborhood of Meadowlark Farms; on the east by unincorporated County agricultural land and a PG&E utility corridor; on the south by Creston Road, rural residential, and agricultural land that includes vineyards and other agricultural uses; and on the west by Beechwood Drive. West of Beechwood Drive is a single family residential neighborhood and Virginia Peterson Elementary School.

The Plan Area is composed of gently rolling terrain that is divided by a ridge that runs from east to west through the middle of the property. Following this ridge, the watershed is roughly divided between the northern and southern portions of the site. Along the southern half of the site, the natural runoff is transmitted to the southwest corner of the property at Creston Road and Beechwood Drive. The northern half of the site drains northwesterly along Meadowlark Road, where the easterly portion of the site drains into Oriole Way and the most northwesterly part of the site drains toward the intersection of Meadowlark Road and Beechwood Drive. In several areas of the site, wetlands meander through and around the topography, providing habitat for local plant species.

There are currently six occupied residential units, one outdoor storage area, and a barn in the Plan Area. The property is planted with forty acres of grapes, and the balance of the undeveloped area rotates between cattle grazing and grain farming. In addition, there are 105 mature, native oak trees on the site. The majority of these trees are located in the central portion of the Plan Area.

Existing site conditions related to utilities to be completed based on CEQA studies.



The Beechwood Plan Area as seen from Creston Road facing northwest.



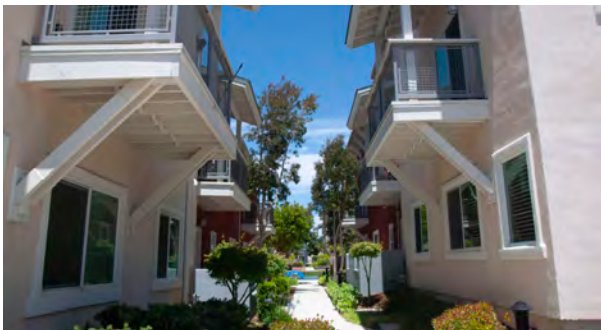
The Beechwood Plan Area as seen from Cattleman Way facing west.

1.3 Vision

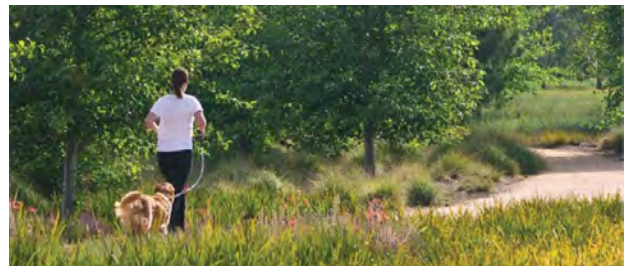
The vision of the Beechwood Specific Plan is to **establish a master planned neighborhood that features parks, multi-use pathways, and a variety of housing types and that celebrates the City's heritage through preserving and replanting oak trees native to El Paso de Robles (Pass of the Oaks).**

To achieve the vision for the Beechwood area, the Plan supports residential development at different densities along with small-scale commercial uses. The new community will be designed with an emphasis on active open space, multi-use pathways, on- and off-street bicycle paths, active and passive open spaces, and a circulation system that complements the rural character of the surrounding areas. The following guiding principles outline the various elements of the Plan and should be used to evaluate development proposals and any proposed future amendments to the Plan.

1. *Help meet regional and local workforce housing needs by providing a mix of land uses and housing types for a range of income levels.*
2. *Create healthy neighborhoods by providing recreational opportunities and safe walking and biking facilities connected with the rest of the City.*
3. *Protect native oak trees and riparian areas for future generations.*
4. *Provide safe and interconnected circulation network for all modes and abilities.*
5. *Provide certainty that phasing, financing, and maintenance of Plan Area infrastructure and services proceed in a manner that serves the interests of the community.*
6. *Provide a master planned residential community that exhibits high-quality architecture and incorporates local sustainable landscaping.*



The Beechwood Specific Plan helps meet regional and local workforce housing needs.



The Plan prioritizes healthy neighborhoods and safe walking and biking.



Native oak trees and riparian areas provide an organizing framework for the Plan. The Plan Area's open space collect and treat stormwater runoff.



The Plan promotes high-quality architecture and local sustainable landscaping.

FIGURE 1C: ILLUSTRATIVE DEVELOPMENT PLAN



LEGEND

- RESIDENTIAL SINGLE FAMILY-7
- RESIDENTIAL MULTIPLE FAMILY- 14
- RESIDENTIAL MULTIPLE FAMILY -24
- MIXED USE - 24
- COMMUNITY PARK
- AMENITIZED / PASSIVE PARK AREAS
- CONSERVED OPEN SPACE
- PG+E UTILITY OPEN SPACE
- MULTI-USE PATHWAY
- ENHANCED SIDEWALK
- NATIVE PATHWAY

- PROPOSED TREE
- EXISTING TREE, TO REMAIN
- WATER QUALITY BASIN
Final location, size and design of water quality basins subject to adjustment pending final site plans and engineering.
- SUBTERRANEAN WATER QUALITY CHAMBER
Final location, size and design of underground water quality chambers subject to adjustment pending final site plans and engineering.
- * WATER PRESSURE BOOSTER STATION
- * SEWER LIFT STATION

NOTE:
LOTS AND INTERNAL STREETS ARE CONCEPTUAL AND
SUBJECT TO REVISION IN ACCORDANCE WITH THE
SPECIFIC PLAN

The Illustrative Development Plan for the Beechwood Area envisions a network of open spaces that preserves existing mature oak trees, provides connectivity between and within new neighborhoods, and complements the agricultural context of southeast Paso Robles.

1.4 Regulatory Context

This section provides a brief summary of the Plan Area's regulatory context, highlighting those regulations that are directly relevant to planning for the Beechwood Plan Area.

General Plan

The underlying plan governing the Plan Area is the City's General Plan. Under Government Code Section 65450 et seq., a specific plan implements and must be consistent with the governing general plan. A Specific Plan is required for the Beechwood area pursuant to the General Plan's designation of this area as a Specific Plan Overlay in the 2003 Land Use Element (Amended in 2014), and has been identified as necessary to ensure the City can accommodate orderly growth in the future.

In addition to designating areas where specific plans are required, the General Plan also provides direction for distribution of density, development standards, and allowable land uses in order to address community-wide issues on a comprehensive basis. The Beechwood Specific Plan implements the General Plan's direction and supports the community-wide goals for housing, parks, and connectivity. Appendix C identifies the Specific plan policies and design standards that ensure consistency with the General Plan policies and action items.

Housing Element

In the Housing Element of the General Plan, there are currently two conflicting regulations regarding the number of housing units required at a density of 20 dwelling units per acre in the Beechwood Area. The conflicting regulations are:

Housing Element Section 2. Section 2 Action Item 10a of the General Plan Housing Element calls for 100 dwelling units at 20 dwelling units per acre in the Plan Area, plus acreage for Residential Multi-Family to accommodate 50 units at 8 dwelling units per acre (see Housing Element Policy H-1.2, One-Time Action/Project 10).

Housing Element Section 5.1. Section 5.1 of the Housing Element cites Regional Housing Needs Allocation requirements for the Beechwood area as 120 units at a minimum density of 20 du/ac for Low and Very Low Income groups and 550 units at a minimum density of 3 du/ac for Above Moderate income groups.²

The Beechwood Specific Plan complies with Section 2 of the Housing Element. Upon adoption of the Specific Plan, the project team recommends that the City amend the requirements of the Housing Element to align with Section 2.

Zoning

Upon adoption of the Beechwood Specific Plan, the existing base zones and related development standards within Plan Area will be replaced by the zoning defined in the Plan. However, much of the existing Zoning Code will apply to development within the Plan Area. Sections that will be particularly relevant to development in the Beechwood Plan Area include:

- **Section 21.16E.150 - Oak Tree Preservation.** This section references the Municipal Code Chapter 10.01; the Oak Tree Preservation ordinance. The stated purpose of the ordinance is to maintain the heritage and character of the City of Paso Robles. It provides policies, regulations and specifications necessary

² The allocation for the Beechwood Plan Area cited in the Housing Element is based on the SLOCOG April 2013 RHNA Plan. The 2019 Regional Housing Needs Allocation Proposed Final Plan, released in August 2019, indicates an increase in housing needs for the region and the City of Paso Robles between 2019 and 2028.

to govern the preservation of oak trees within the city and to control their pruning and/or removal. The provisions apply to private property owners and to tree maintenance services and arborists. The provisions also apply to new development, redevelopment and any discretionary considerations by the City that could result in development of intensities that could impact existing oak trees. Chapter 10.01 details permits and application processes required to prune or remove; the preservation and maintenance of existing oak trees; and safeguarding of trees during and after construction. All 105 oak trees in the Plan Area are subject to this ordinance. Chapter 3 of the Specific Plan addresses the compliance with this ordinance.

- **Chapter 21.16K - Neo-Traditional Design Options.** This chapter offers incentives for neo-traditional design of infill and new development. The intent of the chapter is to encourage new development to use neo-traditional designs and an urban form that recall the area's historic small town character. Section 21.16.K.020 lists the various incentives for neo-traditional design in residential development—one of which is that “the city council shall reduce city development impact fees by a minimum of two percent if an extraordinary number of neo-traditional features are incorporated into the project”. The determination as to whether a project incorporates sufficient features is made based on a point system described in Section 21.16K.040. Chapter 2 of this document describes design features of development anticipated in the Plan Area that comply with this chapter of the Zoning Code. Upon adoption of the Specific Plan, the City Council shall make a determination regarding compliance and reduction in development impact fees.

County of San Luis Obispo 2015/2016 County Bikeways Plan

The 2016 County Bikeways Plan identifies and prioritizes bikeway facilities throughout the unincorporated area of the County including, bikeways, parking, connections with public transportation, educational programs, and funding. While the Beechwood Plan Area lies within incorporated Paso Robles, the Bikeways Plan proposes a Class 2 (striped on-street) bikeway on Creston Road between Highway 41 and the Plan Area. Installation of this improvement would provide a continuation of the existing Class 2 bikeway on Creston Road alongside the Plan Area.

City of Paso Robles Bike and Pedestrian Master Plan

Adopted by City Council in December 2018, the City of Paso Robles Bike and Pedestrian Master Plan is a comprehensive plan that addresses the needs of both recreational and commuter bicyclists and walkers of all ages and abilities. Among its stated purposes is to provide a master plan for bicycle and pedestrian transportation throughout the city, and to identify and prioritize short-, mid- and long-range bicycle and pedestrian improvements. The Master Plan identifies the following improvements for the Beechwood Plan Area:

- Class 1 (separated) bikeway on Meadowlark Road east of Beechwood Drive
- Class 1 (separated) bikeway on Meadowlark Road west of Beechwood Drive
- Class 2 (striped on-street) bike lanes on Beechwood Drive
- Class 1 (separated) bikeway on Creston Road and Class 2 (striped on-street) bike lanes
- Class 1 (separated) bikeway along Airport Road
- An east-west Class 1 (separated) bikeway bisecting the Plan Area between Beechwood Drive and Airport Road.

The Master Plan also identifies a Safe Route to School study area around Virginia Peterson Elementary school, which covers roughly the western half of the Beechwood Plan Area. The Master Plan notes that continual infrastructure improvements are recommended within a ¼-mile radius around a given school, which covers most of the Plan Area up to the Oriole Way alignment (see Figure 4A). Chapter 4 of the Specific Plan addresses recommended measures for bikeways, pedestrian improvements and traffic calming measures that are consistent with the Safe Routes to School goals.

Paso Robles Gateway Plan

The 2008 Paso Robles Gateway Plan identifies the location, purpose, and general design characteristics the City Gateways identified in the General Plan. The document offers general design standards as well as design recommendations specific to each gateway.

The Gateway Design Plan identifies the southeast corner of the Plan Area along Creston Road as the Creston Road Gateway. This gateway is categorized as a Town and Country Gateway, which marks an “edge of town” entry point from the surrounding countryside. The following are design recommendations specific to the Creston Road Gateway:

1. The street should have two to four travel lanes separated by a central median, with curbside parking, except near corners where bus stops or right-turn lanes may replace the parking.
2. Strong rows of deciduous canopy street trees should be planted in broad parkway strips each side of the street.
3. Buildings should front the avenue, never backing up to it. Frontage types may include common lawn, porch and fence, stoop, forecourt, and at commercial buildings, shopfront and awning.
4. Building forms and detailing should be simple and traditional to Paso Robles, generally with gable roofs with eaves to the street. Building materials should be natural, or faithfully simulate natural materials.
5. Planning for the Olsen Ranch / Beechwood area should adhere to the T2, T3, and T4 design standards contained in the 2008 Gateway Plan.

In addition, the plan identifies Creston Road in the gateway area as a T2 Rural thoroughfare type, and specifies standards for the palette of thoroughfare, frontage, building and fence types for the T2 Rural Transect Zone. These include:

- A 100- to 200-foot setback from the roadway
- Limited-access roadway with pervious gravel shoulders
- Ranch-style residential development screened from view from the road with topography or plantings
- A Gateway road that is substantially enclosed by a canopy of relatively continuous tree plantings
- Side roads that are narrow with little if any pavement
- Board fence types
- Native vegetation preserved.

1.5 Using the Plan

The Plan is intended to serve as a comprehensive guide to development within the Beechwood Plan Area. To this end, its structure is designed to best inform and direct the user regarding design and build-out of the Plan Area. The Specific Plan is organized as follows:

- **Chapter 1: Introduction** introduces the Plan, describes the Plan Area and the overall vision for the Plan Area, and summarizes the existing regulatory context of the Plan Area.
- **Chapter 2: Land Use and Design** establishes land uses, zones, development standards, design standards, and design guidelines for all development within the Plan Area. Chapter 2 also describes the development potential of the Plan Area. The chapter begins by listing goals related to land use and design and concludes with a list of Plan policies.
- **Chapter 3: Parks, Open Space, and Natural Resources** discusses the range of open spaces within the Plan Area. The chapter begins by listing goals related to parks, open spaces and natural resources and concludes with a list of Plan policies.
- **Chapter 4: Circulation and Connectivity** describes the circulation network within the Plan Area. This includes mobility for vehicles, pedestrians, and cyclists. The chapter begins by listing goals related to circulation and connectivity and concludes with a list of Plan policies.
- **Chapter 5: Utilities and Public Services** details the range of infrastructure improvements and public services required for build-out of the Plan Area. The chapter begins by listing goals related to utilities and public services and concludes with a list of Plan policies.
- **Chapter 6: Implementation** provides information on phasing of the Plan implementation, maintenance, subdivisions, infrastructure costs and phasing, funding mechanisms, and administration of the Specific Plan. The chapter concludes with a list of Implementation Actions.
- **Appendix A: Architectural Style Guide** provides a brief guide of architectural styles that are appropriate for the Plan Area. This appendix is a reference guide only.
- **Appendix B: Typical Front Yard Landscape Plan** provides a list of appropriate plant species for the Beechwood Plan Area and diagrams a front yard landscape plan for a typical lot.
- **Appendix C: General Plan Consistency Table** is a matrix of applicable General Plan policies paired with the Beechwood Specific Plan section, policy, design standard, or design guideline that helps implement the General Plan policy.
- **Appendix D: Definitions** defines terms used in the Specific Plan.

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2 Land Use and Design

This chapter establishes the land use plan, land use categories, and corresponding zones within the Plan Area. It describes the desired uses, form, and character of pedestrian-scaled neighborhoods with a variety of housing types, quality architecture, and inviting streetscapes. The Plan shapes the development of the built environment by serving as a guide for developers, architects, and designers to ensure new development is consistent with the desired character of the Plan Area and by providing the Review Authority with direction for project evaluation.

Included throughout this chapter are Design Standards, which are requirements, and Design Guidelines, which are recommendations. Specific Plan policies related to land use and design are listed at the end of the chapter.

2.1 Land Use and Design Goals

- A.** Create a sense of place that reflects the small town character and native oaks of the City and provides a healthy environment for children, working age adults, and those in their retirement years.
- B.** Encourage an assortment of housing options ranging from single-family houses to multi-family unit types, for a range of household types and income levels, consistent with the City's housing goals.
- C.** Retain the natural character of the Plan Area by preserving native oak trees, prominent slopes, and riparian areas through avoidance, impact mitigation, and habitat enhancement.
- D.** Require architecture that is high in quality and complementary in style to the existing small town aesthetic of Paso Robles.



Examples of land uses envisioned in the Beechwood Specific Plan area. These include single-family residential, detached and attached multi-family residential, and residential mixed-development types.

2.2 Land Uses

The purpose of this section is to establish and describe land use categories for the Beechwood Plan Area that ensure compatible, desirable, and economically feasible development. The range of housing densities and styles described here support housing options for all income levels, including workforce housing. This includes single-family as well as attached and detached multi-family housing on a variety of lot sizes. Taken together, the three residential and one mixed-use land use categories expand housing opportunities for all segments of the community and provide adequate neighborhood and community services to reduce the need for driving for everyday needs within the Plan Area. The distribution of land uses is summarized in the Table 2-1: Land Use Distribution, below, and shown in Figure 2A: Land Use Map. Information on ownership, maximum dwelling units per parcel, and maximum units overall is provided in Section 2.6: Development Potential.

TABLE 2-1: LAND USE DISTRIBUTION

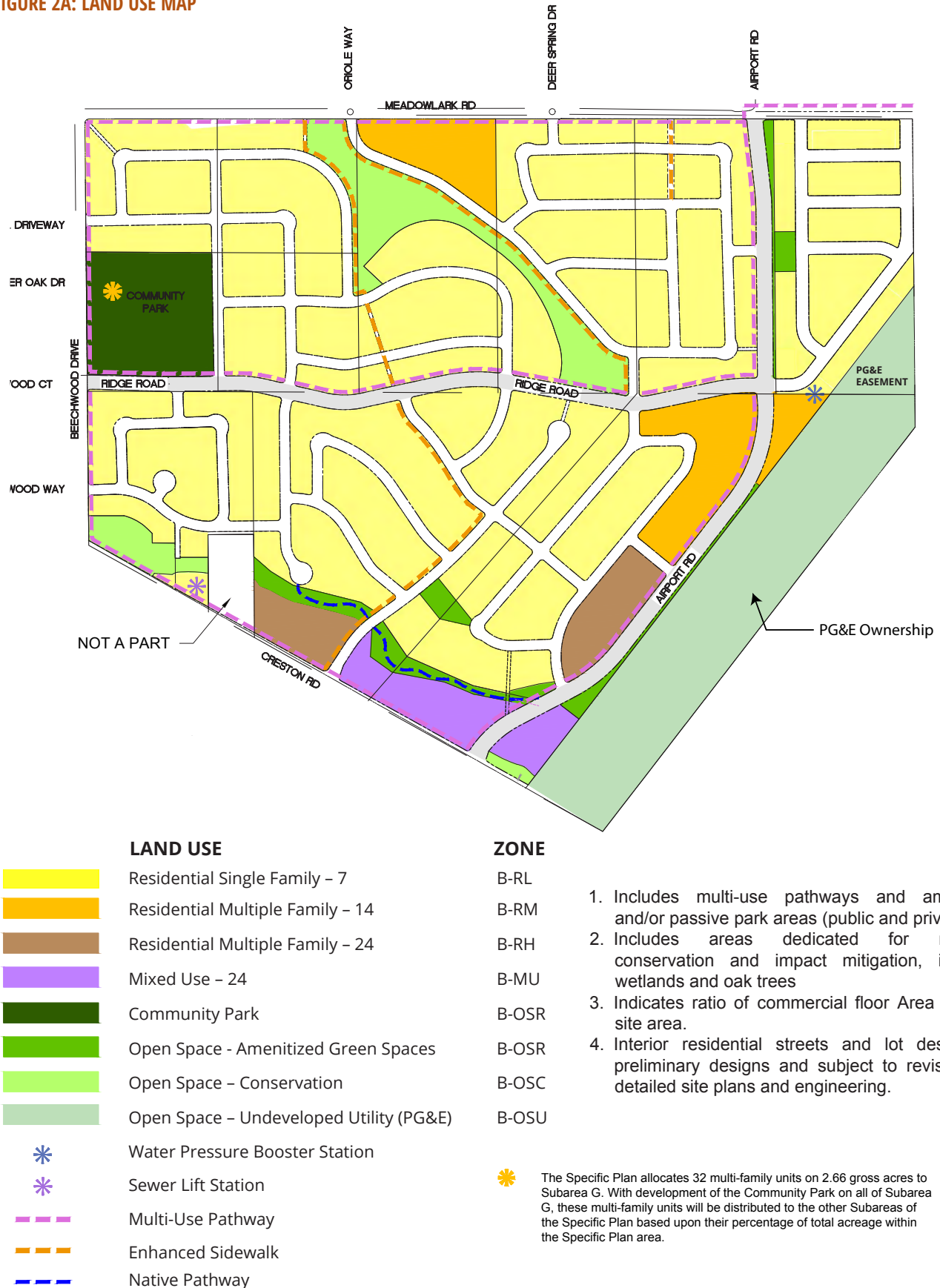
Land Use	Description	Zoning Designation (see Section 2.3)	Density (du/ ac)		Gross FAR (Max.)	Gross Acres
			Min.	Max.		
Residential - Single Family - 7	Detached single-family residential uses	B-RL	-	7	N/A	147.3
Residential - Multiple Family - 14	Attached, semi-attached, and detached residential uses	B-RM	8	14	N/A	12.1
Residential - Multiple Family - 24 ²	Compact attached residential uses	B-RH	15	24	N/A	6.9
Mixed Use - 24	Primarily neighborhood-serving retail uses. High-intensity residential uses may be allowed separately or as part of vertical mixed-use development.	B-MU	-	24 ³	0.2	5.6
Community Park	Informal and formal play field, play structures, tot lot, picnic areas, parking	B-OSR	-	-	-	8.1
Open Space - Amenitized Green Spaces	Informal recreational areas, small play structures, passive/natural park areas, and multi-use pathways.	B-OSR	-	-	-	10.1
Open Space - Conservation	Areas dedicated to resource conservation and impact mitigation. Not publicly accessible.	B-OSC	-	-	-	10.2
Open Space - Undeveloped Utility (PG&E)	PG&E ownership and easement area corridor	B-OSU	-	-	-	26.1
Rights-of-Way - Major Roads						8.4
TOTAL						234.8

¹ Local roadways and block design are preliminary designs and subject to revision with detailed site plans and engineering.

² See Table 2-4 for detailed information on how the Specific Plan meets the Housing Element requirements.

³ Mixed Use Residential will require density transfer from residential areas of the plan.

FIGURE 2A: LAND USE MAP



The Plan offers a range of housing densities and products to provide housing options for all income levels, including single-family as well as attached and detached multi-family housing. These are described below.

Residential-Only Land Uses

Residential Single Family - 7

The Residential Single Family - 7 land use designation allows for single-family residential building types, accessory dwelling units, and other accessory uses at a maximum density of 7 units per acre. Minimum lot size in this land use designation is 2,720 square feet.

The Residential Single Family - 7 designation is characterized primarily by detached single-family homes. Duplex housing types that generally appear to be at the same scale as single-family housing types are allowed. Detached and attached accessory dwelling units are encouraged.

Residential Multiple Family - 14

The Residential Multiple Family - 14 land use designation allows for a mix of housing types, including small-lot single-family houses, duplexes, triplexes, and townhouses, and cottage courts, as well as supporting recreational areas and open spaces. The minimum density in this designation is eight dwelling units per acre and the maximum density is 14 dwelling units per acre. Minimum lot size in this land use designation is 2,380 square feet.

The Residential Multiple Family - 14 supports a mix of densities, including detached, clustered and attached housing options at a similar scale as single-family options. It is intended to meet the needs of persons seeking rental housing units, at various price levels and to serve as a transition zone between Residential Single Family - 7 and Residential Multiple Family - 24 areas.

Residential Multiple Family - 24

The Residential Multiple Family - 24 land use designation supports compact multi-family development at minimum density of 15 dwelling units per acre and a maximum density of 24 dwelling units per acre. Sites that satisfy the requirements of the Housing Element must be a minimum density of 20 dwelling units per acre.

The Residential Multiple Family - 24 land use designation supports compact multi-unit housing options and supporting recreational areas and open spaces at scales appropriate for Paso Robles. This designation provides the highest allowable density at locations where it can be accommodated through sensitive site and building design. It also is intended to meet the needs of persons seeking rental housing units, at various price levels.

Other Land Uses

Mixed Use - 24

The Mixed Use - 24 land use designation allows for a variety of commercial, retail, office professional, and multi-family residential uses. In this designation, the maximum residential density is 24 dwelling units per acre and the maximum non-residential FAR is 0.2.

The focus of this designation is neighborhood- serving commercial uses and boutique specialty commercial uses with a tourist and light agriculture orientation, such as wine tasting and arts and crafts studios. Residential uses may be provided as part of horizontal or vertical mixed-use development. If non-residential uses are found not to be viable, then residential-only development may be allowed. Development in the Mixed Use land use category will be consistent in scale with the surrounding residential neighborhoods.

Community Park

The Community Park land use designation allows for a public park offering active recreation, sports facilities, playgrounds, and passive recreation intended to serve both local needs and the needs of the broader Paso Robles community. Amenities may include athletic fields, playgrounds, picnic areas, multi-use pathways, and passive park elements.

Open Space - Amenitized Green Space

Amenitized Green Spaces are small, focused open spaces that provide informal recreational areas and gathering spaces. These spaces are interspersed within residential areas and are connected by the multi-use pathway. They may be public or privately maintained but must remain open and accessible to the community.

Open Space - Conservation

The Open Space - Conservation land use category is applied to the oak tree areas, gently rolling topography, aesthetic and visual open spaces, and wetland areas. These areas are not intended for community use and will be maintained in a natural state.

Open Space - Undeveloped Utility

The Open Space - Undeveloped Utility land use designation is applied to the 26.1-acre PG&E utility easement on the east side of the Plan Area which includes 23.7 acres of PG&E owned area and 2.5 PG&E easement corridor area. This land use designation contains high voltage transmission towers, and PG&E routinely maintains the established grasses to reduce fuel loads. Areas with this land use designation are anticipated to remain undeveloped.

2.3 Zoning Districts

The zoning and development standards presented in this section implement the land uses described in Section 2.2. These zones and associated standards are sensitive to the rural nature of the surrounding area while supporting the development of pedestrian-oriented neighborhoods and a range of housing types and mixes of uses.

Zones and Permitted Uses

The Beechwood Plan establishes seven zones within the Plan Area, as shown in Figure 2A: Land Use Map. These seven zones, described below, were developed to reflect the community's vision to create diverse, healthy, and connected areas as directed by the General Plan. These zoning designations and related development standards supersede the existing zoning established on the City's Zoning Map and associated development standards and regulations in the Zoning Code. For all topics not addressed in the Specific Plan, all standards of Title 21 of the Paso Robles Municipal Code (Zoning) apply throughout the Beechwood Plan Area.

Beechwood-Residential Low (B-RL). The B-RL Zone implements the Residential Single Family - 7 Specific Plan land use designation. It regulates the development of detached single-family houses and duplexes on lots a minimum of 2,720 square feet. Permitted uses within this zone are generally consistent with those of the R-2 district as identified in Table 21.16.200 of the Zoning code.

Beechwood-Residential Medium (B-RM). The B-RM Zone implements the Residential Multiple Family - 14 Specific Plan land use designation. It regulates the development of small lot single-family and multi-family neighborhoods, including duplexes, triplexes, and townhouses designed to have a house-scale form while accommodating multiple units within each structure. Permitted uses within this zone are consistent with those of the R-2 district as identified in Table 21.16.200 of the Zoning code.

Beechwood-Residential High (B-RH). The B-RH Zone implements the Residential Multiple Family - 24 land use designation. It regulates the development of a diversity of multi-family housing types with a primary emphasis on multiplexes while being sensitive to the surrounding house-scale context. Permitted uses within this zone are consistent with those of the R-3 district as identified in Table 21.16.200 of the Zoning code.

Beechwood-Mixed Use (B-MU). The B-MU Zone implements the Mixed Use - 24 land use designation. It regulates the development of mixed-use and pedestrian-oriented commercial and/or residential uses. The B-MU Zone allows for vertical mixed-use development with neighborhood-serving retail or other active ground floor uses and offices and/or residences on upper floors. Separate commercial uses or multi-family residential uses in multiplex housing types are also allowed.

Permitted uses within this zone are generally consistent with those of the CP district as identified in Table 21.16.200 of the Zoning code. In addition, the following uses are permitted either outright or permitted conditionally:

Additional uses permitted outright: Wine Tasting Rooms; Domestic Violence Center; Employee Housing for 6 or fewer employees; Group Care Homes; Multiple-Family (two or more residential units per lot as a primary land use); Residential Care Facilities (for elderly, handicapped, etc.) for 6 and fewer residents; Supportive Housing; Transitional Housing; Secondhand merchandise (antiques); Bed and breakfast inns; Bus Stations (private).

Additional uses permitted with a CUP: Boardinghouse/Roominghouse; Convalescent Care facilities/Nursing Homes; Emergency Shelters; Living Groups; Residential Care Facilities (for elderly, handicapped, etc.) for more than 6 residents; Indoors racquetball/handball courts; Outdoor ballfields, playgrounds, stadiums and amphitheaters; Pools/waterslides as accessory use to a hotel/resort development; Tennis courts as accessory use to a hotel/resort development; Furniture, appliances and home furnishings; and Pet stores.

Beechwood-Open Space Recreation (B-OSR). The B-OSR zone implements the Community Park and the Amenitized Green Space land use designations. It is established to provide a district for publicly accessible open space areas use for recreational purposes, both active and passive.

Permitted uses within this zone are generally consistent with those of the POS district as identified in Table 21.16.200 of the Zoning code. However, permitted uses differ from those of the POS district in that no uses within the following land use categories are permitted, either outright or conditionally: Residential, Transient Lodgings, and Resources Extraction.

Beechwood-Open Space Conservation (B-OSC). The B-OSC zone implements the Open Space - Conservation land use designation. It is established to protect and preserve open space land and its existing mature vegetation as a limited and valuable resource.

No uses listed in Table 21.16.200 of the Zoning code are permitted outright within the B-OSC district. Uses permitted conditionally are limited to the following: Public facilities (government offices, community centers, libraries, recreation buildings, equipment yards, etc.); Public utilities facilities (wells, pump stations, switching and relay boxes, pipelines, power transmission lines, water tanks, and electrical substations); and Outdoor storage of materials and equipment (as an accessory use).

Beechwood-Open Space Utility (B-OSU). The B-OSU zone implements the Open Space - Undeveloped Utility land use designation. It is established to provide a district for PG&E utility operations and maintenance.

No uses listed in Table 21.16.200 of the Zoning code are permitted outright within the B-OSU district. Uses permitted conditionally are limited to Public utilities facilities (wells, pump stations, switching and relay boxes, pipelines, power transmission lines, water tanks, and electrical substations).

Development Standards

TABLE 2-2: STANDARDS FOR DEVELOPMENT IN RESIDENTIAL AND MIXED-USE ZONES

Standard	Requirement by Zone			
	B-RL	B-RM	B-RH	B-MU
Lot Requirements				
Lot Area (min./max.)	2,720/12,000 sq ft	-	-	-
Lot Width (min.) ¹	34 ft	34 ft	-	-
Lot Depth (min.) ¹	80 ft	70 ft	-	-
Lot Coverage (max.)	50% (60% on lots ≤ 5,000 sq ft)	60% (70% on lots ≤ 3,500 sq ft)	70%	80%
Setbacks				
Front (min./max.)	10/25 off primary street; 5/25 ft off shared driveway		10/20 ft	0/10 ft
Front, Detached Accessory Building (min.)	20 ft; may not be located closer to the front property line than the front wall of the main structure oriented toward the street		-	-
Street Side (min./max.)	5 ft/10 ft	5 ft/15 ft	5/15 ft	0/10 ft
Side (min.)	5 ft (3 on lots ≤ 5,000 sq ft)	5 ft (3 ft on lots ≤ 5,000 sq ft)	5 ft	5 ft
Side, Detached Accessory Building (min.)	3 ft	3 ft	-	-
Rear (min.)	15 ft	15 ft (10 on lots ≤ 3,200 sq ft)	10 ft	10 ft
Rear, Detached Accessory Building (min)	3 ft	3 ft	3 ft	3 ft
Building Form				
Height (ft) (max.)	35 ft	45 ft	45 ft	45 ft
Building Separation between Primary Structure and Detached Accessory Dwelling Unit (min.)	6 ft			
Density/FAR Requirements				
Density (min./max.)	0/7.0 du/ac	8.0/14.0 du/ac	15.0/24.0 du/ac	0/24.0 du/ac ²
Non-residential FAR (max.)	-	-	-	0.2
Parking				
Garage Setback (min.)	20 ft from front property line; 5 ft from shared driveway		20 ft	20 ft
Garage Setback from Primary Facade (min.)	5 ft	5 ft	10 ft	10 ft
Private Open Space				
Area	See Section 2.4 of this Specific Plan for applicable standards.			
Length (min.)	10 ft			
Width (min.)	6 ft			
Location	Must be provided on the lot; may not be located in a required front or side street setback; and may not be used for driveways or off-street parking.			

Standard	Requirement by Zone			
	B-RL	B-RM	B-RH	B-MU
Common Open Space				
Area (min.)	See Section 2.4 of this Specific Plan for applicable standards.			
Length (min.)	-	20 ft		
Width (min.)	-	20 ft		
Location	Must be provided on the lot; may not be located in a required front or side street setback; and may not be used for driveways or off-street parking.			
Other Building and Site Design				
Building Entrance Location and Orientation	See Section 2.4 of this Specific Plan for applicable standards.			
Common Amenities	-	See Paso Robles Zoning Code Section 21.16I.180 - Open space and recreational amenities		
Swimming Pools and Spas	See Paso Robles Zoning Code Section 21.16E.290 - Swimming pools and spas			
Fencing, Screening and Landscaping	See Section 2.5 of this Specific Plan for applicable standards.			

¹ Lot dimensions apply to single-family and small-lot development, and may include a shared easement for access. For cottage court and townhouse development where lots are not subdivided, see pages 22 and 23 for minimum lot width.

² Residential development in the B-MU zone will require density transfer from available units in residential areas of the plan, based on the allocation shown in Table 6-1. Residential-only development is allowed only if non-residential development is found to not be viable.

TABLE 2-3: STANDARDS FOR DEVELOPMENT IN OPEN SPACE ZONES

Standard	Requirement by Zone	
	B-OSR	B-OSC and B-OSU
Lot Requirements		
Maximum Impervious Surface Area	5%	5%
Setbacks		
Front (min.)	20 ft	10 ft
Side (min.)	20 ft	10 ft
Rear (min.)	15 ft	10 ft
Building Form		
Height (ft) (max.)	35 ft	25 ft
Density/FAR Requirements		
Non-residential FAR (max.)	0.2	0.2

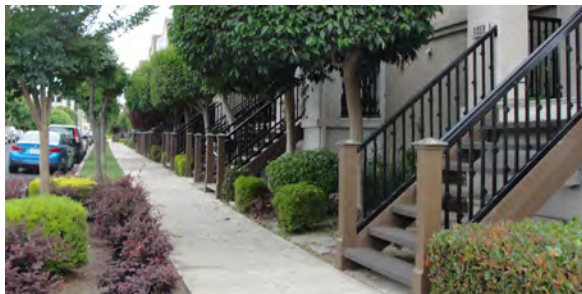
General Design Standards and Guidelines

Building design shapes a building's character and affects how it relates to the public realm. The siting of a building and the composition of its facade can create visual interest, stimulate pedestrian activity, and contribute to an overall attractive and engaging environment. This section lists design standards and guidelines that apply to development throughout the Beechwood planning area. Standards are requirements while guidelines are recommendations.

General Design Standards

DS-1 All buildings shall provide detailed design along all elevations (front, rear, and sides). Detailed design requires the use of at least five of the following architectural features on all front and exterior side (corner lot) elevations and at least three of the following architectural features on all interior and rear elevations, as appropriate for the building type and style. Architectural features shall be varied on the different building elevations:

- Dormers
- Gables
- Recessed entries
- Covered porch entries
- Cupolas or towers
- Pillars or posts
- Eaves (minimum 6-inch projection)
- Offsets in building face or roof
- Window trim
- Bay or oriel windows
- Balconies
- Decorative patterns on exterior finishes
- Decorative cornices
- Alternate feature



Stoops, porches, bay windows and balconies add visual interest to a facade and enhance the pedestrian environment.



Eaves, recessed entries, and porches with pillars or posts help add depth to a facade and help create a welcoming entry.



For development along a drive-aisle, landscaping and architectural features should be used to enhance the street-facing facade and the driveway-facing facade.



Gables, window trim, and a variety of exterior finishes are effective in enhancing the quality and residential design.

General Design Guidelines

These guidelines are intended to guide designers in creating a cohesive and attractive new neighborhood for the City that exhibits high-quality architecture and design, as well as to assist the City in review of proposals. In general, the design guidelines will encourage development that is that is contextual, desirable, and visually intriguing with architectural integrity and material sustainability.

- DG-1 *Choose architectural styles that reflect community context and heritage, and demonstrate a consistent architectural style within any one structure. See Appendix A for guides to architectural styles appropriate to the Beechwood area.*
- DG-2 *Design buildings to complement the site and neighborhood context and enhance the visual quality and character of the building. Desirable architectural features include variable wall planes, balconies, bay windows, window boxes, eaves, chimneys, dormers, and recessed entries.*
- DG-3 *Incorporate varying projections, wall planes, and openings in building facades. Minimize blank walls.*
- DG-4 *Ensure that window proportion, placement and design is consistent with the overall architectural style of the building and adds architectural interest to the building. Windows should be recessed or include decorative trim with a minimum depth of 0.5 inches to create shadows and architectural relief.*
- DG-5 *Locate windows, balconies, and decks to protect neighbor privacy. Direct sight lines to neighbor's windows or livable outdoor areas should be avoided wherever possible.*
- DG-6 *Avoid false fronts, applied mansard roofs, and other artificial rooflines.*
- DG-7 *Use authentic and durable building materials. Typical materials should include stone, stucco, brick, masonry, tile, and any other fire resistant material.*
- DG-8 *Design buildings to follow sustainable design principles such as providing access to natural light and ventilation and orientation to views, employing strategies for water conservation, reuse and harvesting, and installing solar panels to power common area facilities and lighting.*
- DG-9 *Design corner buildings with architectural features that address both sides of the corner exposure.*
- DG-10 *Avoid identical building elevations on any two adjacent structures.*
- DG-11 *Incorporate universal design in building and site design to the greatest extent feasible.*
- DG-12 *Locate surface parking areas, excluding garage aprons, to the rear or side of buildings.*
- DG-13 *Screen surface parking areas from view from the primary right-of-way.*
- DG-14 *Where possible, use alleys and drive aisles as access to off-street parking.*
- DG-15 *To create comfortable and usable open spaces, consider the effects of sun, wind, noise, and traffic.*



Entry stairs, corner landscaping, and alleys encourage pedestrian orientation and visual interest along rights-of-way.

2.4 Building Types

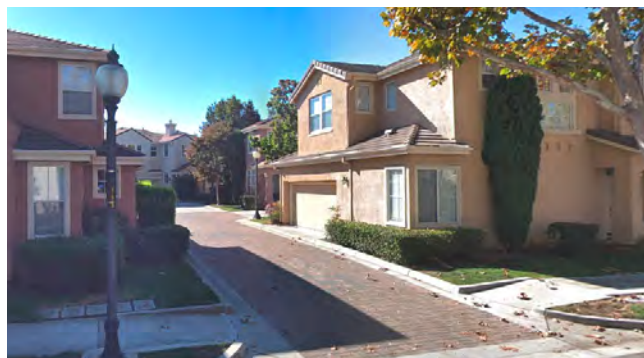
This section describes building types anticipated in the Beechwood Specific Plan area. Table 2-4: Permitted Building Types indicates the zones where each building type is permitted. Design standards specific to building type are listed on pages 23-29. These standards are related to building form, access, and open space. Following the required design standards, recommended design guidelines specific to each building type provide qualitative guidance to applicants and assist the City in review of proposals.

TABLE 2-4: PERMITTED BUILDING TYPES

Building Type	Residential Single-Family - 7	Residential Multiple-Family - 14	Residential Multiple-Family - 24	Mixed Use - 24
Single-Family House (<i>see page 23</i>)	•	•		
Accessory Dwelling Unit (<i>see p. 24</i>)	•	•		
Duplex (<i>see page 25</i>)	•	•	•	
Triplex (<i>see page 25</i>)		•	•	
Fourplex (<i>see page 25</i>)		•	•	•
Cottage Court (<i>see page 26</i>)	•	•	•	
Townhouse (<i>see page 27</i>)		•	•	
Multiplex (<i>see page 28</i>)			•	•
Commercial Flex Low-Rise (<i>see page 29</i>)				•



Single-family house building types (see page 23)



Cottage Court building type (see page 26)



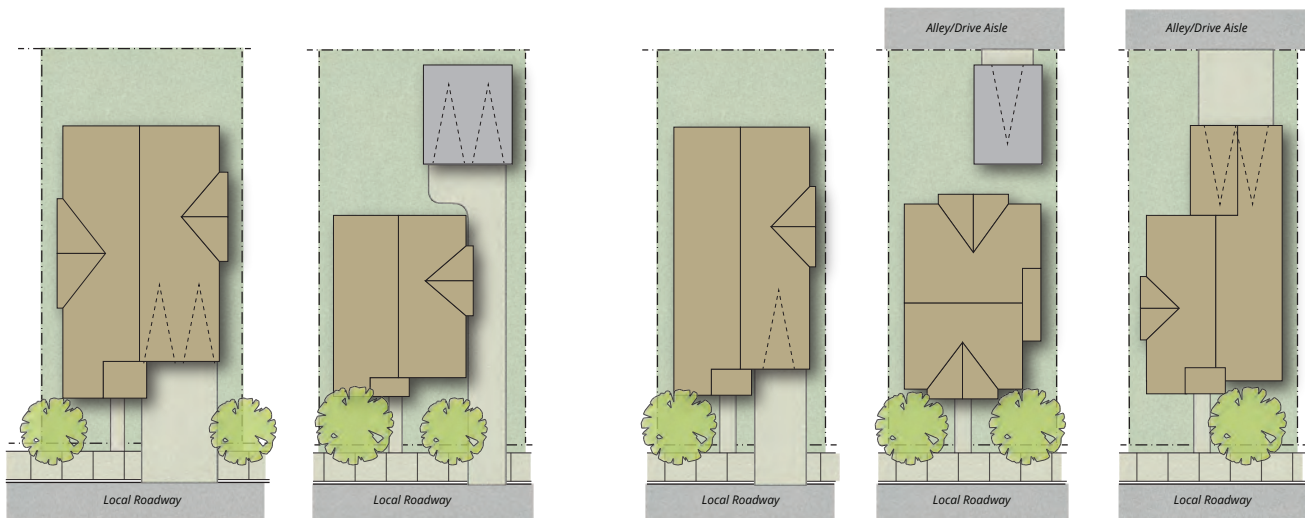
Townhouse building type (see page 25)

Single-Family House

The single-family house type is low- to medium-size structure consisting of one unit sited on a single lot with private open space and parking. Single-family houses are appropriate in the B-RL and B-RM zones.

Single-Family Design Standards

- DS-2 Buildings must be oriented toward a right-of-way
- DS-3 Building entrances must be visible and directly accessible from the right-of-way.
- DS-4 Primary windows must face the right-of-way.
- DS-5 Parking must be provided in individually secured garages, either attached or detached.
- DS-6 Detached garages must be located at the rear of the property and may be accessed from the front, side or rear of the property.
- DS-7 Transitional elements such as stoops, front landings, porches, and landscaping must be located between the sidewalk and private entryway.
- DS-8 Detached garages must be designed with colors, materials and forms that are consistent with the design of the primary structure.



Single-family house site plans. These examples show a lot size 42 feet in width and 80 feet in depth.

Small lot single-family house site plans. These examples show a lot size 34 feet in width and 80 feet in depth. As shown above, access can be from the front or front a rear alley.

Single-Family Design Guidelines

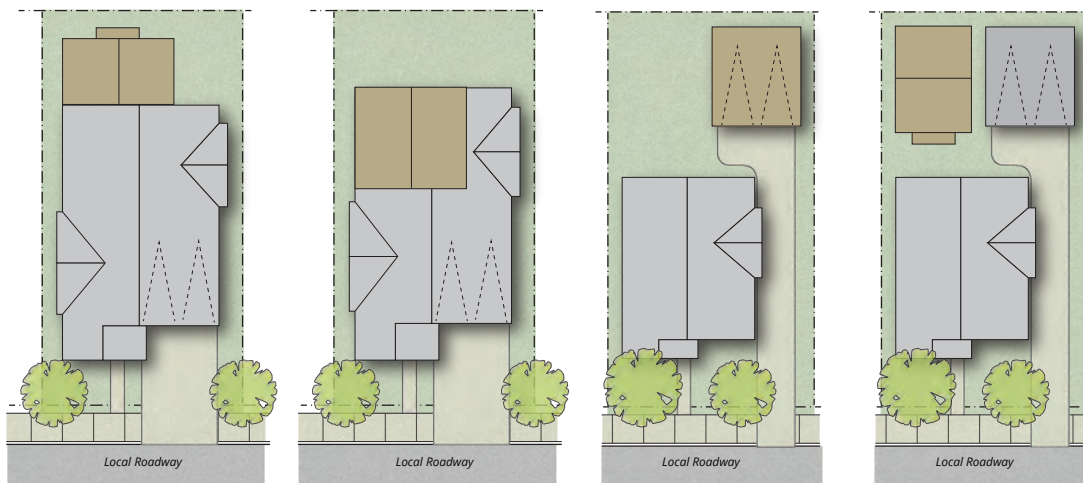
- DG-16 Minimize the visual prominence of the garage from the right-of-way. Garage doors should occupy no more than 50 percent of the building facade; 60 percent for lots $\leq 3,200$ square feet.
- DG-17 Locate the pedestrian access path separate from the driveway. Where the driveway provides pedestrian access to the building, provide a distinguishable path.
- DG-18 Where possible, design blocks with alleys for vehicular access.
- DG-19 Design floor plan layouts to be sensitive to lot shape, width and depth to maximize usable outdoor spaces.

Accessory Dwelling Unit

Accessory dwelling units (ADUs) are single residential units on a single-family house lot containing no more than one existing single-family residence. When converting an existing garage into an ADU, the primary residence must remain in compliance with parking requirements. While ADUs are subject to the development standards in Table 2-2, ADUs are not counted as units under zoning and do not count toward the units allowed under City Council Resolution No. 18-067.

Accessory Dwelling Unit Design Standards

- DS-9 Accessory dwelling units must be designed with colors, materials and forms that are consistent with the design of the primary structure. When an ADU is constructed above an existing detached garage, the colors, materials, and forms of the ADU must be consistent with the detached garage.
- DS-10 Attached ADUs must have separate entrances to the exterior.



As shown in the diagrams above, an ADU can take many forms, including an extension of the existing floor plan, an upper-story addition above a primary residence, new construction above an existing detached garage, and new detached construction.

The images to the left show new construction (far left) and an ADU above an existing attached garage (left).

Accessory Dwelling Unit Design Guidelines

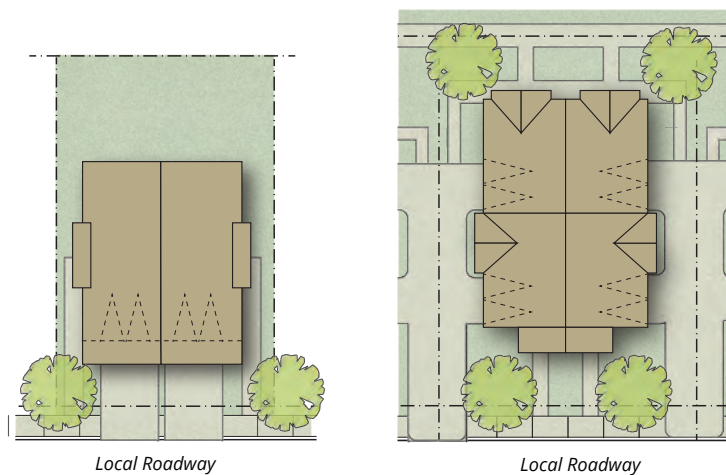
- DG-20 Design ADUs to have interesting roof forms.
- DG-21 Employ innovative design for compact spaces. Good site design and interior design can maximize light and ventilation, minimize space used for circulation, and accommodate full kitchens in small spaces.
- DG-22 When adding onto an existing structure, align plumbing with existing drains and vents to simplify the addition.
- DG-23 Ensure a safe path of travel between the ADU and the sidewalk or alley.
- DG-24 Locate second-story windows in a way that is sensitive to the privacy of the primary structure and neighboring structures.

Duplex, Triplex, and Fourplex

A small- to medium-size structure consisting of two, three, or four units within one building that has the form and scale of a single-family house. Duplexes are appropriate in the B-RL and B-RM zones, and triplexes and fourplexes are appropriate in the B-RM and B-RH zones. Fourplexes may also be appropriate in the B-MU zones upon a finding that commercial uses are not viable.

Duplex, Triplex, and Fourplex Design Standards

- DS-11 Buildings must be oriented toward the public street.
- DS-12 Each unit entry must be accessible from the right-of-way.
- DS-13 Parking must be provided in individual garages or carports
- DS-14 Each unit must be provided 100 square feet of private open space. This may be a balcony, porch, or garden area.



Small, house-scale multi-unit buildings contribute to a small-town feel while achieving moderate densities. The example site plans to the left show a shared driveway, separated footpaths and ample area for landscaping.

Duplex, Triplex and Fourplex Design Guidelines

- DG-25 *Minimize paved areas. Locate landscaping in areas abutting driveways and within setbacks.*
- DG-26 *Incorporate spacial paving or permeable paving in paved areas.*
- DG-27 *Employ pedestrian-oriented building design features such as sloped, one-story roofs at building entries.*
- DG-28 *Design buildings to express a single architectural style while lending individual identity to each unit. This may be accomplished through distinctive entry design, a break in building form or appropriate variation of materials, or variation the elevation of the entry.*



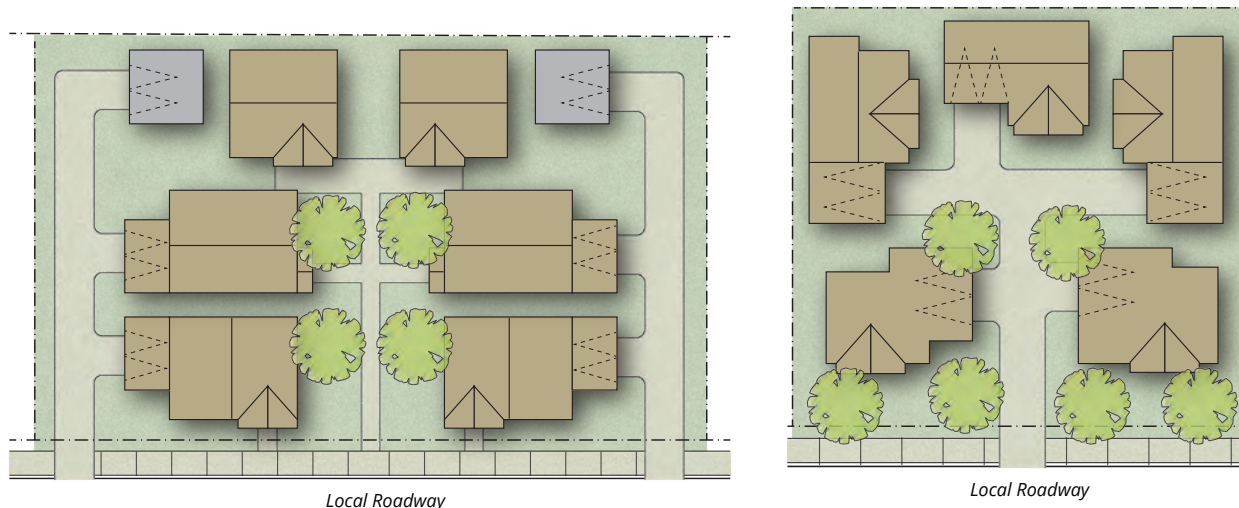
Design of duplex, triplex, and fourplex development emphasizes pedestrian pathways, unit entries, and landscaping.

Cottage Court

A cottage court is a series of three to nine small, detached single-family structures located on a single lot with individual buildings arranged to define a shared court that is typically perpendicular to the street. The shared court is a common open space essential to the building type. In the Beechwood Plan Area, the central shared area may be a drive aisle (also known as a motor court). Cottage court development is appropriate in the B-RL, B-RM and B-RH zones. For a subdivision in the form of a cottage court, see Single-Family House building type.

Cottage Court Design Standards

- DS-15 The minimum lot width for Cottage Court development is 120 feet.
- DS-16 Units must be oriented toward a common courtyard or driveway.
- DS-17 Entrances must be visible and accessible from a right-of-way, common courtyard, shared driveway, or park.
- DS-18 Each unit must be provided a minimum of 100 square feet private open space.
- DS-19 Five percent of the lot area must be accessible common open space.
- DS-20 The front setback from a shared drive aisle must be landscaped.
- DS-21 Portions of buildings adjacent to the right-of-way shall address the street with corner elements, articulation, and/or windows similar to those of a front facade.



Cottage courts are small clusters of single-family homes arranged around a common open space (left) or a shared driveway (right). In both cases, shared common open space is an essential feature of this building type.

Cottage Court Design Guidelines

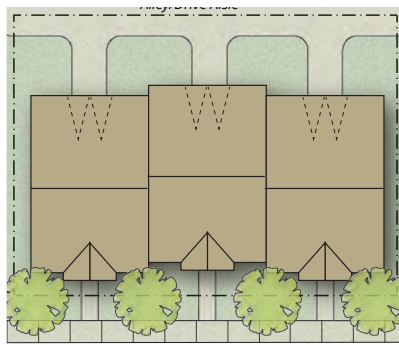
- DG-29 Provide definition to the courtyard entry with landscaping, roof forms, or other design elements.
- DG-30 Landscape all open areas not used for buildings, parking areas, driveway, pedestrian pathways, utilities, or amenity areas.

Townhouse

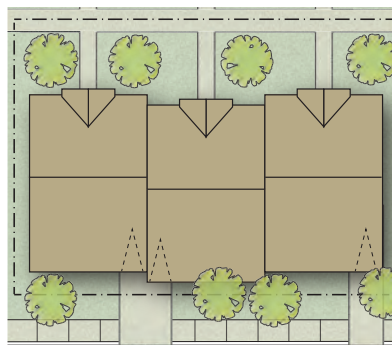
The Townhouse building type is a series of attached units within a single structure where individual entrances face a public or private street or shared drive aisle. Typically, a townhouse development consists of two to eight individual building facades, with private open space for each unit in the form of a patio, small yard, and/or balcony. Parking is integrated into the ground floor of units and individually secured. Townhouse development typically does not include stacked or interlocking units. Townhouses are appropriate in the B-RM and B-RH zones.

Townhouse Design Standards

- DS-22 The minimum lot width for a townhouse development site is 60 feet or two townhouses.
- DS-23 Townhouses must be oriented toward, visible from, and accessible from a right-of-way, drive aisle, common open space, or park.
- DS-24 Townhouse parking must be provided in individually garages or carports. Tandem parking configurations are permitted. Parking may be accessed from a public right-of-way, private drive, side street or alley.
- DS-25 Each townhouse unit must be provided a minimum of 200 square feet of private open space. This may be a porch, yard, or garden area.
- DS-26 Townhouse development must provide 100 square feet of private common space per unit.



Local Roadway



Local Roadway

Townhouse development is an opportunity to establish an attractive and pedestrian friendly street wall. Whether front entries are located along a right-of-way (far left) or along a shared open space (left), the continuity of building facades lends character to the neighborhood.

Townhouse Design Guidelines

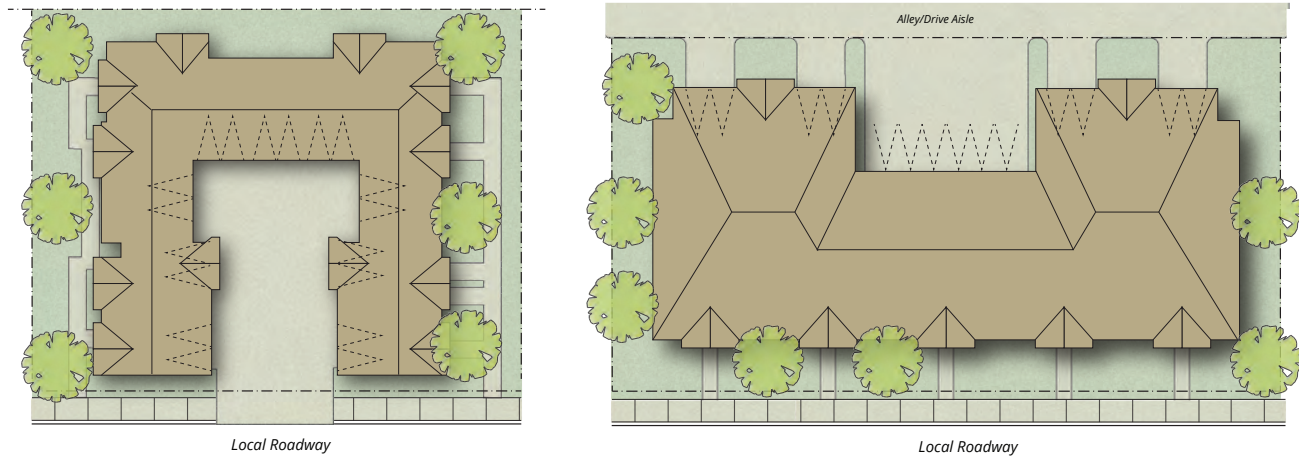
- DG-31 Use a diverse mix of frontages (projecting porches, engaged porches, stoops, etc.) to create visual interest along the right-of-way.
- DG-32 Articulate the massing of townhouses such that individual units are differentiated from each other. Units should have a varying setbacks and separate, identifiable roof forms.
- DG-33 Provide a variety of landscaping within the front setback of each townhouse unit.
- DG-34 Design facades such that dwelling entries are the predominant facade feature.
- DG-35 Avoid long, horizontal eaves and roof elements across the facades of townhouses. Off-set units and/or break up linear eaves and roof elements with gables, building projections, and other architectural articulation.
- DG-36 Where parking is accessed from the front of the building, ensure that garage doors are not a visually dominant feature of the facade.
- DG-37 Minimize driveway aprons. Where possible, configure garages such that adjacent single-car garage doors are paired.

Multiplex

A medium-size structure consisting of multiple stacked dwelling units. This type may be designed with a shared entry or individual entries along the front or side of the structure. Multiplex development is appropriate in the B-RM and B-RH zones. Multiplexes may also be appropriate in the B-MU zones upon a finding that commercial uses are not viable.

Multiplex Design Standards

- DS-27 Buildings must be oriented toward a public or private street.
- DS-28 Building entrances must be visible and accessible from a right-of-way, footpath or courtyard.
- DS-29 Parking is provided in shared garages and/or surface parking.
- DS-30 Each unit must be provided 60 square feet of private open space
- DS-31 Five percent of the lot area must be accessible common open space.



Multiplex units are block-scaled buildings containing more than four units. The buildings present an opportunity to define the character of the block.

Multiplex Design Guidelines

- DG-38 Incorporate alleys and pathways to break up large buildings, provide direct access to shared open space, and add visual interest from the right-of-way.
- DG-39 Locate parking within buildings or to the rear to minimize the visual impact on the street.



Multiplex units may be stacked or interlocking. The roof forms, colors, and materials of the above structures add visual interest.

Commercial Flex Low-Rise

A block-scaled building that typically provides a vertical mix of uses with active uses on the ground level and service or residential uses on upper floors. This building type may also include strictly commercial uses consisting of side-by-side and/or stacked units. Commercial flex low-rise buildings are appropriate in the B-MU zone.

Commercial Flex Low-Rise Design Standards

- DS-32 Buildings must be oriented toward a public street.
- DS-33 Each residential unit must be provided 60 square feet of private open space.
- DS-34 Five percent of the lot area must be common open space accessible from the right-of-way.
- DS-35 Residential entries must be separate from commercial entries.

Commercial Flex Low-Rise Design Guidelines

- DG-40 *Where appropriate, establish shared parking areas among buildings within 400 feet of one another.*
- DG-41 *In mixed use buildings, clearly distinguish in form and location entrances to residential, office or other upper story uses entrances to retail or other commercial ground-floor uses.*
- DG-42 *Design outdoor spaces carefully, with defined edges, seating areas, and lighting establishes a sense of place.*
- DG-43 *Use elements such as small towers to accent massing and provide visual interest, particularly on corners.*
- DG-44 *Design retail spaces with a high degree of transparency. Storefront windows, display cases, and other elements that communicate program should be visually prominent.*
- DG-45 *Distinguish the ground floor from upper stories with horizontal elements, step-backs, overhang, arcades, or other architectural features.*



These commercial flex low-rise structures have active retail on the ground floor and flexible upper stories that may accommodate a range of uses, both residential and non-residential.

2.5 Design of the Public Realm

This section describes the design of the public realm within the Plan Area. Included in the discussion is design on individual lots that impacts the look and feel of the Beechwood public realm as well as streetscape design elements located within the right-of-way. Like in Section 2.4, this section includes both design standards, which are required of all development, and design guidelines, which are recommended of all development.

Fencing and Screening

Fencing and screening in the Beechwood Specific Plan will emphasize the small-town neighborhood character of the area as well as complement the area's network of multi-use pathways and sound-attenuating perimeter walls. While development within the area must comply with the standards established in the City's Zoning Ordinance Section 21.20.140, expectations for design within the Beechwood area call for additional design standards.

On properties not abutting a sound-attenuating perimeter wall, fences and walls within front and street-side setbacks will be designed to enhance the rural quality of the area and foster a sense of openness in the community. Fences and walls will be articulated to reduce perceived walking distances and add visual interest to the public realm. Where the Plan includes a sound-attenuating wall, landscaping may complement the design of the wall.

Policies related to fencing and screening do not apply to fences or walls required by regulations of a State or Federal agency or by the City for reasons of public safety. For the design of sound-attenuating perimeter wall along arterials and collectors within the Plan Area, see Chapter 4, Section 4.2.



Fences in the Beechwood plan Area should be rural in nature and transparent in design. The split-rail fence on the left and the wrought iron fence on the right help establish a comfortable pedestrian experience.

Fencing and Screening Design Standards

- DS-1 Gates, jogs, planter rows, and/or piers a maximum of 14 inches wide, and/or other features shall be integrated into the design of all fences or walls that exceed 30 feet in length.
- DS-2 On properties abutting the sound-attenuating perimeter wall, additional fencing or landscaping screening is not permitted above the perimeter wall. Landscape screening such as hedges a maximum height of 7 feet are permitted along the wall.
- DS-3 Any retaining wall over six feet in height shall be benched and/or stepped back so that no individual retaining wall exceeds a height of six feet.

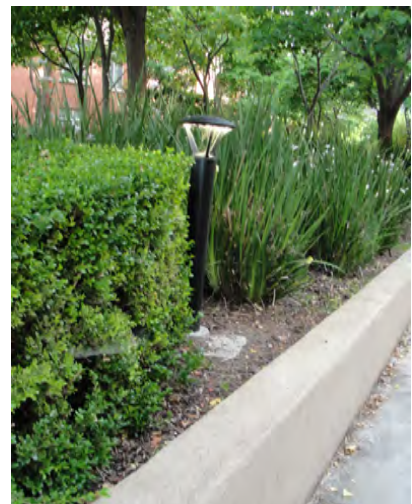
- DS-4 On corner lots, walls abutting the side yard shall be set back a minimum of five feet from any side-walks or curbs. Barbed, razor, and concertina wire are prohibited on all properties, and chain link fencing is prohibited within a front or street side setback.
- DS-5 Mechanical equipment, such as air conditioning, heating, ventilation ducts, exhaust vents, loading docks, refuse storage areas, and utility services must be screened from view from the public right-of-way.
- DS-6 Wall- and ground-mounted equipment may not be located between the building and the street. Screening must be as high or higher than the highest point of the equipment being screened.
- DS-7 Roof-mounted mechanical equipment must be screened from public view from adjacent rights-of-way and residential development with building parapets or other architectural elements.

Fencing and Screening Design Guidelines

- DG-46 *Design all on-site fencing to be compatible with the primary structure in color, material, and architectural style.*
- DG-47 *When appropriate during site preparation and construction, install temporary fencing to protect wetland resources, trees, or other similar sensitive features.*
- DG-48 *Embellish fences with climbing vines and other landscape features that do not add to the overall height of the fence.*
- DG-49 *Design corner fencing and fencing abutting an open space to be an open style such as split-rail or wrought iron.*

Streetscape and Lighting

The design of rights-of-way in the Plan Area includes a strong streetscape program that defines the street and creates a safe environment for automobiles, pedestrians, and cyclists while adding beauty, comfort and shade to the street. Selection of street tree species is based on height, canopy diameter, disease resistance, and where appropriate, transparency. See Figure 2B: Street Tree Plan for more information. Additional street-scape measures such as special paving, street furniture, and other pedestrian amenities enhance walkability, comfort, and safety in areas with high pedestrian foot traffic.



Pedestrian-scaled lighting like the acorn-style on the left and the path light on the right contribute to a safe public realm. In commercial and mixed-use areas, outdoor furniture can make a streetscape inviting and comfortable.

Lighting throughout the Plan Area will be designed to provide ambiance and safety without unnecessary spillover or glare onto adjacent properties. Lighting includes overhead streetlights, pedestrian-scaled fixtures along the multi-use pathway and within mixed-use areas, and on-site illumination.

The streetscape maintenance program will be consistent with Zoning Ordinance Chapter 10.04 (Street Tree Planting and Maintenance).

Streetscape and Lighting Design Standards

- DS-8 Special paving shall be installed along areas with high pedestrian foot traffic, including near the Mixed Use area and the Community Park.
- DS-9 Street trees shall be installed per Figure 2B: Street Tree Plan.
- DS-10 Water quality best management practices shall be incorporated in the design of all streetscapes to the extent feasible.
- DS-11 A lighting plan for the Plan Area shall be developed and shall include regularly-spaced streetlights, regularly-spaced pedestrian-scaled lights along the multi-use pathway, and adequate pedestrian-scaled lighting within parks, pathway heads, and other publicly-accessible open spaces. Pedestrian-scaled lights shall be vandal-proof and a maximum of 16 feet in height.
- DS-12 All pole lights shall utilize full cut-off “hooded” fixtures to prevent off-site light spillage and glare.
- DS-13 All lighting within the Plan Area shall incorporate energy-efficient fixtures and technology.
- DS-14 Building light fixtures shall be designed or selected to be architecturally compatible with the main structure, which should complement the theme of the surrounding area.
- DS-15 Building entrances must be adequately lit to provide safety and security.

Streetscape and Lighting Design Guidelines

- DG-50 *Employ accent lighting that is down-lit and focused on key architectural elements and trees.*
- DG-51 *Determine lighting along multi-use pathways and within open spaces according to need. Lighting should be minimized while providing adequate safety and usability of public spaces.*



A cohesive palette of streetscape design elements helps create a sense of place.

Landscaping and Sustainability

Landscaping throughout the Plan Area will be designed to define, unify and enhance the public realm, reduce water needs, and mitigate environmental degradation resulting from storm water runoff. Landscaping within the right-of-way and on individual lots will incorporate a range of trees, shrubs, grasses and groundcovers to complement existing species. Although the complex habitat of native plant communities cannot be replicated, ecological principles and concepts are applied to the design of ornamental and constructed native landscapes in order to achieve higher levels of environmental benefit and sustainability.

This section presents a framework for an attractive and sustainable landscape pattern that unifies development with surrounding open space and habitats, maximizes the likelihood of plant success, and limits the need for additional resources. Figure 2B: Street Tree Plan illustrates the placement and species for all street trees within the Plan Area. A more complete list of species appropriate to the Plan Area is provided in Appendix B: Typical Front yard Landscape Plan. In addition, the standards and guidelines in this section promote the use of ecological design principles and the use of drought-tolerant or native plant and tree varieties with a focus on the rural landscape. All landscaping must also comply with Section 5.2 of the Specific Plan (Water Conservation Strategies) and Zoning Ordinance Chapter 21.22B (Landscape and Irrigation Ordinance).



Street tree species recommended for perimeter streets around the Beechwood Plan Area are the Australian Willow (left), the Chinese Pistache (center), and the London Plane Tree (right).

Landscaping and Sustainability Design Standards

- DS-16 All landscape materials shall be consistent with the City's Landscape Ordinance and the approved street tree planting list.
- DS-17 Plant communities must be designed to create ecological conditions that closely match the available light, water, climate, and soils of the City and region.
- DS-18 Turf areas shall not exceed 30 percent of yard areas. Synthetic turf, however, is encouraged and permitted in any yard.
- DS-19 Plant species shall be planted and located in communities and associations rather than single species to encourage plant diversity.
- DS-20 Irrigation systems should minimize precipitation rate.

FIGURE 2B: STREET TREE PLAN



STREET TREE PALETTE

PERIMETER STREETS

STREET	BOTANICAL NAME	COMMON NAME
● Beechwood Dr	Geijera parviflora	Australian Willow
● Creston Rd	Pistacia chinensis	Chinese Pistache
● Meadowlark Rd	Platanus acerifolia	London Plane Tree

INTERIOR COMMUNITY STREETS

STREET	BOTANICAL NAME	COMMON NAME
● Airport Rd	Koelreuteria paniculata	Goldenrain Tree
● Airport Rd (Median)	Quercus agrifolia	Coast Live Oak
● Oriole Wy	Fraxinus augustifolia 'Raywood'	Raywood Ash
● Ridge Rd	Geijera parviflora	Australian Willow

NEIGHBORHOOD STREETS

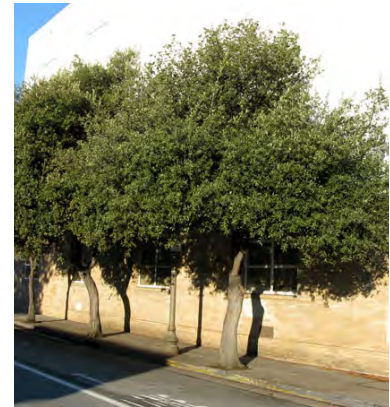
● Selection determined at neighborhood level

BOTANICAL NAME	COMMON NAME
Cladrastis lutea	Yellowwood
Fraxinus a. 'Raywood'	Raywood Ash
Geijera parviflora	Australian Willow
Ginkgo biloba	Maidenhair Tree
Koelreuteria paniculata	Goldenrain Tree
Lagerstroemia indica	Crape Myrtle
Pistacia chinensis	Chinese Pistache
Ulmus parvifolia	Chinese Elm
Zelkova serrata	Sawleaf Zelkova

— ENHANCED SIDEWALK

Landscaping and Sustainability Design Guidelines

- DG-52 *Incorporate cisterns and graywater systems for sustainable landscape irrigation purposes.*
- DG-53 *Use sustainable materials in the landscape construction and site furnishing selections including, but not limited to, recycled materials, environmentally preferable products, materials that can be recycled, certified “green” products and locally available or manufactured products.*
- DG-54 *Employ low impact development (LID) techniques in residential yard areas. See Section 5.2, Infrastructure Improvements for examples of LID techniques.*
- DG-55 *Re-use soils from the site as horticultural soils where appropriate and feasible.*
- DG-56 *Plant California native plants on slopes and other areas not devoted to active recreation.*
- DG-57 *Whenever possible, plant materials should be indigenous to the region, or similar in character and habitat to indigenous materials.*
- DG-58 *Maintain soils to promote optimum plant growth and retain moisture.*
- DG-59 *On individual lots, design front yard landscaping and choose plant species to be consistent with the typical landscaping plan and species list shown in Appendix B.*



Street tree species recommended for streets interior to the Beechwood Plan Area are the Goldenrain Tree (left), the Coast Live Oak (center), and the Holly Oak (right).

2.6 Development Potential

This section describes the anticipated build-out of the Beechwood Plan Area based on the allocation of development in City Council Resolution NO. 18-067. That resolution allocated a total of 911 residential units and 47,000 square feet of commercial area to the Plan Area distributed among subareas as indicated in Figure 2C: Land Use Diagram with Subareas and Table 2-5: Development by Subarea. As the Plan achieves build-out, units may be shifted between subareas provided the total number of units does not exceed 911 excluding accessory dwelling units. Commercial uses allocated to the Mixed Use-24 land use designation, however, may be converted to residential dwelling units at a rate of 1 dwelling unit per 1,000 square feet of commercial use, upon a finding that commercial uses on the Mixed Use site in question are not viable. Any residential uses constructed in the Mixed Use-24 land use designation must be part of, and not in addition to, the 911 units allocated to the Plan Area.

As noted in Table 2-5 footnotes 2, 3 and 4, the Plan Area is required to support 100 units at a minimum density of 20 units per acre and a minimum of 50 units at a minimum density of 8 units per acre (see Section 1.4)

While accessory dwelling units will not be counted in the overall unit count, about 656 single-family dwelling units are anticipated in the Plan Area, all of which could support one accessory dwelling unit (ADU).

FIGURE 2C: LAND USE DIAGRAM WITH SUBAREA

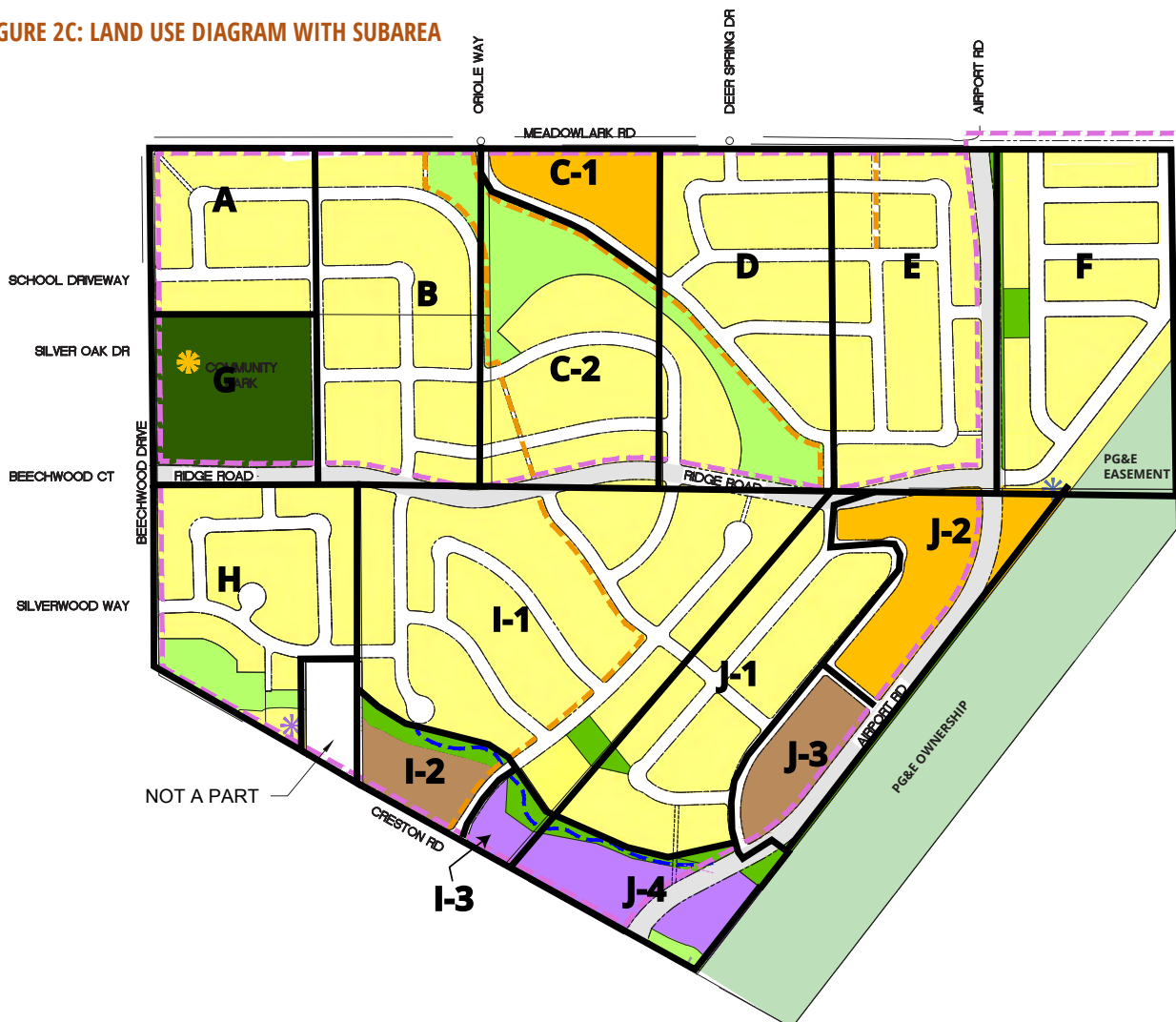


TABLE 2-5: DEVELOPMENT BY SUBAREA

Subarea	Current Owner	Gross Area (acres)	Dwelling Units Allocated per City Council Resolution NO. 18-067	Dwelling Units to be Reallocated from Subarea G	Commercial Area (sf)	Gross Density ¹ (du/ac)
A	Harrod	9.75	36	2	-	3.7
B	Harrod	19.80	86	3	-	4.3
C Total	Harrod	19.95	82	3	-	4.1
C-1		4.50	48 ²	1	-	10.7
C-2		15.45	34	2	-	2.2
D	Pensco	19.95	88	3	-	4.4
E	Erskine	19.95	88	3	-	4.4
F	Huebner	19.95	88	3	-	4.4
G	Delucca	9.66	32⁵	N/A	-	3.3
H	Harrod	15.80	54	3	-	3.4
I Total	Erskine	38.02	164	6	7,000	4.3
I-1		32.22	124	5	-	3.9
I-2		4.20	40 ³	1	-	9.5
I-3		1.80	-	-	7,000	-
J Total	Harrod	38.22	193	6	40,000	5.0
J-1		16.55	60	3	-	3.6
J-2		9.70	63 ²	2	-	6.5
J-3		4.67	70 ⁴	1	-	15.0
J-4		7.30	-	-	40,000	-
-	PG & E	23.78	-	-	-	-
Sub Total Residential	-	201.95	911⁶	-	-	4.5
Sub Total Commercial	-	9.10	-	-	47,000⁷	-
Total	-	234.83	911	32	47,000	-

Notes:

¹ All areas and density are expressed in gross acreage. Subarea acreage includes local roadways, parks, open spaces, and easements. Net density and acreage will differ; to be determined with implementing development applications in accordance with the Development Standards listed in this chapter.

² Subareas C-1 and J-2, together, shall have a minimum of 50 units provided at 8 du/ac min.

³ Subarea I-2 shall have a minimum of 2.0 acres provided at 20 du/ac

⁴ Subarea J-3 shall have a minimum of 3.0 acres provided at 20 du/ac

⁵ As shown on the Land Use Diagram, Subarea G is anticipated to support a Community Park. However, 32 multiple-family residential units are allotted to Subarea G per City Council Resolution NO. 18-067. When the community park is expanded to the entire subarea as shown on the Land Use Diagram, the 32 dwelling units will be reallocated proportionally to other subareas based on acreage. Additionally, all 32 units must take the form of one or more of the following building types: small lot single-family homes (single-family homes on lots less than 40 feet width), duplex, triplex, fourplex, cottage court, townhouse, or multiplex.

⁶ Transfer of dwelling units within and between property ownership is permitted to allow design and market flexibility and avoid sensitive resources, provided the maximum number of units allowed by this Specific Plan is not exceeded.

⁷ Potential future conversion of commercial use to residential dwelling units in the Mixed Use-24 Land Use Designation at a rate of 1 dwelling unit per 1,000 sf of commercial use; reallocated by future amendment to the Specific Plan.

2.7 Land Use and Design Policies

The following numbered Beechwood Specific Plan (BSP policies) will ensure that development within the planning area achieves the shared vision for the Beechwood Area and is guided by the Plan's Guiding Principles.

- BSP-1** Allow for a mix of uses, residential densities, and open spaces as described in Table 2-1: Land Use Distribution and Figure 2A: Land Use Map.
- BSP-2** Require compliance with development standards in Section 2.3 and design standards in sections 2.4 and 2.5 as applicable based on building type.
- BSP-3** Allow transfers of density between subareas of the Plan Area such that the total number of units in the Plan Area does not exceed 911 (see Chapter 6: Implementation).
- BSP-4** Permit and facilitate the proportional re-allocation of the 32 units allocated to subarea G to other subareas to permit construction of the Community Park as shown in Figure 2A. Re-allocation of units is proportional based on acreage and all 32 units must take the form of one or more of the following building types: small lot single-family (single-family homes on lots less than 40 feet in width), duplex, triplex, fourplex, cottage court, townhouse, or multiplex.
- BSP-5** For the construction of residential uses in the Mixed Use -24 land use designation, require the conversion of 1,000 square feet of permitted commercial area per residential unit.
- BSP-6** Permit residential-only development in the Mixed Use -24 area only upon a finding by the Planning Commission that non-residential are not viable.
- BSP-7** Permit and encourage the construction of accessory dwelling units on single family house lots. Accessory dwelling units may be detached new construction, converted detached garages, converted attached garages, additions, or remodels, provided all additions comply with the development standards of the base zone.
- BSP-8** In the event that the development standards of the Specific Plan are physically infeasible due to specific site conditions, allow for a Minor Modification process in accordance with the Zoning Ordinance Chapter 21.23 (Zoning Administrator – Permits, Variances, Applications, and Appeals).
- BSP-9** Refer to Appendix B: Typical Front Yard Landscape Plan for the landscape design on lots throughout the Plan Area.
- BSP-10** Promote entry-level and workforce housing opportunities to the extent possible through the provision of residential units at a variety of price points and support for the construction of ADUs.

3 Parks, Open Space, and Natural Resources

This chapter establishes the Plan's goals for parks and open space, describes the types of parks and open space that will be established, and defines the natural features unique to the Plan Area. Together, the land use plan and the parks and open space network will preserve the natural features of the Plan Area while creating a new livable neighborhood with ample space for active and passive recreation. Specific Plan policies related to parks, open space and natural resources are listed at the end of the chapter.



Examples of parks and open space envisioned in the community

3.1 Parks, Open Space, and Natural Resource Goals

- A.** Connect neighborhoods by a multi-use pathway system, bike lanes, and sidewalks.
- B.** Enrich the natural setting with a variety of public parks, multi-use pathways, and open spaces, each with its own unique character and range of active and passive uses, including a community park, amenitized green spaces, green belts, and natural features.
- C.** Retain the natural rural character of the area by preserving open space and protecting wildlife habitat and vegetation through avoidance, impact mitigation, and habitat enhancement.
- D.** Sensitive resources are preserved and enhanced in dedicated open space and utilizing oak trees protection measures.
- E.** Provide for additional park area with future development of Subareas within the Plan and/or pay in-lieu fees to fund park improvements/acquisitions city-wide, or a combination thereof as approved by the City.

3.2 Parks and Open Space

The parks and open space network provides opportunities for active and passive recreation, adds to the natural beauty of the area, preserves natural resources, and enhances property values within the Plan Area. As discussed in Chapter 2 Land Use, there are several open space land use categories. Areas designated as Open Space-Conservation will remain undeveloped and preserved for habitat protection and restoration. The Community Park will support recreational activities and may include structures that are necessary to support the specific purposes of a designated park. Additionally, throughout the Plan Area, Amenitized Green Spaces will be provided to enable opportunities for passive recreational amenities and other outdoor activities. Figure 3A: Parks, Open Space, and Multi-use Pathways Plan illustrates all open spaces within the Plan Area, and Table 3-1: Parks and Open Space Summary provides the sizes and uses of the open space within the Plan Area. Figure 3A also shows preliminary lot line configurations.

TABLE 3-1 PARKS AND OPEN SPACE SUMMARY

Type	Gross Acres	Acres per 1,000 residents	Description
<i>Usable Open Spaces</i>			
Community Park	8.1		Informal and formal play field, play structures, tot lot, picnic areas, parking
Open Space-Amenitized Green Space	9.6		Informal recreational areas, small play structures, passive/natural park areas, native pathways, and multi-use pathways
Total Usable Open Space	17.7	7.3	
<i>Non-usable Open Spaces</i>			
Open Space-Conservation	10.1		Conservation and environmental mitigation areas
Open Space- Undeveloped Utility	26.1		PG&E-owned area and PG&E easement corridor area
Total Non-Usable Open Space	36.2		
TOTAL OPEN SPACE	53.9	22.2	

As shown in Table 2-5, a total of 911 units are allocated to the Plan Area. Assuming an average of 2.66 persons per household, the Plan Area will yield a population of approximately 2,423 persons.¹ The 53.9 acres of open space within the Beechwood Specific Plan area shown in Table 3-1 will therefore provide approximately 22.2 acres of open space per 1,000 residents. Including only programmed, active and passive open spaces (the Community Park and Amenitized Green Spaces), the Specific Plan provides 17.7 acres of open space, or approximately 7.3 acres per 1,000 residents. This exceeds the General Plan requirement for 7 of park space per 1,000 residents.

¹ Per Section 1.0 of the Land Use Element, the General Plan assumes that each dwelling unit will be occupied with an average of 2.66 persons.

Community Park

The Community Park is a planned eight-acre publicly-owned and publicly-accessible open space for passive and active recreation facilities intended to serve both local and community needs. Shown in Figure 3B, an illustrative design concept for the park supports two regulation-size baseball diamonds, two multi-use athletic field including lights, for a variety of sporting activities for youth sports, two picnic areas with gazebos, a tot lot, and parking along the park's perimeter. While this concept may be modified as the Plan is implemented, the ultimate design must support active and passive recreation needs for the community.

FIGURE 3A: PARKS, OPEN SPACE, AND MULTI-USE PATHWAYS PLAN



FIGURE 3B: COMMUNITY PARK CONCEPT



Amenitized Green Spaces

Amenitized Green Spaces are focused open spaces that provide informal recreational areas and gathering space. These spaces are interspersed within residential areas, are connected by the multi-use pathway, and may be public or privately maintained. These spaces may include small-scale amenities such as exercise stations, and benches.

FIGURE 3C: TYPICAL AMENITIZED PARK AREA WITH MULTI-USE PATHWAY OR ENHANCED PEDESTRIAN CONNECTION

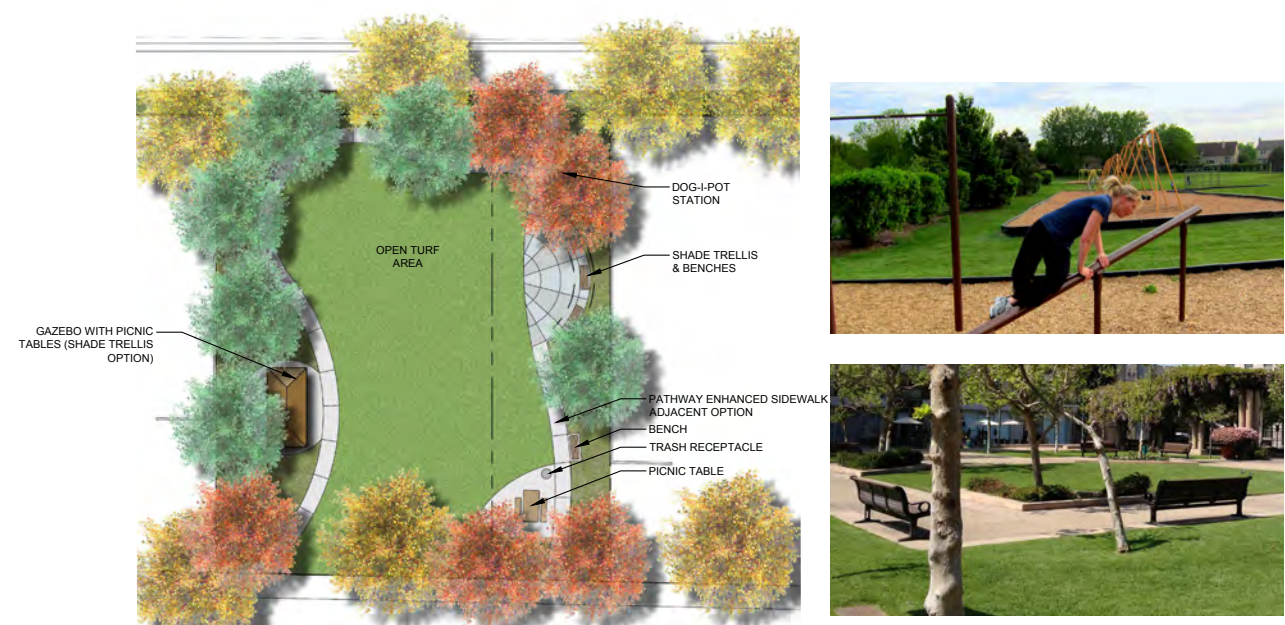


FIGURE 3D: TYPICAL AMENITIZED PARK AREA - SUBAREA F

Amenitized Green Spaces are located within and between residential neighborhoods to provide informal open spaces for the community to gather, rest, and exercise, and play. Amenitized green spaces may include exercise stations, picnic tables, public art, chess tables, or small playgrounds.



FIGURE 3E: AMENITIZED PARK AREA CONCEPT - SUBAREA I-1 & J-1



Included within the linear Amenitized Green Space that separates subareas I-2, I-3, and J-4 from Residential Single-Family-7 uses to the north is a six-foot native pathway. This pathway allows the Amenitized Green Space to function as a pedestrian corridor as well, enhancing access among the neighborhoods off the major roadways. Also included as an Amenitized Green Space is a 2.9 linear mile multi-use pathway system that winds throughout the Plan Area, supporting pedestrians, hikers, joggers, and cyclists.

Multi-Use Pathway

The multi-use pathway is a privately maintained, paved concrete and landscaped amenity that provides access throughout the Plan Area, connecting residential areas, commercial areas, parks and other open spaces, natural open spaces, major roadways, and local roadways. Separated from the roadway, the multi-use pathway complies with the California Highway Design Manual's standards for a Class 1 bikeway. It functions as both a circulation and recreational amenity that serves a wide range of users – walkers, joggers, strollers, and other mobility devices (i.e., wheelchairs, scooters, etc.). The Plan Area incorporates approximately 2.9 linear miles of multi-use pathway, as identified in Figure 3A. Figure 3F shows a typical cross section of the pathway, and Figure 3G shows a 3D rendering of the pathway alongside a perimeter wall (see Section 4.2 for more on the perimeter wall).

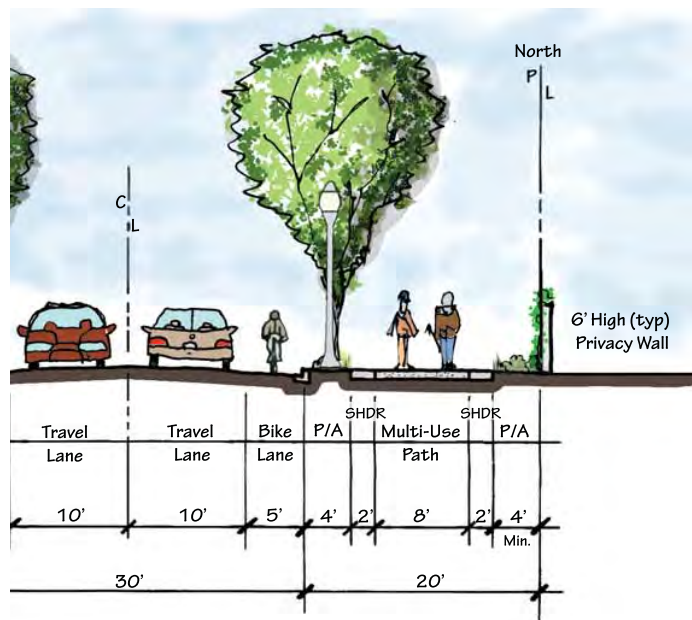


FIGURE 3F: MULTI-USE PATHWAY CONCEPT

The Plan proposes approximately 2.9 linear miles of Multi-Use Pathway. Landscaping on both sides of the pathway enhance safety and comfort for all users.

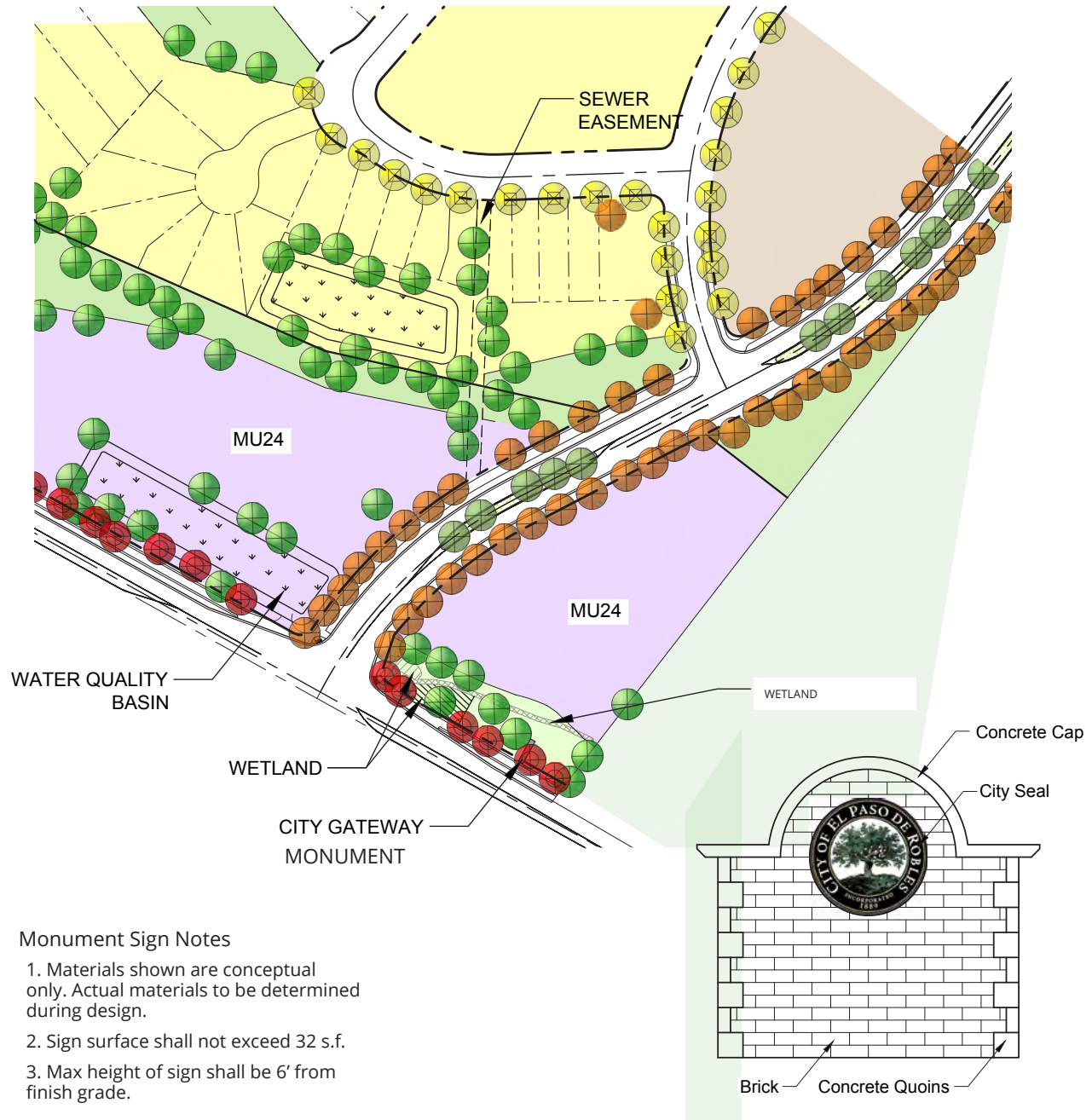


FIGURE 3G: MULTI-USE PATHWAY CONCEPT - PERSPECTIVE RENDERING

Open Space - Conservation

Open space captures, preserves, and reflects the rural character and history of the City. Open Space is used for the preservation of natural features and resources, specifically the wetlands and areas of oak trees that are located within the Plan Area. Informal pathways may pass through, but these spaces are otherwise not intended for or accessible by the community. In the Open Space - Conservation area abutting Creston Road south of Airport Drive, a Town and Country Gateway feature will be installed to welcome residents and visitors entering the city from the south.

FIGURE 3H: CITY GATE MONUMENT



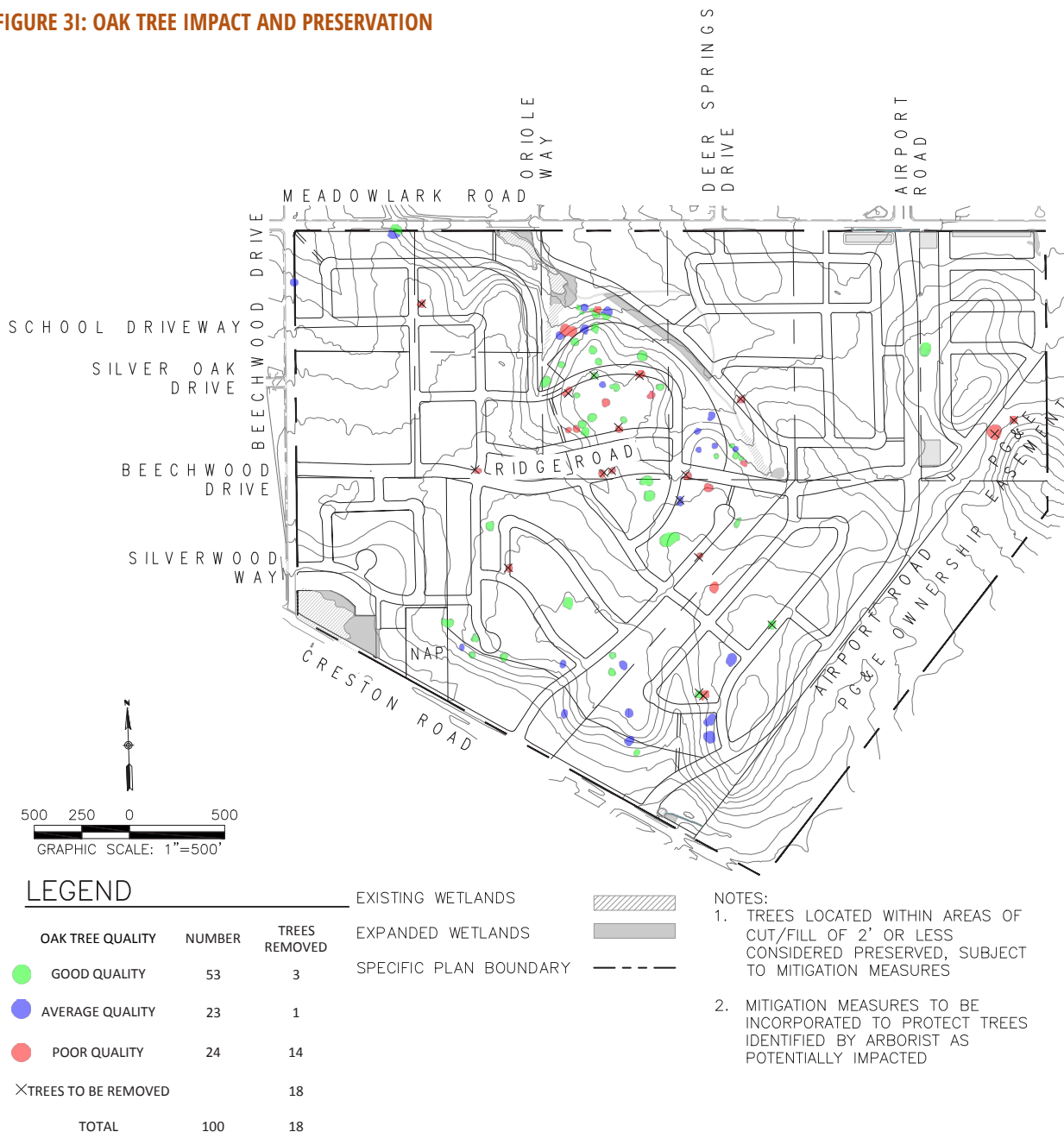
3.3 Natural Resources

Natural resources in the planning area include wetlands, oak trees, and the agricultural buffer. The Plan is designed to preserve these important resources as described below.

Oak Tree Preservation

Figure 3I: Oak Tree Preservation Plan identifies the location and relative quality of each tree and identifies the trees to be preserved and those to be impacted/removed with development of the Specific Plan. Tree location, quality, proposed preservation and removal were confirmed by an on-site inspection conducted with City staff and the Applicants' consultant team, including the Project Arborist. The number and quality of oak

FIGURE 3I: OAK TREE IMPACT AND PRESERVATION



trees to be preserved and removed are summarized on Table 3-2 below. As the figure and table indicate, of the 18 trees to be impacted/removed, 14 are of poor quality, three are of fair quality and only one out of 50 good- quality trees is anticipated to be removed.

TABLE 3-2: TREE IMPACT AND PRESERVATION SUMMARY

Tree Quality	Number	Trees Removed	Trees Preserved
Good	50	1	49
Average/Fair	18	3	15
Poor	37	14	23
Total	105	18	87

The Beechwood Specific Plan minimizes impacts to oak trees and riparian habitats by employing sensitive street and lot design, grading and equipment operations, tree identification, fencing, construction monitoring, and proper long term maintenance. The roadway configuration described in this Plan has been designed to avoid impacts to preserved oak trees, and individual lot designs will similarly be designed to avoid impacts, with trees located outside of proposed residential lots to the extent practicable. In addition, Plan policies ensure long-term maintenance through covenants, conditions, and restrictions (CC&Rs). The following measures shall be employed to ensure protection of oak trees, both with community/public spaces and within privately-owned lots.

- Clearly identify on future tentative tract maps and site plans pursuant to the Specific Plan all oak trees identified on the Oak Tree Preservation Plan as preserved.
- Where oak trees are located within residential lots measures indicated below and in the Oak Tree Preservation Plan shall be employed to avoid impact and removal of oaks. The Director of Community Development may allow the removal of individual oaks that are identified as preserved on the Plan due to an unavoidable or unusual condition(s) and mitigating techniques to protect the tree are infeasible. The removal of any oak identified as preserved on the Plan shall be mitigated in accordance with the Environmental Impact Report.
- The location of all oak trees shown as preserved on the Plan shall be shown on grading plans and improvement plans. Where oak trees are located within a residential lot, custom-lot grading and stepped foundations or other methods will be employed to minimize impacts from grading, excavation and other lot development activities as identified in Item 4 below. These measures are intended to preserve the number of good and average quality oak trees. Also refer to the Site Grading Concept in Chapter 5.
- For all lots with oak trees that are identified to remain on the Preservation Plan:
 - Building envelopes shall be located outside of the critical root zone (CRZ) and located as to minimize the need for construction activities within the CRZ.
 - The limits of the CRZ of preserved trees shall be identified by a qualified arborist and fenced accordingly.
 - Temporary fencing may be necessary to protect trees during site preparation and construction.
 - A pre-construction meeting shall be held with the city, applicant/developer, contractor, and arborist to address fencing and construction monitoring as well as address long term maintenance obligations.

- Construction activities that are necessary near or within the CRZ shall be noted on grading and/or other construction plans for review and approval by the Arborist. Where grading and excavation is required within the CRZ, such activities shall be monitored as determined by the Arborist. Earth-work cuts within the CRZ are prohibited and fills within the CRZ minimized to the satisfaction of the Arborist. Tree wells or other techniques, satisfactory to the arborist, may be utilized in or around the CRZ.
- Long term maintenance and preservation of oak trees within all conserved and open space or amenitized green space shall be the responsibility of the HOA and shall be conducted in accordance with the Project's Oak Tree Preservation Plan.
- The Project's CC & Rs shall help assure long term maintenance of oak trees located on residential lots by notifying all lot owners of prohibited activities within the CRZ and providing educational materials about proper care of oak trees, including pruning and elimination of mistletoe and deadwood. See additional specific measures indicated below.
- To address the removal of oak trees resulting from development of the Specific Plan, the Project's street tree planting plans and other landscape plans emphasize oak trees in the planting palettes. Refer to Figure 3E, for more details on the location and the number of oak trees anticipated.

Additional specific measures for oak trees are indicated below:

Oak Tree Protection Measures for Trees Located in Common/Public Areas

- All Oak trees as identified on the Oak Tree Preservation Plan shall be shown on grading, landscape, and improvement plans and clearly identified as "to remain" or "to be removed". A qualified arborist shall review and approve the grading and improvement design and specific oak tree protection measures for individual trees that are to remain prior to approval of the plans as recommended in the Oak Tree Protection Plan Report as part of the Project's Environmental Impact Report. Should a specific preservation measure or guideline be found not feasible, alternative measures may be approved for individual trees on a case by case basis with approval by the Project arborist,
- On-going protection and maintenance of oak trees are the responsibility of the Master Homeowners Association. The Project's CC&Rs shall indicate preservation and health of oak trees as a maintenance item. Prior to approval of a final map which will result in grading and development in areas with oak trees present, an appropriate mechanism shall be created that provides for annual evaluations of oak trees by a qualified arborist, to the satisfaction of the Community Development Director. Said evaluations shall report on the health of oak trees that are to be preserved and shall identify corrective measures necessary to maintain the health of oak trees.

Oak Tree Protection Measures for Trees Located on Private Lots

- All Oak trees, together with their trunk diameter and the limits of their tree canopies, as identified on the oak Tree Preservation Plan, shall be shown on Project grading, landscape, and building plans. The trees shall be clearly identified as "to remain" or "to be removed" as indicated on the Oak Tree Preservation Plan.
- Prior to issuance of grading, landscape, and building permits for development on all lots with oak trees to remain, a qualified arborist shall review the development plans (grading and building) for conformance with the measures listed in the Oak Tree Protection Plan Report as part of the Project's Environmental Impact Report.

- The Master HOA and/or sub-associations shall be made aware of the importance of oak tree preservation and shall include information about this in its various publications to homeowners. A signage program promoting tree preservation shall be instituted by the HOA.
- The HOA shall be required to monitor oak trees on private lots yearly for a period of five years from the initial sale of a home. The evaluation shall be conducted by a qualified arborist and include a report on the health of oak trees and identify any improvement or activity that is endangering the long-term health of the trees. The Project's CC&Rs shall authorize the HOA access on to private property to conduct the evaluations and to use its powers under the Project's CC&Rs to compel the homeowner to take reasonable corrective action, satisfactory to the HOA. These evaluations shall be funded by the HOA, with any corrective actions necessary to be the responsibility of the homeowner.
- The Department of Real Estate Yellow and White reports shall include, satisfactory to the Community Development Director, information to potential and future home buyers of lots with oak trees of the special considerations listed above.

For more detailed information on the on-site oak trees, the oak tree rating system for determining relative quality, and the preservation measures to be employed, refer to the Oak Tree Protection Plan Report as part of the Project's Environmental Impact Report.

Wetlands

The Plan Area consists of approximately 2.8 acres of wetlands as part of the Open Space Conservation land use. Predominantly located in the southwest and north-central portion of the Plan Area, the wetlands are mainly surrounded by annual grassland and sporadic patches of other low-growth flora.

The Plan proposes a wetland mitigation program to mitigate impacts in three areas 1) along Creston Road at the intersection with Beechwood Drive, 2) Meadowlark Road frontage east of Airport Road and 3) the Oriole Road Extension into the Plan Area. These wetland impacts will be primarily mitigated along the new southerly extension of Oriole Road along its western boundary. A linear wetland area will be created to mitigate for the re-alignment of approximately 1,000 feet of drainage and associated wetland within the Plan Area's interior. Detailed impact and mitigation areas will be developed with the grading and drainage design approved with the Tentative Map. Permits will be required by the US Army Corps of Engineers that will further define appropriate avoidance measures or compensatory mitigation based on final project plans.

Agriculture Buffer

Agricultural buffers provide space for typical farming practices to continue when development occurs in or near farm operations. Buffers limit human-occupied structures in the space between croplands and adjacent non-agriculture uses, protecting the health and safety of the general public from farm operations noise, dust, odor, legal pesticide use, and other normal activities that are part of farming and ranching. Agricultural uses adjacent to the Beechwood Plan Area that require a buffer are limited to areas east of the PG&E easement. Areas east of Subarea F, and are therefore already buffered by the easement.

3.4 Parks, Open Space, and Natural Resource Policies

The following numbered Beechwood Specific Plan (BSP policies) will ensure that development within the planning area achieves the shared Vision for the Beechwood Area and is guided by the Plan's Guiding Principles.

- BSP-11** Require that the PG&E easement remains undeveloped and preserve the visual prominence of the existing topography of the site.
- BSP-12** Preserve oak trees to the greatest extent practicable through avoidance and employ custom grading, step foundations, and other mitigation measures that preserve existing oaks and replace poor quality trees that are removed in accordance with Zoning Ordinance Chapter 10.01 (Oak Tree Preservation).
- BSP-13** Create visually-appealing, comfortable, and memorable recreation facilities in the form of community parks, amenitized green spaces, and multi-use pathways.
- BSP-14** Design the multi-use pathway to serve a wide range of users and include ample vegetation and water quality features, as described and illustrated in Section 3.2.
- BSP-15** Ensure that wetland impacts are mitigated according to the wetland mitigation program and the grading and drainage design approved with future tentative tract maps.
- BSP-16** Provide a consistent canopy of shade trees, existing and newly-planted, throughout the Specific Plan area to enhance pedestrian comfort.
- BSP-17** Install a Town and Country Gateway feature within the Open Space - Conservation area north of Creston Road and east of Airport Road. The design of the feature shall be visible and legible to motorists and shall reflect the rural setting of this entry point into the city.
- BSP-18** Where a water quality basin feature is not needed, design the multi-use pathway to meander around additional landscaping that complements the landscaping in the adjacent planted areas.

4 Circulation and Connectivity

This chapter consists of the overall Circulation Plan, which sets forth the street network and standards, intersection improvements, bicycle and pedestrian systems, and the perimeter wall plan. The Plan envisions complete, comfortable streets that accommodate bicycle and pedestrian facilities, as well as vehicles traveling at safe speeds. Prioritizing multi-modal mobility and access helps to achieve broader community goals of livability and environmental sustainability. Specific Plan policies related to circulation and connectivity are listed at the end of the chapter.



Examples of circulation improvements envisioned in the community

4.1 Circulation and Connectivity Goals

- A.** Connect the Plan Area to adjacent collector and arterial streets with multiple points of access to minimize concentration of vehicles.
- B.** Create bicycle- and pedestrian-friendly neighborhoods with sidewalks and bike lanes, and a detached multi-use pathways.
- C.** Design streets and intersections using current traffic-calming strategies to reduce speeds, including narrow lanes, roadway curvature, mini-roundabouts, and enhanced pedestrian crossings.
- D.** Design an interconnected transportation network using pedestrian-scaled streets and blocks that are sensitive to the natural topography.

4.2 Circulation Plan

The Plan prioritizes mobility and access for all modes and abilities as a means to achieve the community's vision of livability, connectedness, and environmental sustainability. As such, the Plan provides a framework for orderly development while creating recreational opportunities and minimizing the impact of transporta-

tion on the residential areas. The streets are designed to accommodate the diverse needs of all transportation modes – pedestrians, bicyclists, and automobiles – while creating beautiful and livable public spaces. Throughout the Plan Area, roadways are designed to minimize traffic noise, impervious areas, and concentrated storm water runoff. Furthermore, the Regional Transit Authority plans to link future bus service routes and bus stops to the network in order to facilitate use of public transit.

Pedestrian and bicycle paths are an integral component of the Plan's circulation system, providing a network of interconnected multi-use pathways along roadways and through the open spaces that facilitate non-vehicular travel. The multi-use pathways will be easily accessible and help enrich the community's quality of life by providing opportunities for a more active, healthy lifestyle with greater connections to the outdoors. Figure 4A diagrams circulation within the Plan Area.

FIGURE 4A: CIRCULATION PLAN

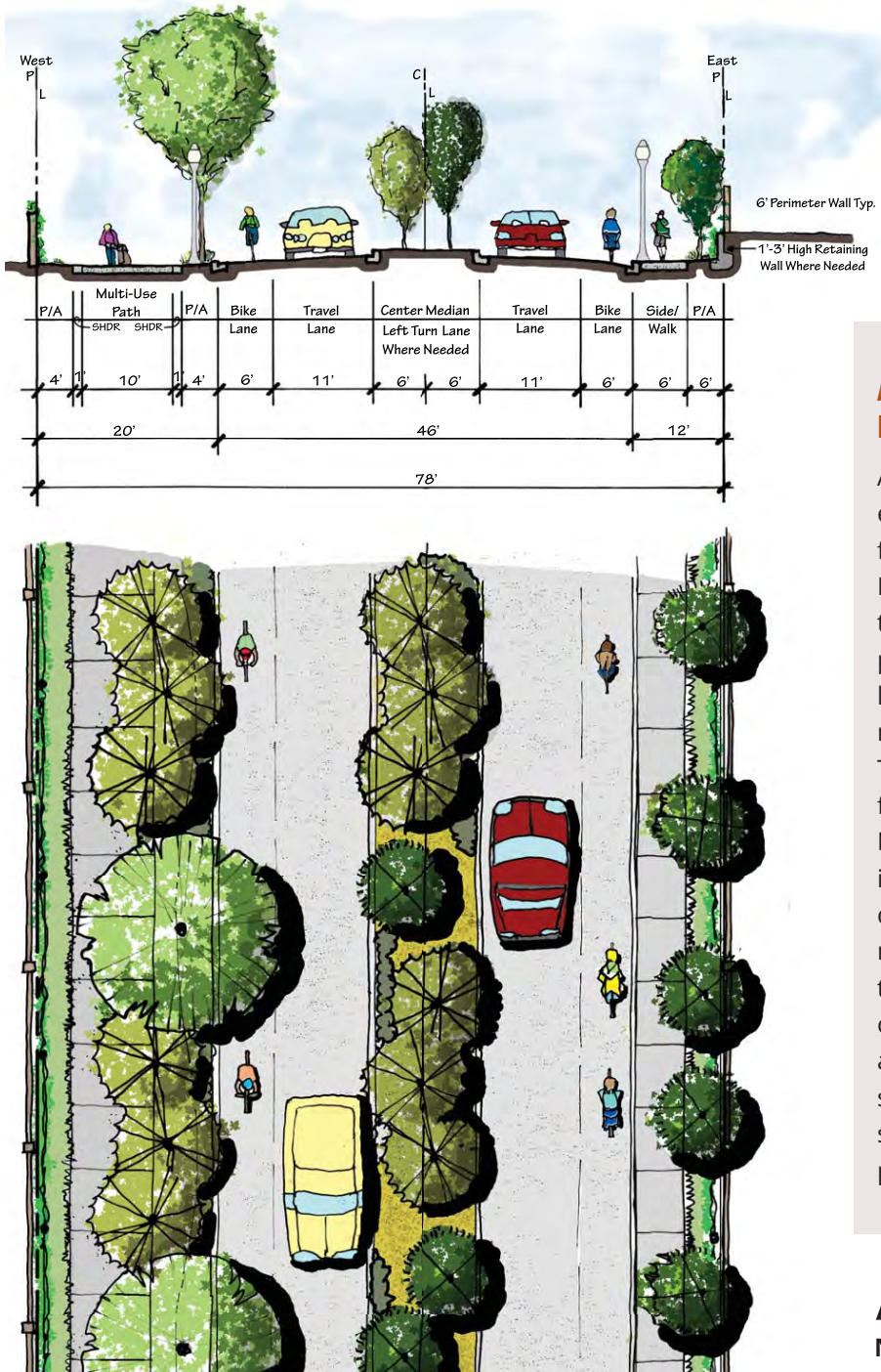


Roadway Network

Existing and Extended Roadways

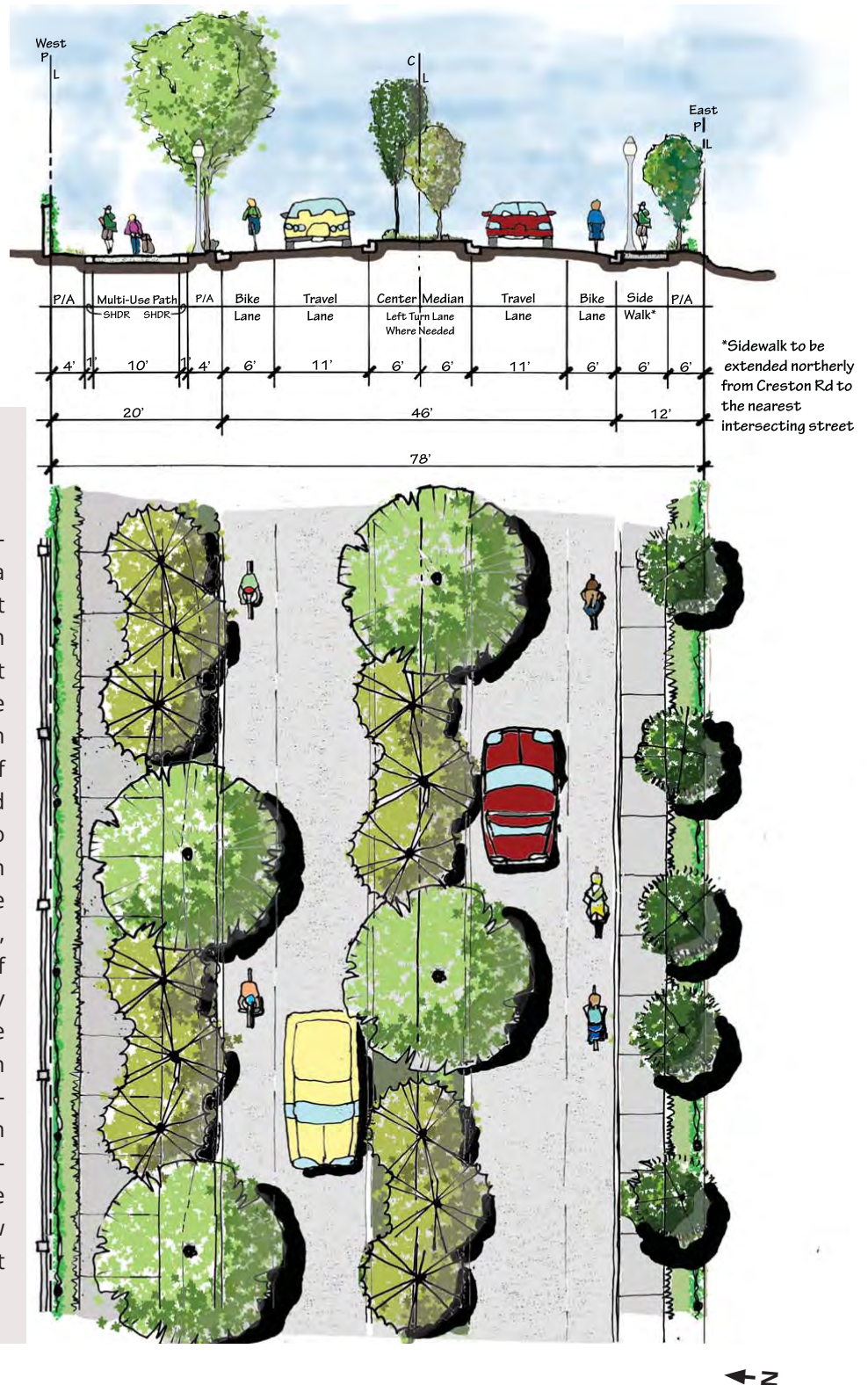
The Plan Area is bounded by Meadowlark Road on the north, Beechwood Drive on the West, and Creston Road on the south. Airport Road extends through the site from Meadowlark Road to Creston Road. As depicted in the following street diagrams, the roadways will be improved to accommodate traffic generated by development of the community.

FIGURE 4B: AIRPORT ROAD - NORTH OF RIDGE ROAD



AIRPORT ROAD (NORTH OF RIDGE ROAD)

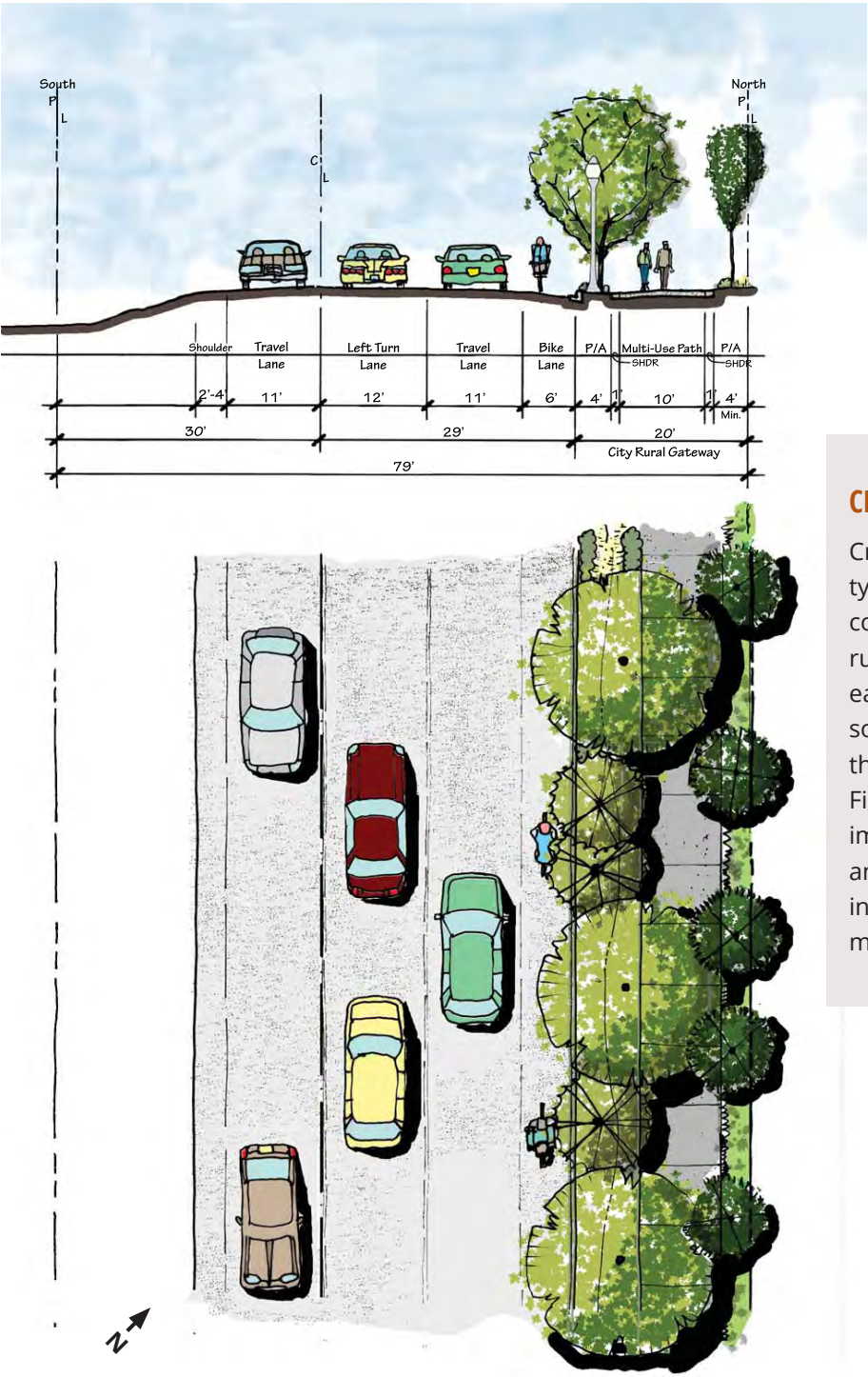
Airport Road will be extended through the Plan Area from its existing terminus at Meadowlark Road to Creston Road. This section of Airport Road will have narrower lane widths than the section north of Meadowlark Road. The section of Airport Road from Meadowlark Road to Ridge Road is proposed to include a landscaped median with left turn lanes, a multi-use pathway along the west side, bicycle lanes on both sides of the street, and sidewalk along the east side. Figure 4B illustrates the street design in section and plan.

FIGURE 4C: AIRPORT ROAD - SOUTH OF RIDGE ROAD

AIRPORT ROAD (SOUTH OF RIDGE ROAD)

Airport Road will be extended through the Plan Area from its existing terminus at Meadowlark Road to Creston Road. This section of Airport Road will have narrower lane widths than the section north of Meadowlark. The section of Airport Road from Ridge Road to Creston Road is proposed to include a landscaped median with left turn lanes, a multi-use pathway along the west side, bicycle lanes on both sides of the street, and water quality basins. Figure 4C illustrates the street in section and plan. In addition, development on Sub-area J-4 will include pedestrian walkways to ensure continuous pedestrian access from the Creston Road sidewalk to new development east of Airport Road.

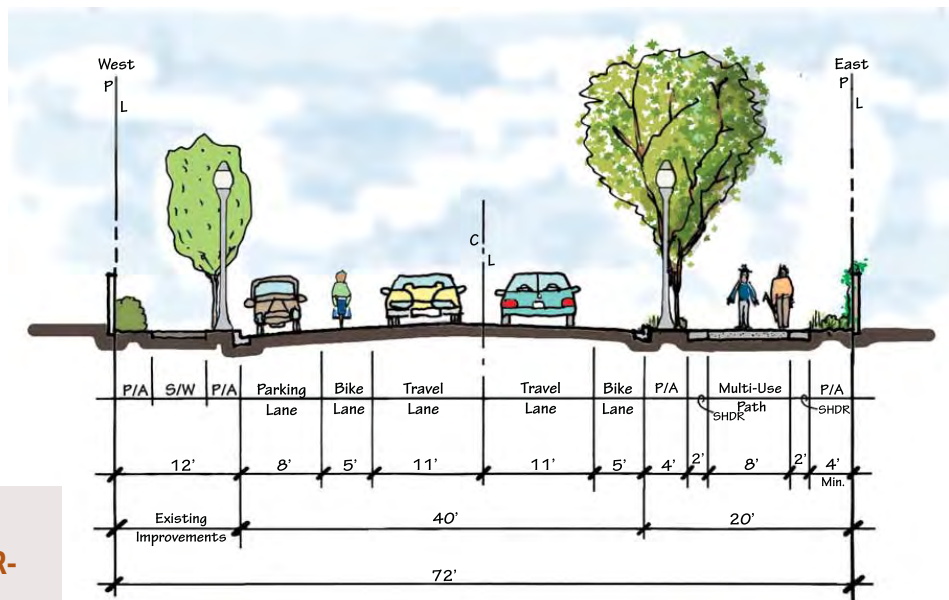
FIGURE 4D: CRESTON ROAD



CRESTON ROAD

Creston Road is a County-maintained arterial that connects the City with the rural county areas to the east and runs along the southwestern boundary of the Plan Area. As shown in Figure 4D, this road will be improved to meet County and/or City standards and include landscaping and a multi-use pathway.

FIGURE 4E: BEECHWOOD DRIVE, PARALLEL PARKING



BEECHWOOD DRIVE (PARALLEL PARKING)

Beechwood Drive abuts the site along its western boundary and will be widened from Creston Road to Meadowlark Road along the project frontage. This street currently experiences congestion during school drop-off and pick-up times. Beechwood Drive will be designed with traffic-calming measures such as on-street parking and curb extensions or “bulb-outs” at the intersections. Additional enhancements to pedestrian crosswalks will be employed at key locations where pedestrian crossings are anticipated. Figure 4E illustrates the typical street section and plan.

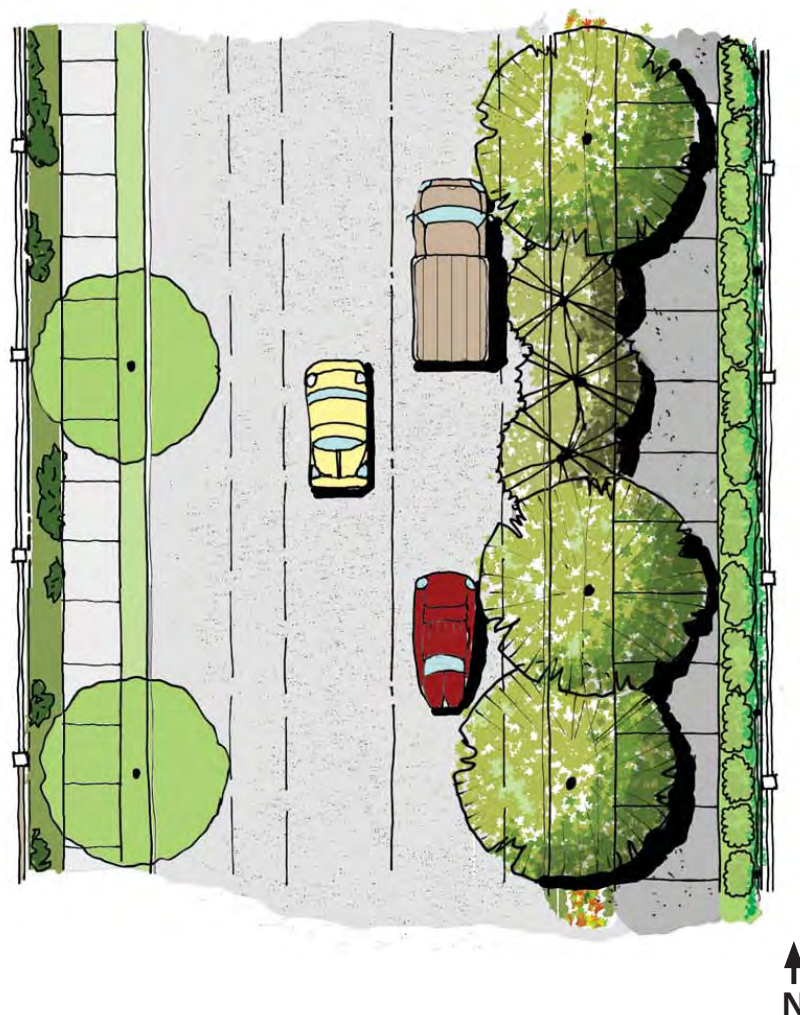
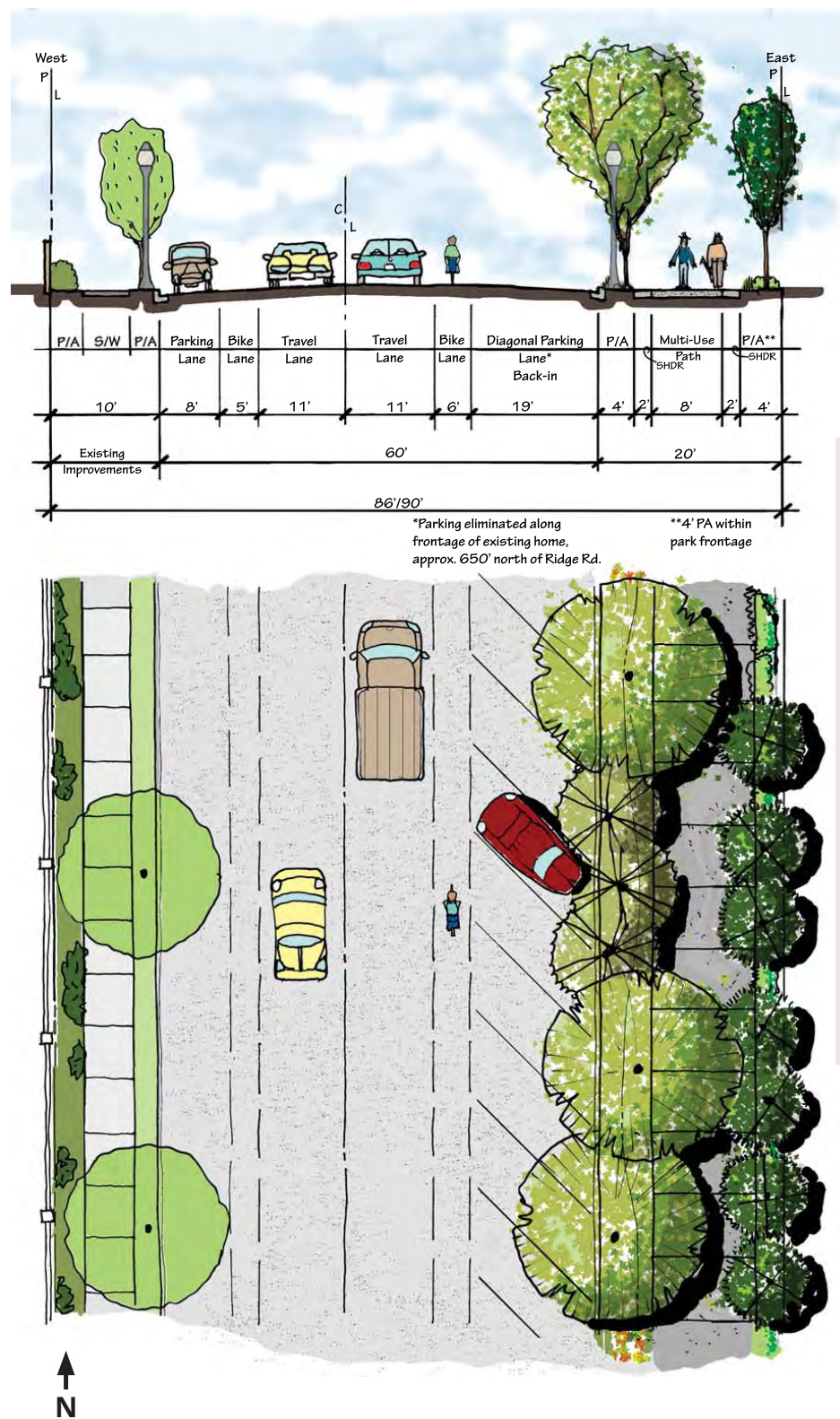


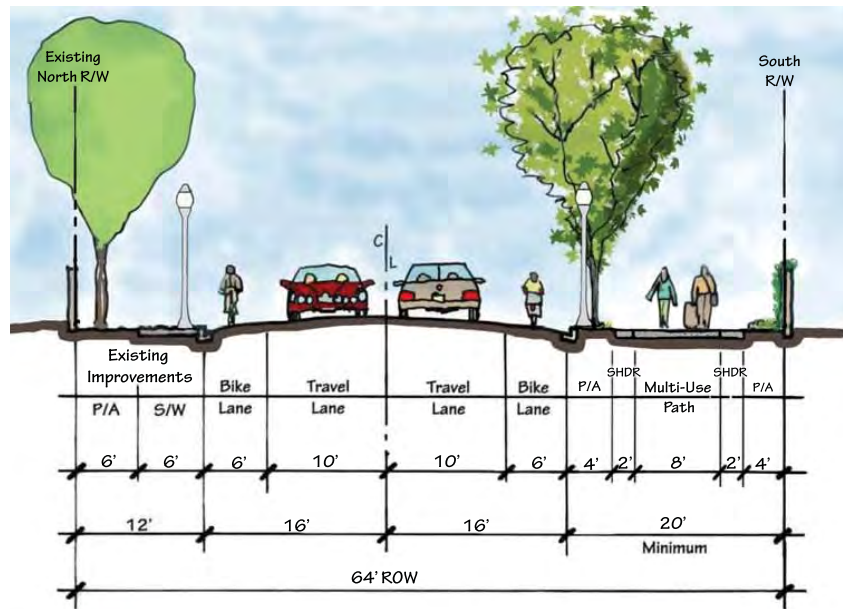
FIGURE 4F: BEECHWOOD DRIVE, DIAGONAL PARKING



BEECHWOOD DRIVE (DIAGONAL PARKING)

Beechwood Drive will include diagonal on-street parking near the intersection with Meadowlark Road to better accommodate student drop-off and pick-up near the elementary school across Beechwood Drive, as shown in Figure 4F. Bulb-outs, crosswalk enhancements, and Rapid Rectangular Flashing Beacons (RRFBs) will be employed in the area with diagonal parking.

FIGURE 4G: MEADOWLARK ROAD - WEST OF AIRPORT ROAD

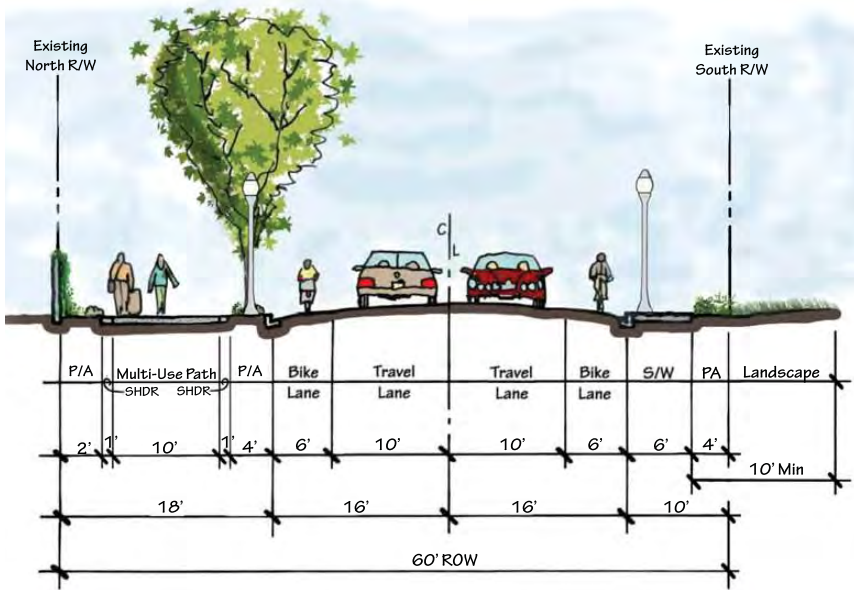


MEADOWLARK ROAD, WEST OF AIRPORT ROAD

Meadowlark Road is classified as a collector street with curb, gutter and sidewalk along the north side adjacent to the existing neighborhoods. No intersections, driveways, curbs, sidewalks, or other improvements currently exist along the south edge of the roadway, and the City often receives complaints about high speeds on this road. In addition to adding curb, gutter, Class 1 bike lanes, and a multi-use pathway along the south side, mini-roundabouts are proposed at Oriole Way and the street/intersection to the east of Oriole Way. Figure 4G illustrates this design in section and plan.



FIGURE 4H: MEADOWLARK ROAD - EAST OF AIRPORT ROAD



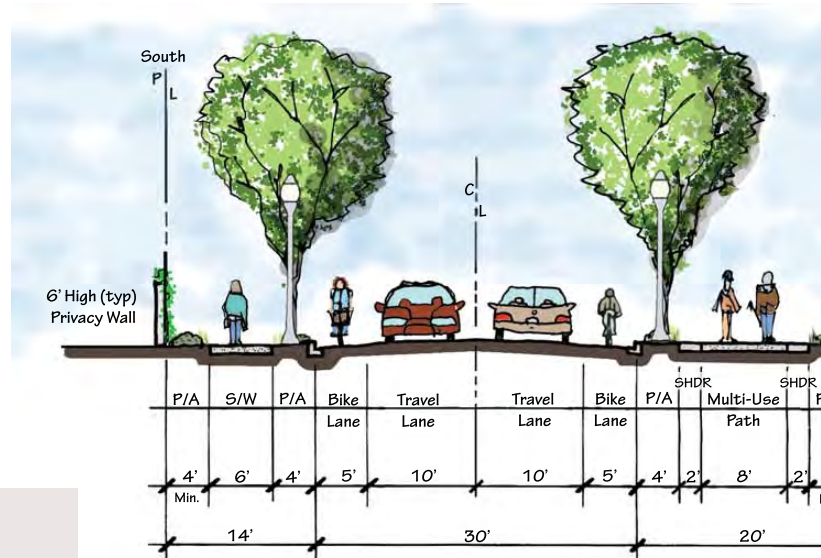
MEADOWLARK ROAD EAST OF AIRPORT ROAD

East of Airport Road, the Meadowlark Road design is modified to ensure seamless bicycle and pathway access between the Beechwood Specific Plan area and the Stonehaven Specific Plan area. For this reason, the multi-use pathway is located on the north side of the roadway while a curb, gutter and sidewalk are installed in the south side of the street.

Internal Street Network

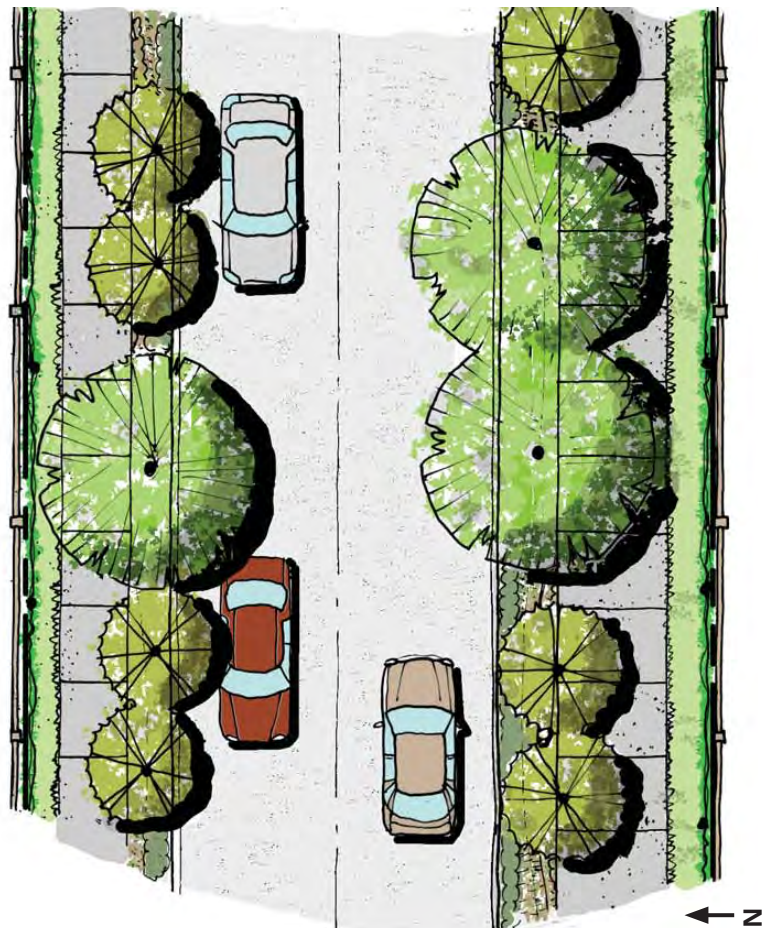
The internal street network is composed of local streets with narrow widths that moderate vehicle speed, reduce the amount of runoff generated from pavement, and create a more intimate streetscape. Ridge Road is the main internal east-west connection. Other neighborhood streets are described on the following pages.

FIGURE 4I: RIDGE ROAD



RIDGE ROAD

Ridge Road runs east/west through the central portion of the site from Airport Road to Beechwood Drive. This road will be lined with multi-use pathways, meander around existing oak trees, and incorporate water quality features. Ridge Road is proposed to be free of driveways, with access to homes provided from local residential streets. Where local streets intersect Ridge Road, mini-roundabouts are proposed for traffic calming, as shown in Figure 4A. Figure 4I illustrates Ridge Road in section and plan.



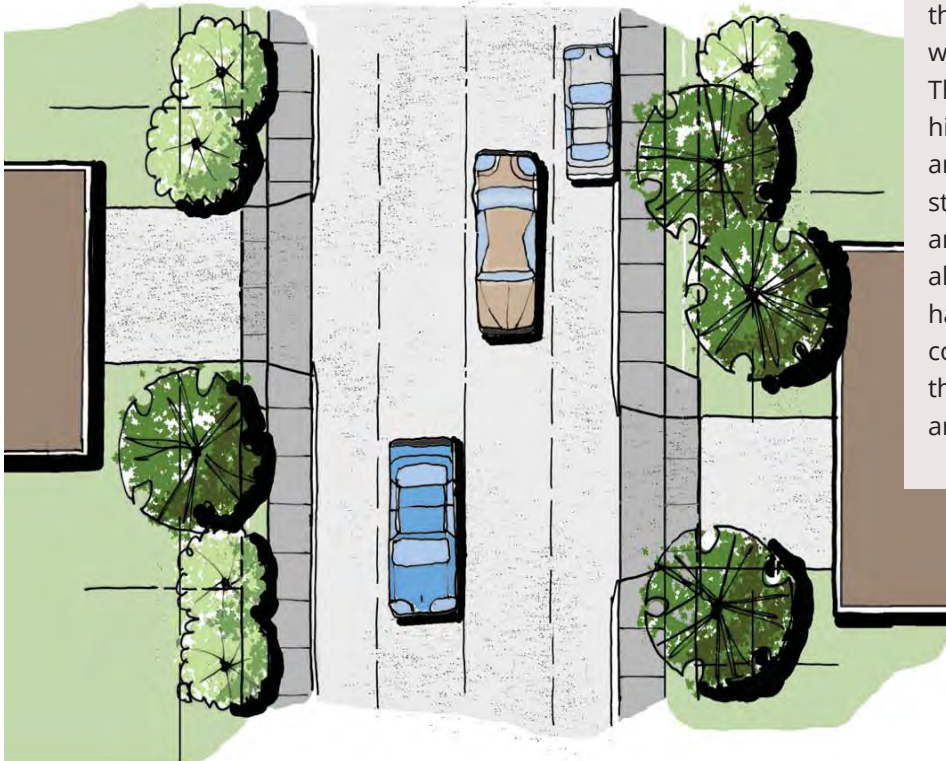
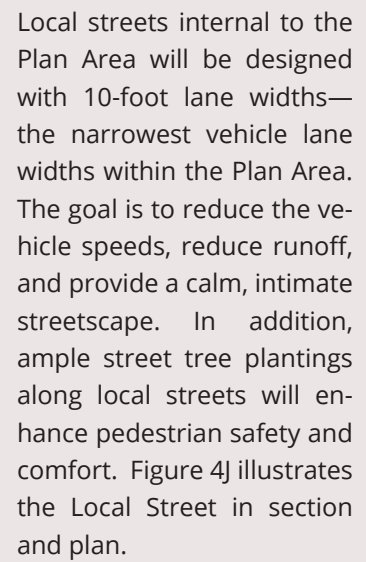
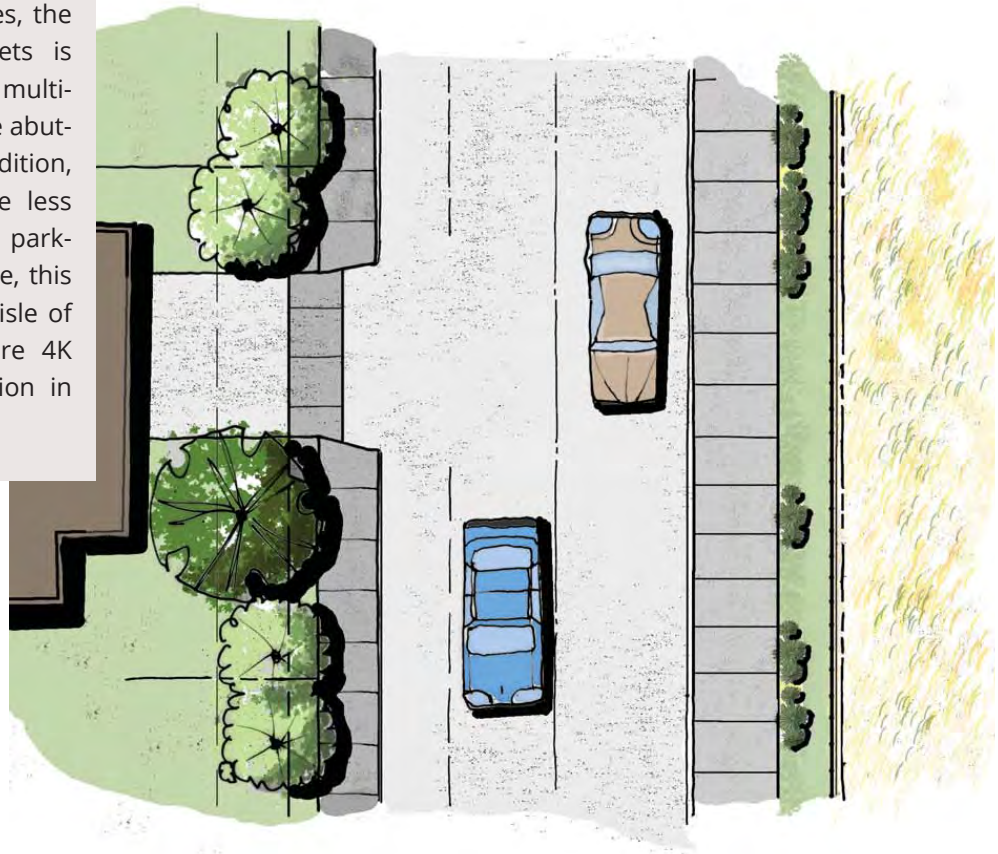
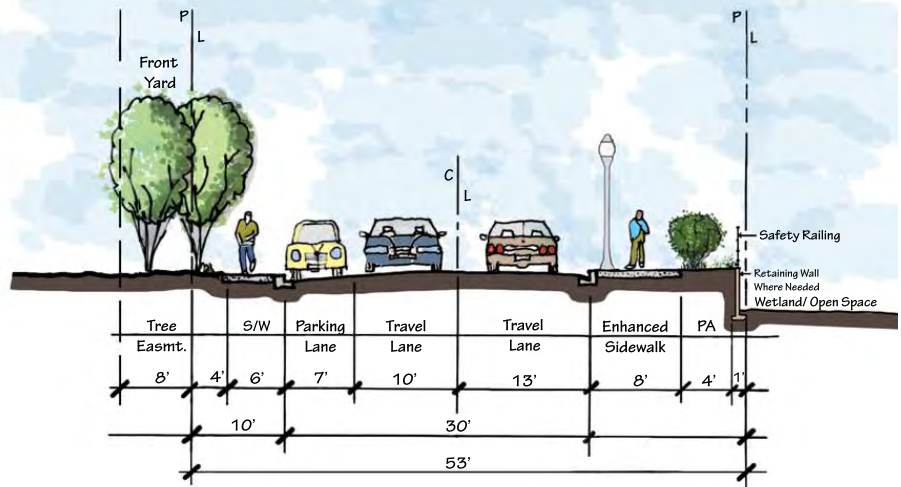


FIGURE 4K: LOCAL STREETS - ADJACENT TO WETLANDS AND OPEN SPACE

LOCAL STREETS - ADJACENT TO WETLANDS AND OPEN SPACE

In areas adjacent to wetlands and open spaces, the design of local streets is modified to provide a multi-use pathway along the abutting open space. In addition, because there will be less demand for on-street parking next to open space, this design removes the aisle of parallel parking, Figure 4K illustrates this condition in section and plan.



Intersection Improvements

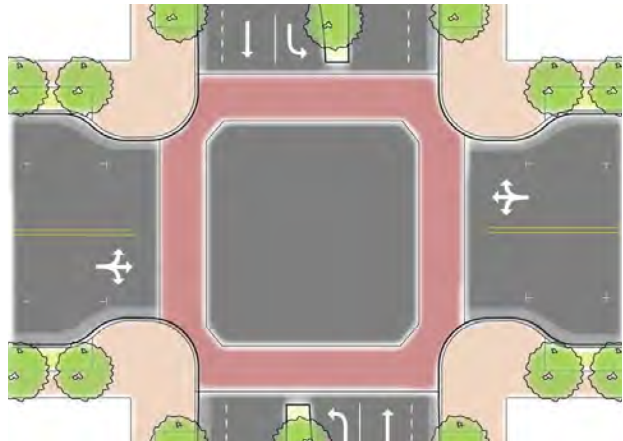
Intersections in the Plan Area will be improved consistent with the descriptions on the previous pages. Where local streets intersect Ridge Road and Meadowlark Road, mini-roundabouts are proposed to provide traffic calming. Precise locations are indicated on Figure 4A: Circulation Plan. Bulb-outs will be provided in appropriate locations throughout the Plan Area to reduce crossing distances for pedestrians.



Examples of proposed mini-roundabout

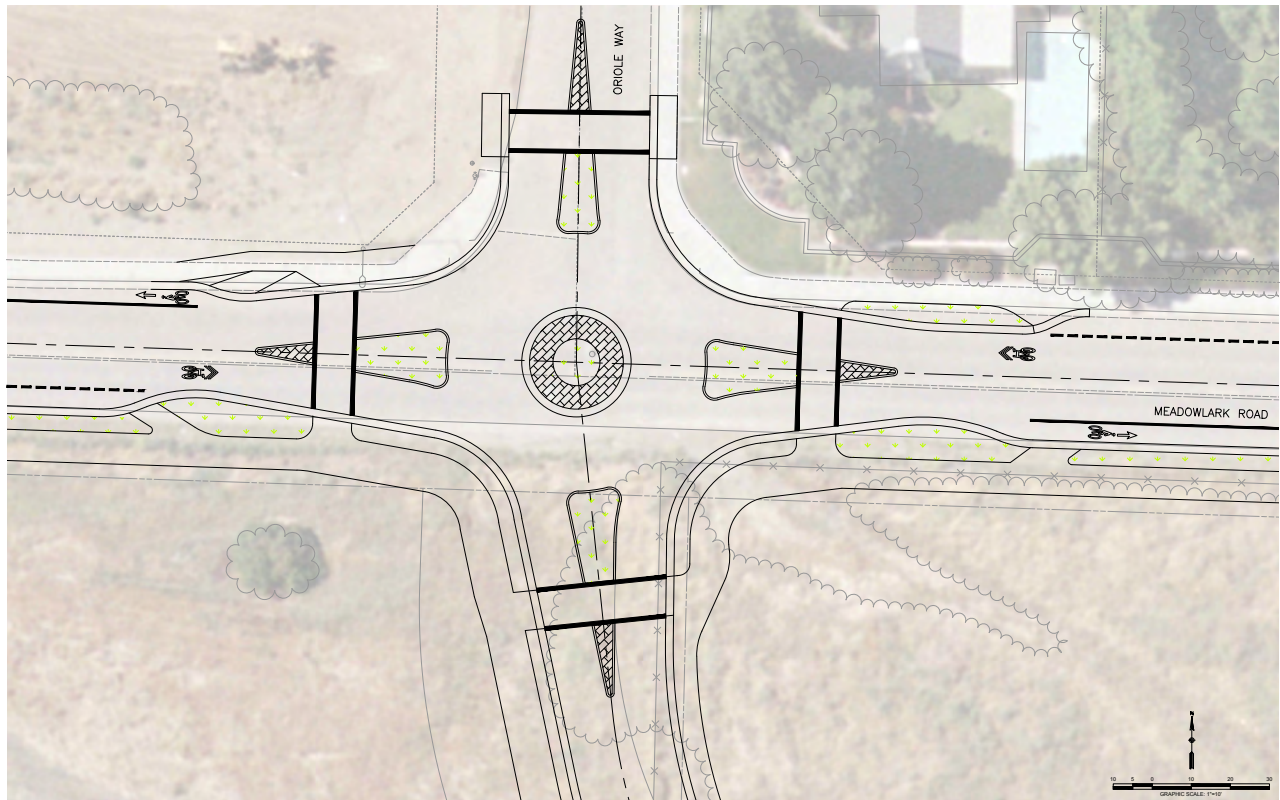


Meadowlark Streetscape Rendering



Example of curb extensions or bulb-outs at intersection

FIGURE 4L: TYPICAL MEADOWLARK AND RIDGE ROAD MINI-ROUNDBOUT



Bicycle and Pedestrian Systems

The Circulation Plan emphasizes bicycle and pedestrian systems as a core component of achieving an active, safe, and attractive environment. As shown in Figure 4A, the Circulation Plan calls for a network of interconnected on-street bike lanes and off-street multi-use pathways along roadways and through open spaces, enabling residents to visit various neighborhoods, parks, and services on bike or on foot. The bikeways not only create a connected network within the Plan Area but also expand the citywide network consistent with the 2018 Bicycle and Pedestrian Master Plan. This includes the Bicycle and Pedestrian Master Plan's recommendations for Class 2 and Class 1 facilities including implementation of new segments of the city's Grand Loop along Meadowlark Road (east of Airport Road), Airport Road, and Creston Road.

The multi-use pathway is an integral part of the bicycle and pedestrian system. Designed to serve as Class 1 bikeways, the pathway also serves as a pedestrian facility, connected with crosswalks, shaded by street trees and lined with landscaping. In total, the Plan proposes approximately 3.8 miles of multi-use pathway. In addition, sidewalks six feet in width will be provided on internal neighborhood streets to encourage walkability and create a safe, convenient, and continuous path of pedestrian travel.

Throughout the Plan Area, pedestrian crossings will be located at appropriate intervals to encourage pedestrian traffic, to enhance safety, and manage speed and flow of vehicular traffic. Other measures to enhance pedestrian and bicycle safety include colored pavements, specialized paving, installation of public art, and speed-reduction measures.

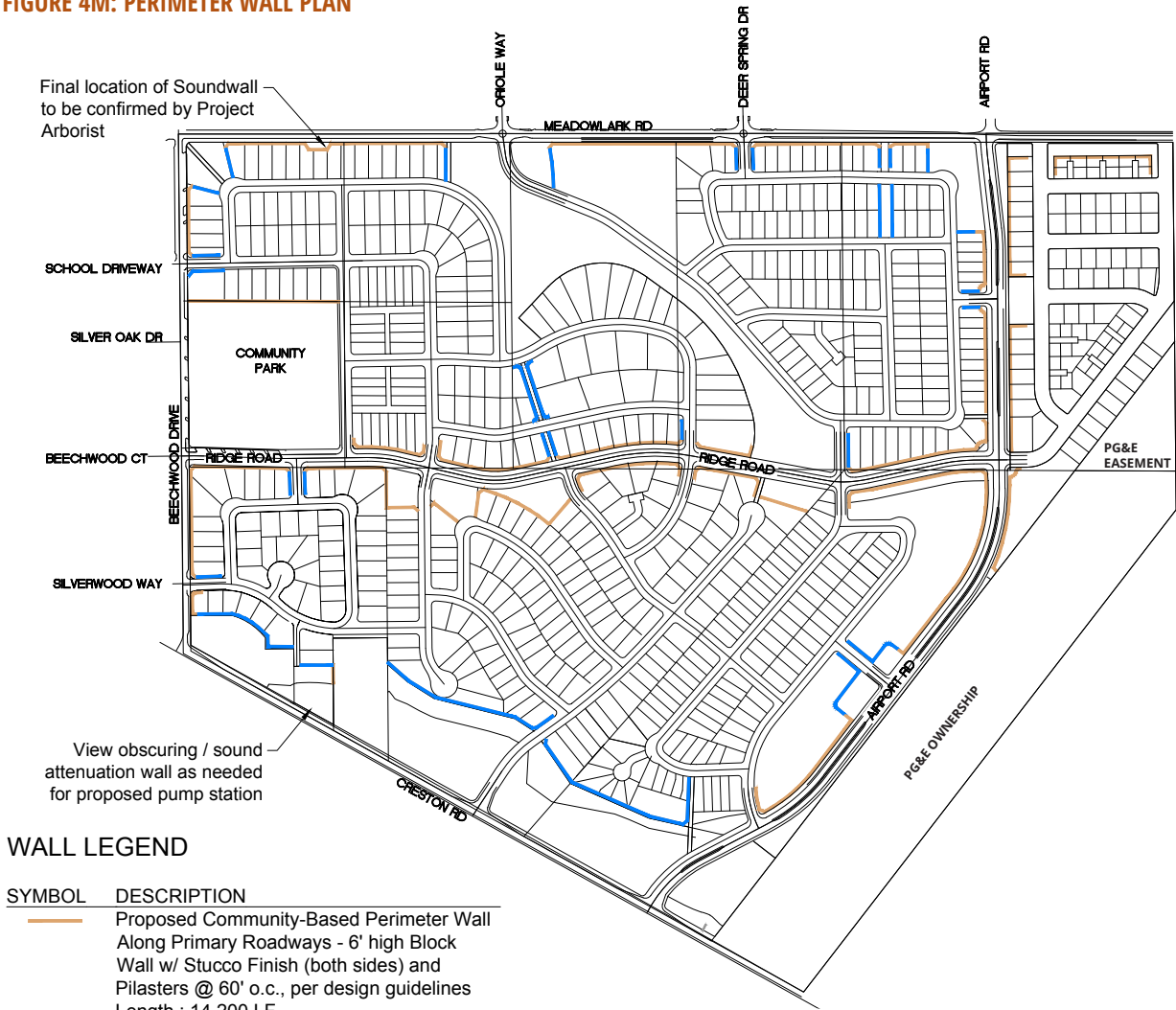


Examples of bicycle and pedestrian improvements

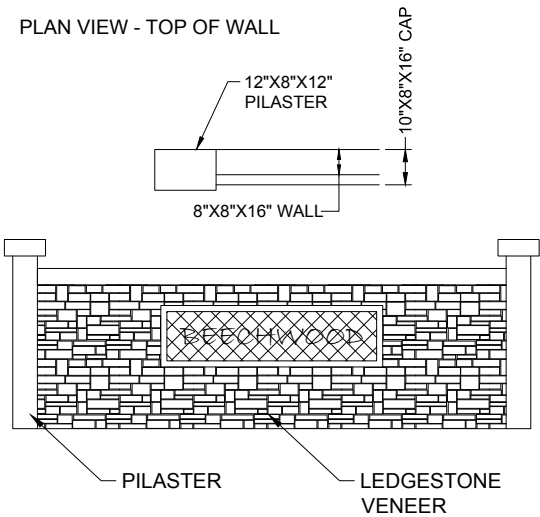
Perimeter Wall

As illustrated in several street sections above and diagrammed in Figure 4M, a perimeter wall is proposed to be constructed along the right-of-way for several block frontages within the Plan Area. The 72-inch high wall is proposed where necessary for sound attenuation, adequate security, community identity, and aesthetics. In general, the perimeter wall is proposed along the roadways with highest traffic capacity within the Plan Area. The wall is proposed to be constructed of concrete masonry unit blocks, with stucco facing on both sides, and 78-inch high pilasters at 40 feet on center. Figure 4M: Perimeter Wall Plan indicates perimeter wall locations and illustrates wall design in elevation and plan. Location and design of walls are subject to change to respond to varying site and engineering conditions. As seen in the Figure 4M, the Proposed Subdivision Based Wall is the responsibility of the individual subdivision to construct and the Proposed Community Based Perimeter Wall along primary roadways will remain as shared cost.

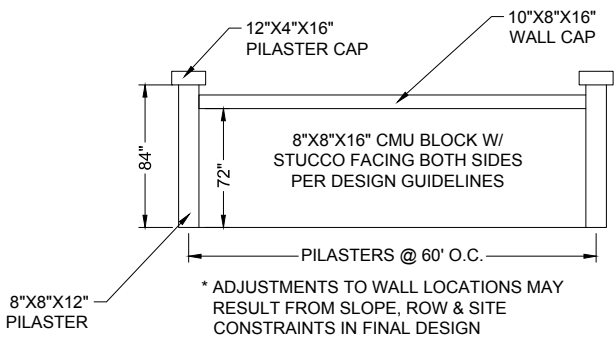
FIGURE 4M: PERIMETER WALL PLAN



PLAN VIEW - TOP OF WALL



SECTION VIEW



CONCEPTUAL WALL DETAIL
NOT TO SCALE

4.3 Circulation and Connectivity Policies

The following numbered Beechwood Specific Plan (BSP policies) will ensure that development within the planning area achieves the shared Vision for the Beechwood Area and is guided by the Plan's Guiding Principles.

- BSP-19** Build-out of the Plan shall apply a multi-modal approach which considers the safety and mobility of all users, including pedestrians, cyclists, and drivers.
- BSP-20** Build-out of the Plan shall enhance the public realm with street trees, street furniture, bicycle facilities, sidewalks, and pedestrian paths.
- BSP-21** A network of interconnected multi-use pathways shall provide opportunities for a more active, healthy lifestyle, as described in Figure 4A: Circulation Plan.
- BSP-22** Prohibit driveways on Ridge Road. Vehicular access to properties fronting on Ridge Road must be from a different roadway or an alley.
- BSP-23** Marked pedestrian crossings shall include measures for safety and convenience, such as curb extensions or bulb-outs; enhanced pavement markings and signage including Rectangular Rapid Flashing Beacons (RRFBs) near Virginia Peterson Elementary School; and other traffic calming strategies consistent with the city's Traffic Calming Program.
- BSP-24** Streets shall be designed with horizontal and vertical curvature for the desired speed where feasible; on tangent sections and where pedestrian crossings are anticipated employ traffic-calming measures such as narrow lanes, mini-roundabouts, bulb-outs, and other strategies consistent with the City's Traffic Calming Program.
- BSP-25** Roadways within a half-mile of Virginia Peterson Elementary School must employ Safe Routes to School programs and measures as identified in the Paso Robles Bicycle and Pedestrian Master Plan Appendix D.
- BSP-26** In the design of non-residential or mixed-use buildings, provide pedestrian entryways that are accessible from the sidewalk and separate and distinct from driveways and parking lot access points.
- BSP-27** Climbing plants, shrubs, or other landscaping shall be installed along the perimeter wall where located along a right-of-way, to soften the view of the wall from the multi-use pathway and roadway.

5 Utilities and Public Services

This chapter addresses the availability of public infrastructure and services for the Plan Area and describes the necessary infrastructure improvements and public services to accommodate development of the community. Specific Plan policies related to utilities and public infrastructure are listed at the end of the chapter.

5.1 Utilities and Public Services Goals

- A.** Supply all new development that occurs within the Plan Area with potable water by a City operated and maintained system.
- B.** Provide low-water-use landscaping and water fixtures into new development.
- C.** Connect all development with the Plan Area to a City operated and maintained wastewater system.
- D.** Provide Low Impact Development (LID) storm water management strategies that allow opportunities for groundwater recharge.
- E.** Reduce runoff and improve water quality by incorporating innovative storm water management processes.
- F.** Ensure private utility purveyors have adequate infrastructure to accommodate the demand from the Plan Area, including solid waste, recycling, electrical, natural gas, cable, telephone, and fiber optics.
- G.** Provide funding for additional public services that adequately serve the new development.
- H.** Provide off-site improvements necessary to meet the demand generated by the build-out of the community.
- I.** Ensure schools and emergency services are adequate to meet the demands of the community.
- J.** Provide funding mechanism for all landscaping, lighting, streets, stormwater features, and common areas.
- K.** Extend recycled water to project.

5.2 Infrastructure Improvements

The Plan proposes new infrastructure and utility improvements necessary to accommodate the envisioned scope of development. The following improvements are associated with build-out of the community and are needed to address public services to the project:

- Installation of recycled water mains and extension of recycled water.
- Extension of wastewater collection lines.
- Extension of City water mains.
- Creation of a new water system pressure zone to serve higher elevations.
- Construction of a new booster pump station to serve a new pressure zone.
- Installation of dry utilities (e.g., gas, electric, cable TV, telephone, fiber optic) throughout the Plan Area.
- Widening, extension and/or improvement of public roads including road segments and intersection(s) discussed under Circulation.
- Installation of storm water collection, quality, and conveyance systems throughout the Plan Area.

The required infrastructure improvements for water facilities, proposed water conservation strategies, recycled water, storm water management, communication, electric power, and gas are described on the following pages. See Section 4.2: Circulation Plan for the proposed extension and improvements to the public road network.



Examples of infrastructure improvements

Water Systems

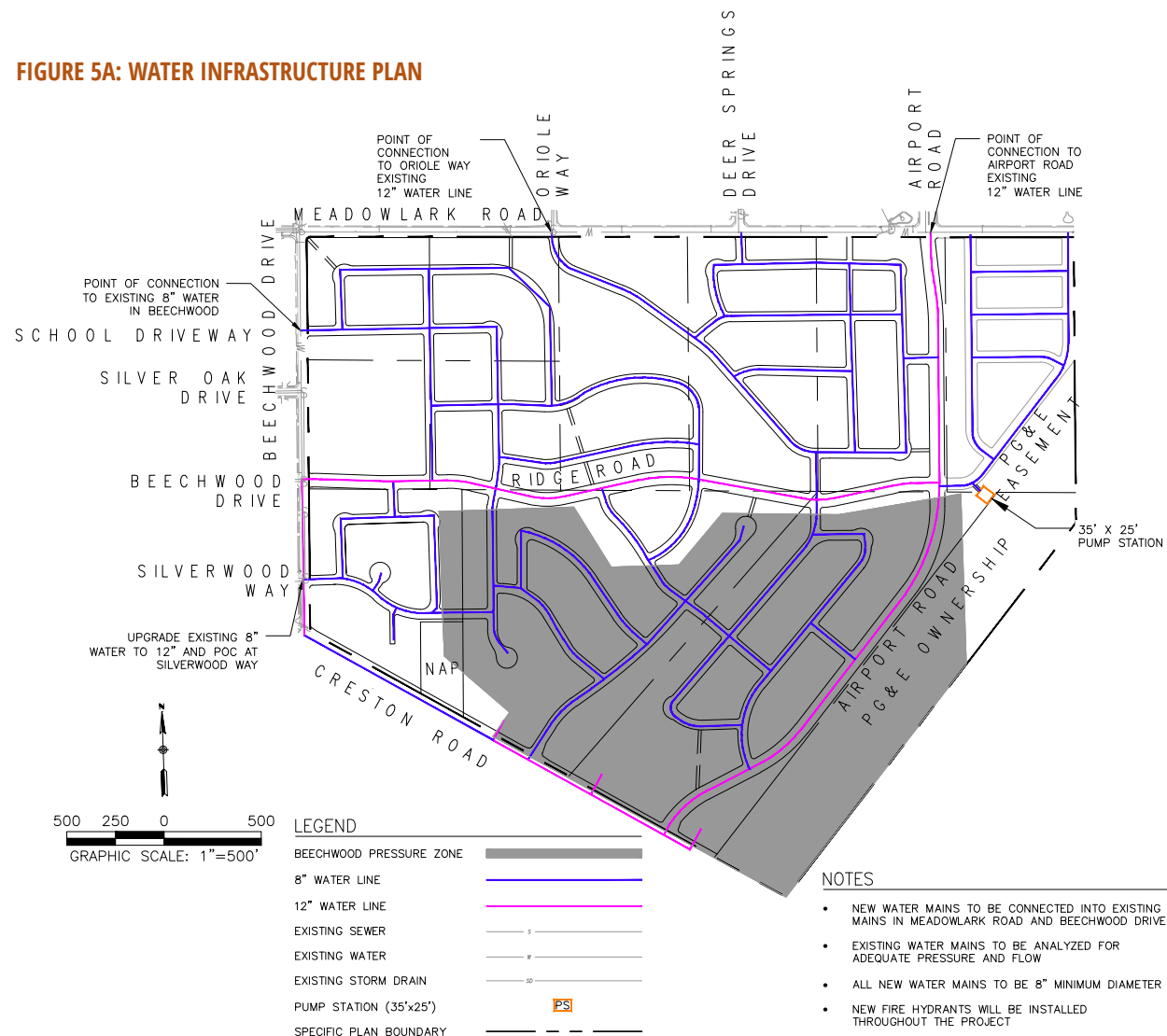
Water Supply Assessment

A Water Supply Assessment (WSA) was prepared for the project to document the City's existing and future water supplies for its service area and to compare these water supplies to the area's future water demand, including that of the proposed Project. This comparison, conducted for both normal and drought conditions in

five-year increments over the next 20 years, is the basis for assessing water supply sufficiency in accordance with SB610. Their findings are outlined in the "Water Supply Assessment" dated April 15, 2019. Conclusions from the study are as follows:

- The Project area currently relies on groundwater from private on-site wells for its water supply and uses an estimated 67 AFY. These wells will be either properly abandoned or taken over by the City for municipal use.
- Once completed, the Project will use an estimated 283 AFY of water resulting in a net increase of water use of 216 AFY.
- Water supply needed to serve the Project's residential water demand (248 AFY) is included in the 2015 UWMP. Water supply needed to serve the commercial water demand (about 10 AFY) and the non-residential irrigation water demand (about 25 AFY) are not included in the UWMP projections but the City has the additional 35 AFY of supply available from its water supply portfolio of Nacimiento water, groundwater from the Paso Robles Groundwater Basin and water from the Salinas River.
- The City has adequate potable supply to provide a reliable long-term water supply for the Project under normal and drought conditions.

FIGURE 5A: WATER INFRASTRUCTURE PLAN



Water Facilities

The City has a diverse water supply portfolio that includes multiple sources of supply, including groundwater, and water from the Salinas River, Nacimiento Water Project, and tertiary treated recycled water. Combined, these sources are sufficient to serve the City through build-out. Even with the availability of water for the community, the community is subject to a water assessment pursuant to SB 610 which will validate the long term reliability of the water needed to sustain the community.

The Beechwood Subdivision proposes a network of looped water mains to serve both potable water needs as well as fire demand. Internally, all lots on residential streets will be served with 8" water mains. In addition, 12" water mains are proposed on Ridge Road and Airport Road. Externally, Beechwood will make 5 connections to the 12" main on Meadowlark Road, 2 connections to the 8" main on Beechwood Drive and 1 connection to the 16" main at the intersection of Beechwood Drive and Creston Road.

A water system hydraulic model was run with both the Beechwood Specific Plan and Stonehaven (i.e., Olsen/ Chandler) pipe networks integrated into the City's existing network. Results of this model are detailed in the Technical Memorandum dated 3/14/19 by WSC, Inc. The resulting analysis calls for installation of a booster station and hydrotank to convert an area of low PHD pressure to a higher pressure zone.

See Figure 5A: Water Infrastructure Plan for more information on the pipe network locations and booster station.

Water Conservation Strategies

An overall goal of the Plan is to maximize water conservation and minimize water consumption at all levels within the community. The community will employ best practices in indoor water conservation fixtures, including low water use shower heads, toilets, and faucets. To reduce outdoor consumption, all landscaping areas will comply with the City's Landscape and Irrigation Ordinance and utilize drought resistant plant materials; lawns will be discouraged and replaced with low water use planting schemes; and educational materials on water conservation will be provided to new home owners as a means to elevate the public's literacy of the issue. By focusing on low water use planting palettes, the Plan will reduce water use and benefit from lower maintenance costs. See Figure 5D for more information.

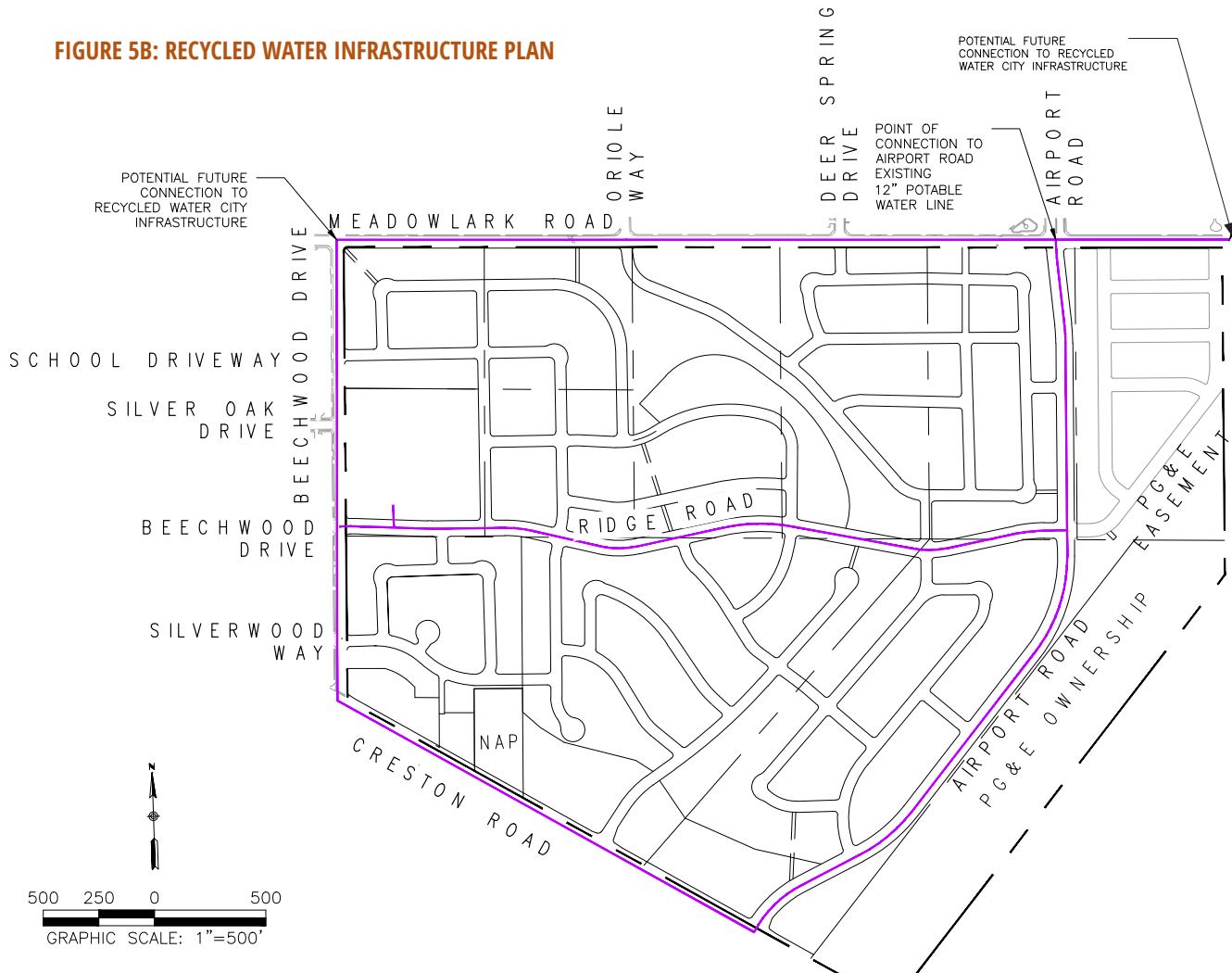
Recycled Water

The City of Paso Robles is currently designing a recycled water distribution system that will serve irrigation demands in the City and will also allow regional recycled water use. Recycled water will benefit the City and regional users by providing a drought-resilient supplemental water supply that can be used to offset irrigation demands and contribute to sustainable use of groundwater. Recycled water is a unique water supply because it is drought-resilient and can allow reduced use of other water supplies that are relied upon to provide potable water and other important uses. Recycled water is water that has been treated using specific processes to meet uniform statewide water recycling criteria and is safe for specific uses. The treatment and quality of recycled water is monitored closely to ensure the safety and suitability of recycled water for the uses being served.

The Beechwood Project will install recycled water mains ("purple pipe") and irrigation lines for future use of recycled water in public landscape areas such as the community park and parkways within the right-of-way,

as shown in Figure 5B. Recycled irrigation is not planned for private improvements. It will be some time before the City's recycled water system reaches the Beechwood area. In the interim, the recycled water mains will be connected to potable water for temporarily supplied via a single connection to the potable water system for irrigation of these spaces in accordance with the City's potable water engineering standards.

FIGURE 5B: RECYCLED WATER INFRASTRUCTURE PLAN



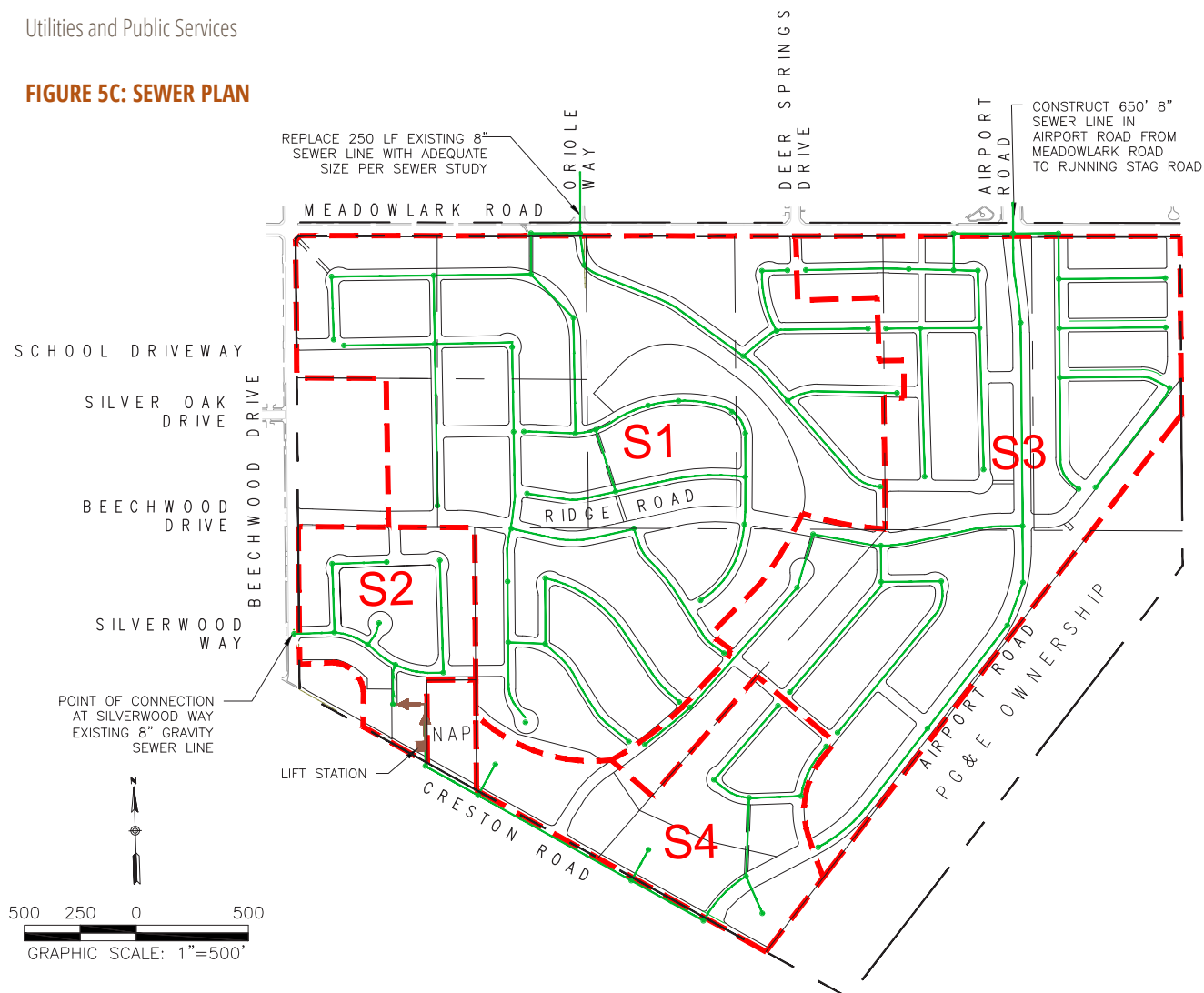
NOTES

- RECYCLED WATER PIPE TO SERVE PUBLIC LANDSCAPE, INCLUDING PARKS, ROAD PARKWAYS AND OTHER PUBLIC SPACES
- RECYCLED WATER TO BE PURPLE PIPE WITH NECESSARY APPURTANCES. CONNECTIONS WILL BE MADE TO EXISTING POTABLE WATER DURING INTERIM CONDITION UNTIL THE TIME THAT THE CITY'S RECYCLED WATER SYSTEM INFRASTRUCTURE EXTENDS TO THE SITE
- EXISTING POTABLE WATER MAINS TO BE ANALYZED FOR ADEQUATE PRESSURE AND FLOW DURING INTERIM PERIOD
- ALL NEW RECYCLED WATER MAINS TO BE 6" MINIMUM DIAMETER

LEGEND

- 6" RECYCLED WATER LINE
SPECIFIC PLAN BOUNDARY

FIGURE 5C: SEWER PLAN



LEGEND

- LIFT STATION
- SEWER MAIN (8" PURSUANT TO SEWER STUDY)
- FORCE MAIN
- SEWERSHED BOUNDARY
- SPECIFIC PLAN BOUNDARY

NOTES

- SEWER LIFT STATION IS ANTICIPATED TO SERVE AREA S4.
- SEWER MAIN TO BE UPSIZED IN ORIOLE WAY FROM MEADOWLARK ROAD TO COOL VALLEY DRIVE, PENDING CONFIRMATION FROM THE CITY'S SEWER MASTER PLAN UPDATE BY WSC, INC.
- SEWER FORCE MAIN REQUIRED FROM LIFT STATION ON CRESTON ROAD TO BEECHWOOD DRIVE AT SILVERWOOD WAY.

Wastewater

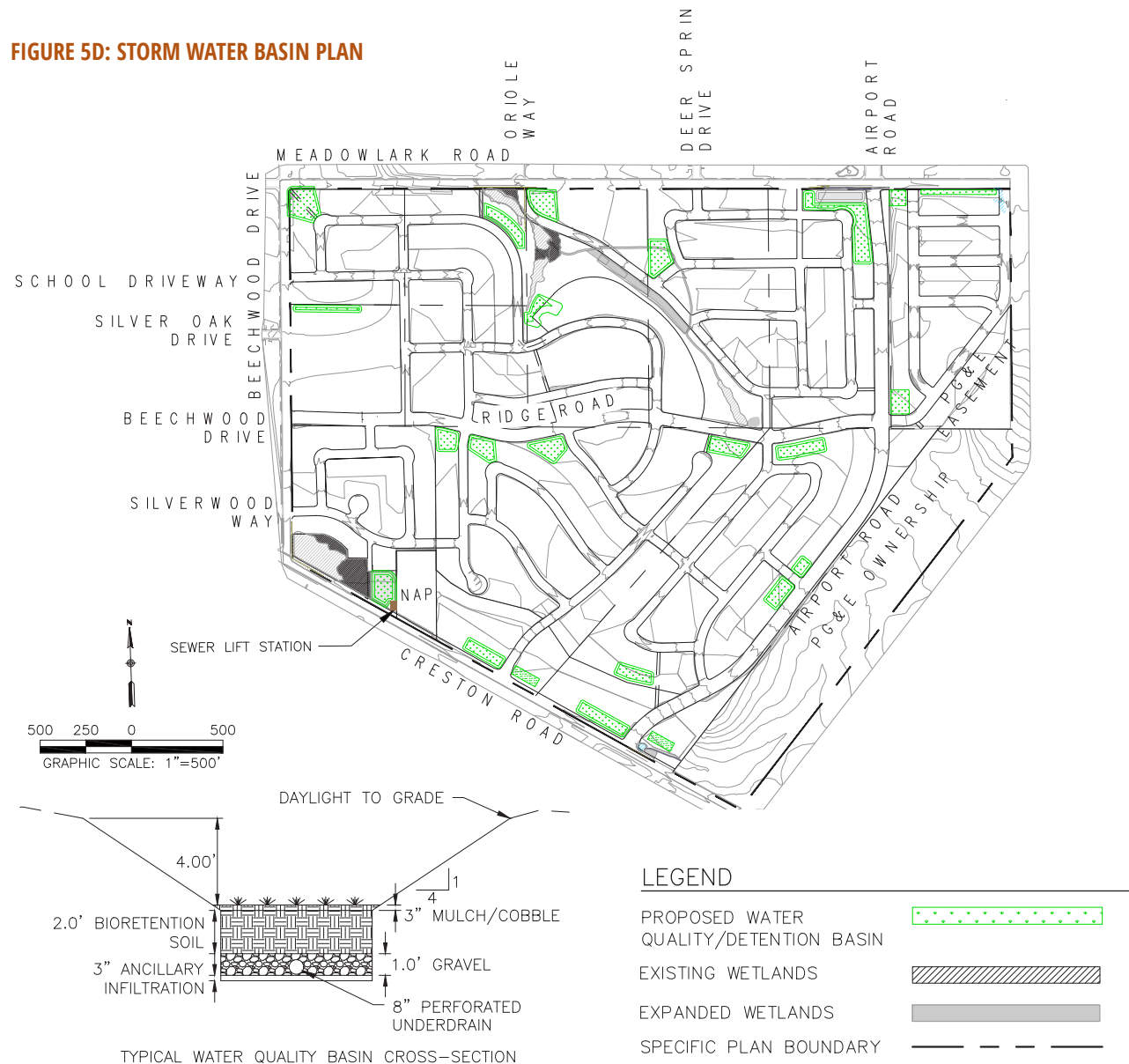
Existing wastewater collection facilities surrounding the Plan Area have been designed to support the community. The City's Sewer Master Plan proposes two connection points for the project to existing facilities in Beechwood Drive: one at Silverwood Way and another at Meadowlark Road. However, the applicant's engineers have determined through preliminary design that connections will likely be required at: 1) Airport Road and Running Stag Road; 2) Meadowlark Road and Oriole Way; and 3) Beechwood Drive and Silverwood Way. Lift Station #11 (existing) will serve the community and will be evaluated for adequacy through the City's Wastewater Master Plan update (in process). It is anticipated that the pumps for Lift Station #11 will require upgrades with the Beechwood subdivision development.

An on-site underground wastewater collection system will need to be installed throughout the Plan Area to support the proposed development. Due to the topographic variations of the site, a city maintained sewer lift station will need to be installed adjacent to Creston Road to accommodate the southern portion of the community. A preliminary design study indicates that the lift station should be located along Creston Road (approximately 650 feet southeast of Beechwood Drive), with a force main alignment following Creston Road northwest 650 feet to the intersection of Creston Road and Beechwood Drive, continuing north along Beechwood Drive to the intersection of Beechwood Drive and Silverwood Way. Additional technical studies and coordination with City staff will determine the capacity of the existing systems and proposed impacts to the system. See Figure 5C: Sewer Plan for more information.

Storm Water Management

Storm water management is an important function in the preservation and maintenance of natural hydrologic processes and ecosystems, as well as minimizing the potential for flooding and the costs and impacts associated with reconstruction. The Plan Area uses effective storm water management to preserve existing

FIGURE 5D: STORM WATER BASIN PLAN

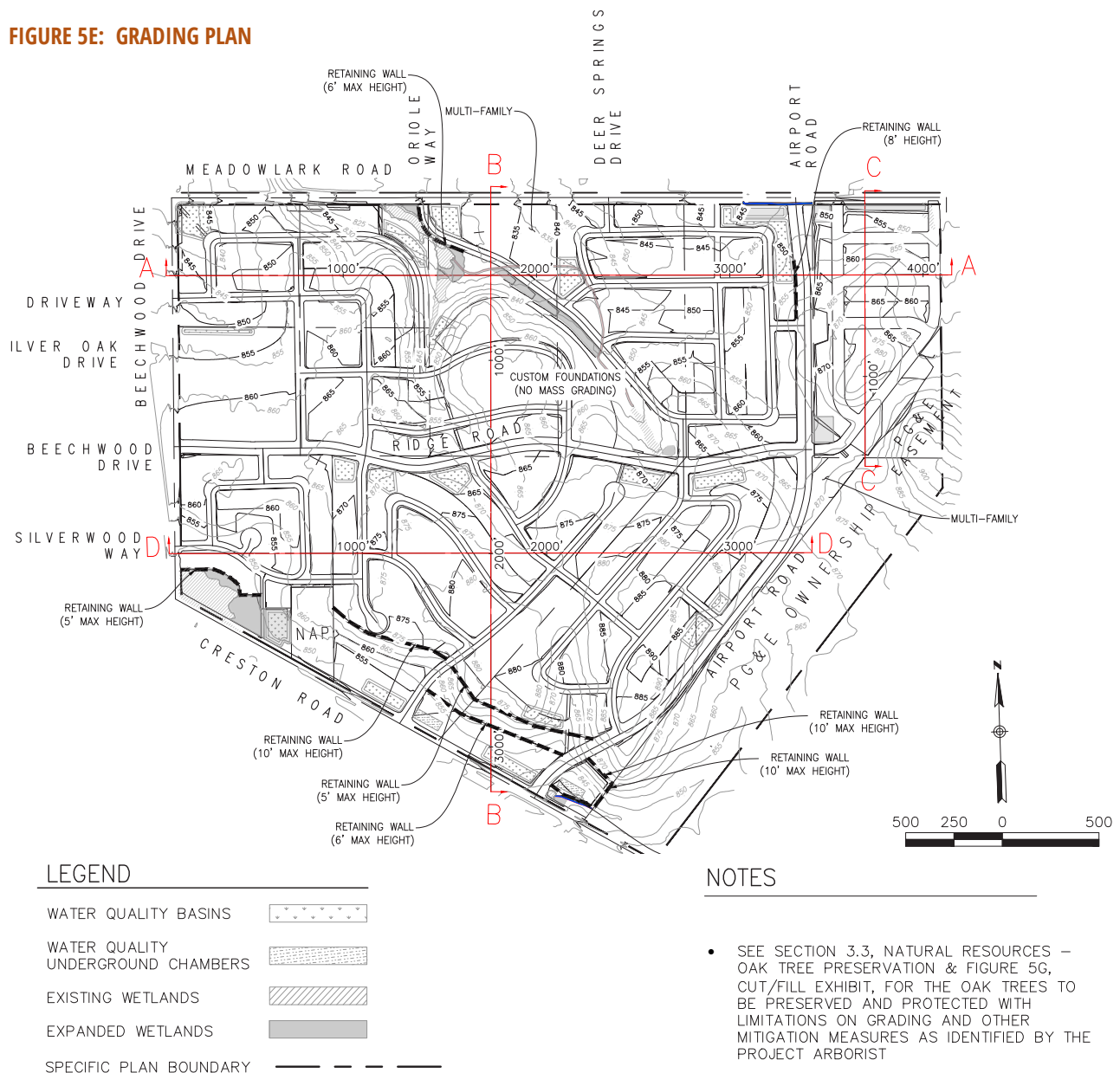


drainage patterns, minimize the potential for erosion and flooding, recharge ground water, improve storm water runoff quality, protect beneficial uses for water bodies, reduce soil erosion, and maintain on-site storm water management (i.e., detention, infiltration, and treatment).

The Plan Area conforms to storm water post-construction requirements of the City and Low Impact Development (LID) standards set forth by State Regional Water Quality Control Board. LID practices help infiltrate, filter, store, evaporate, and detain runoff to recharge ground water and improve water quality. LID design techniques lessen the disturbance of the development area, conserve natural features, and reduce construction and maintenance costs.

Figure 5D shows the storm water basin plan. This design is preliminary; refinements and revisions will happen based on future TTMs, site plans, and engineering. During the construction process and at build-out, the community's design and infrastructure improvements will be managed responsibly by not increasing runoff and impacting natural resources.

FIGURE 5E: GRADING PLAN



Site Grading Concept

The Plan's grading strategy is based on providing sensitively sited and clustered residential development to mitigate potential flooding impacts on areas of developable land and preservation of oak trees. The resultant grading concept takes advantage of the site's relatively modest topographic characteristics by minimizing excessive cut and fill slope heights and reducing the need for tall retaining walls. The strategy includes maintaining drainage patterns and other watercourses as natural channels to reduce peak flows by limiting water velocity. The conceptual grading is intended to achieve several project objectives, including:

- Responsiveness to the natural land form.
- Minimize the visual impacts of grading.
- Ensure that manufactured slopes are stabilized both during and after completion of construction.
- Assure conformity to the City's grading and water quality standards.

The landform of the Plan Area is characterized as gently rolling and flat terrain with a modest overall average slope of 5.1%, including several low hilltops. The low hilltops and corresponding topographic saddles form a modest ridge-like feature that runs southeast from the northwest portion of the site. The majority of the site drains northerly and northwesterly from the low ridge near the center of the property.

As indicated on Figure 5E: Grading Plan, the community will be gracefully integrated into the natural landform and designed to accommodate grade changes. While the grading scheme and storm water management strategies will address the existing slopes, the earth form will be contour-graded where cuts and fills do occur so that the slopes will appear rounded and natural in character. This technique gives the site a softened and more natural appearance and provides a better backdrop for the re-vegetation effort that will further enhance the graded areas.

A balanced grading of approximately 540,000 cubic yards (C.Y.s) of cut and fill is proposed. Retaining walls are proposed in select areas ranging between three feet and 10 feet to reduce slopes into natural resources. See Figure 5F: Cut/Fill Earthwork Plan.

The majority of the lots will be graded to provide building pads that will accommodate concrete slab foundations. This construction method reduces cost and allows for faster production, which helps to keep overall construction costs lower. The new lots will generally step up or down one to three feet, giving the new homes a more custom feel and lend a more appealing appearance to the streetscape. These gently sloping streets enhance storm water quality by slowing runoff, minimizing erosion and providing more opportunity to incorporate water quality enhancements in the street design. In addition, one area within the community is proposed for individually graded lots and stepped foundations, if necessary, to reduce impacts to oak trees and further reduce the amount of grading and graded slope heights.

FIGURE 5F: CUT/FILL EARTHWORK PLAN

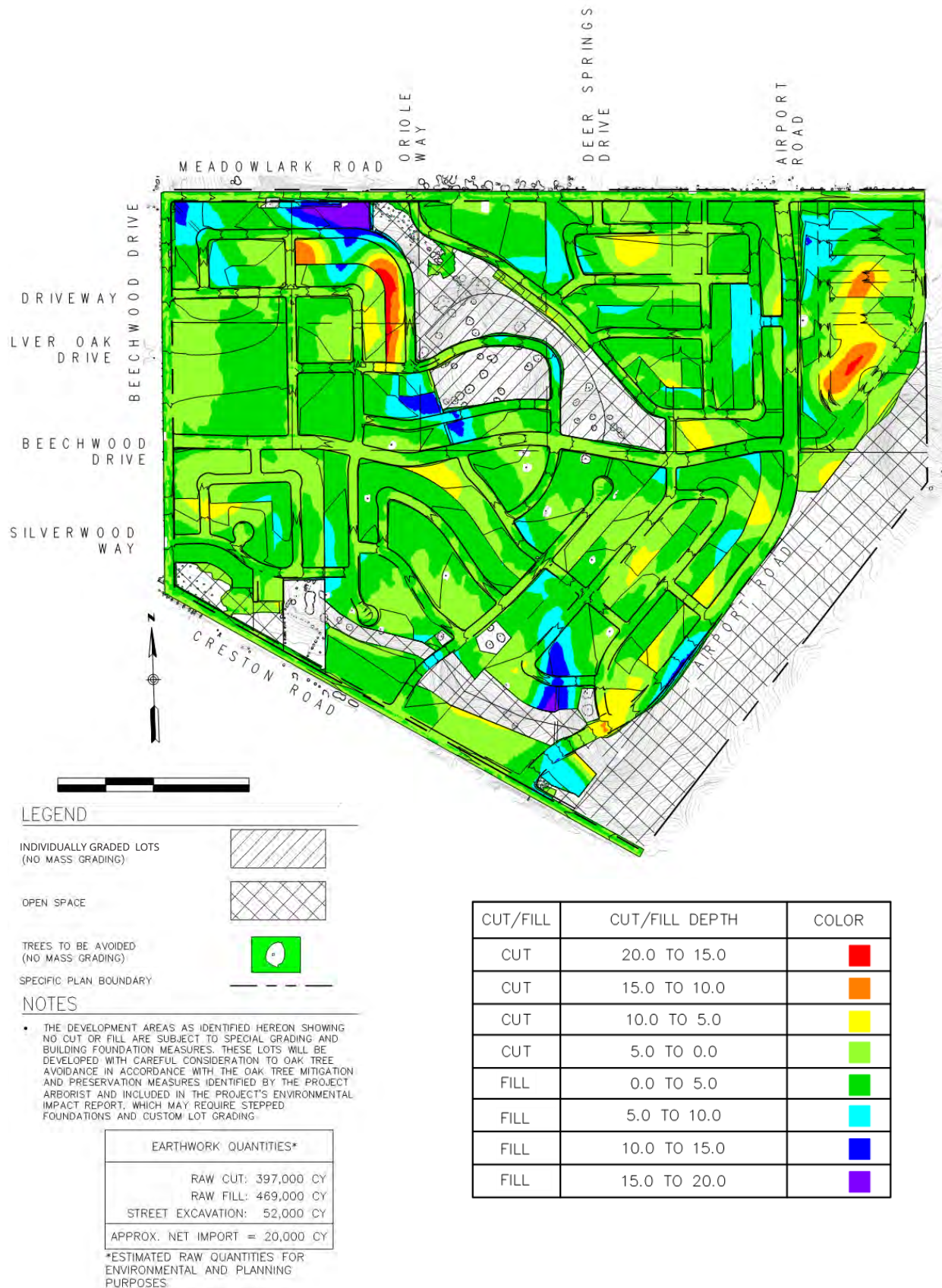


FIGURE 5G: GRADING SECTION A-A & SECTION B-B

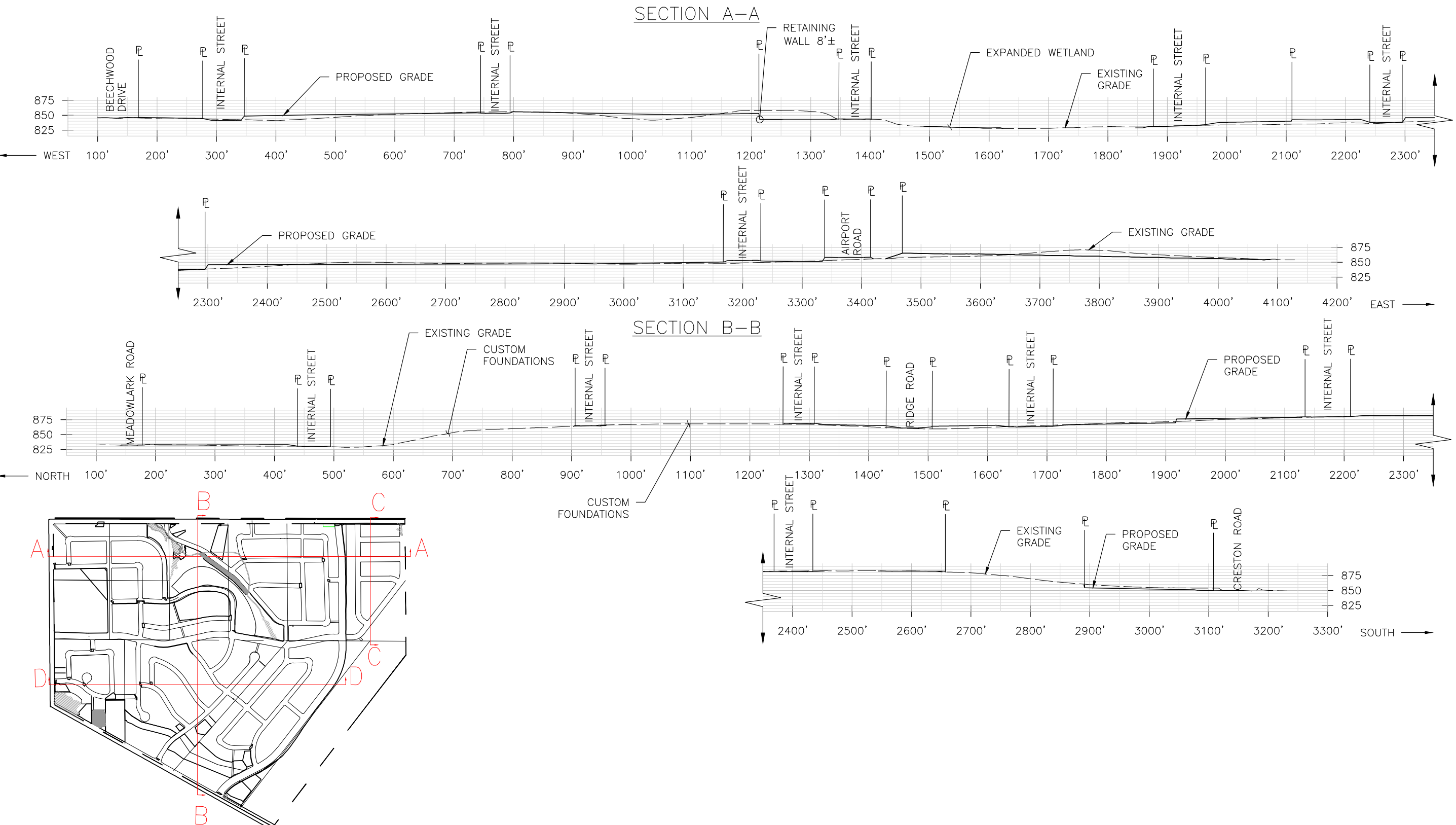
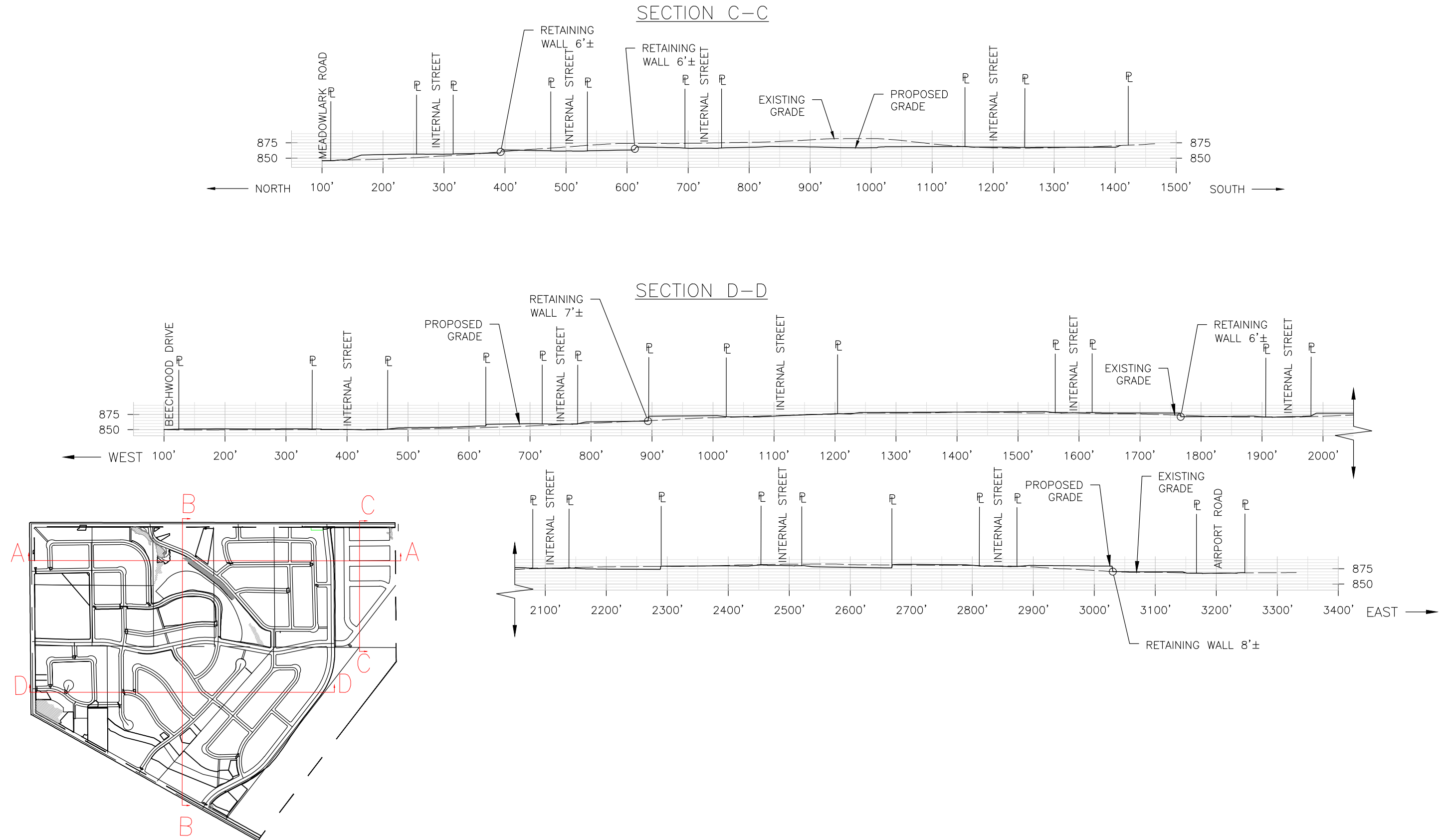


FIGURE 5H: GRADING SECTION C-C & SECTION D-D



Low Impact Development

Low impact development (LID) infrastructure serves a dual purpose through the environmental benefits (pollution abatement, protection of downstream water resources, ground water recharge, water quality improvements/reduced treatment costs, and habitat improvements) and the quality of life benefits (reducing downstream flooding and property damage, lot yield through efficient use of land, aesthetic value, and public spaces). LID techniques include attractive landscaping features as an integral part of the design, which enhances property, multi-use pathways, streets, parks, and open space, while enhancing the area's environmental sustainability potential.

The Plan Area will provide a fully integrated LID storm water system, including collection, cleansing, and detention facilities that are intended to produce appropriately clean runoff. The integrated system will also include the application of measures implemented to protect and enhance the existing and new wetland features within the Plan Area. In addition to the treatment of polluted runoff, this will enable high-quality open spaces in the Plan Area. The developers will coordinate all of the design elements of the system with the City, the Regional Water Quality Control Board, and the Army Corps of Engineers.

The Plan includes LID features to maintain and improve the pre-development hydrology while still accommodating high-quality development and design. The success of each method is dependent on the specific conditions of a site such as soil type, topography, and precipitation patterns.

EXAMPLES OF LID FEATURES

- **Bioretention.** Bioretention areas are vegetated depressions that collect and filter runoff. Vegetative strips, rain gardens, grassy swales, tree box filters, and underground drainage systems are all examples of bioretention areas that increase the amount of rainwater a site can absorb.
- **Permeable Pavement.** Permeable pavement offers an alternative to asphalt and concrete and allows rainwater to percolate into the ground. Permeable pavers can be integrated into lower traffic flow areas such as parking lots, driveways, fire lanes, and bicycle paths.
- **Alternative Driveway and Parking Lot Designs.** Employing alternative designs for driveways and parking lot areas can reduce impervious surfaces and include bioretention strips or cells. Grass parking is also an effective option for seasonal or temporary parking.
- **Reducing Street Widths.** Designing roadways to be narrower than those in conventional design can reduce overall pervious surfaces. Reducing street widths, combined with roadside swales that use vegetation and structural grass (grass supported by a grid and soil structure that prevents soil compaction and root damage), compounds to be a very effective LID strategy that can be applied throughout the street system.

Solid Waste and Recycling

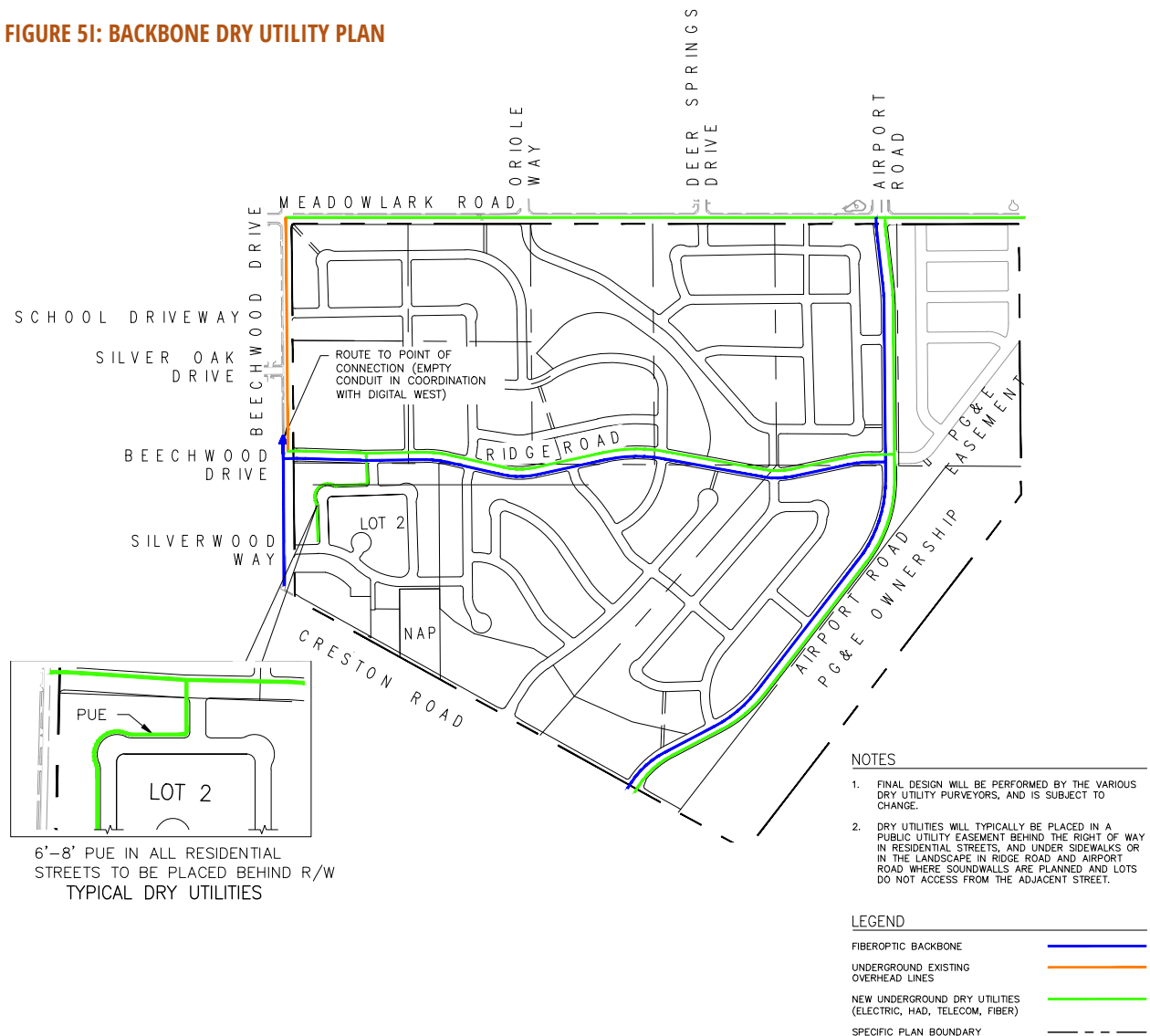
The City has a franchise agreement with Paso Robles Waste Disposal for both residential and commercial solid waste removal. This arrangement includes curbside collection, with three residential disposal options (trash, recyclables, and yard waste), plus the segregated cardboard recycling for commercial businesses. This solid waste removal service will be available to all residents of the community.

Communication Facilities, Electric Power, and Gas

Pacific Gas & Electric provides electricity to the Plan Area. Southern California Gas provides natural gas to the Plan Area.

The immediate neighborhood surrounding the Plan Area has the necessary infrastructure needed to serve the communication, electrical, and natural gas needs of the proposed project. These facilities will be extended into the community from the existing infrastructure by the respective service provider with construction of the different phases of the community.

FIGURE 5I: BACKBONE DRY UTILITY PLAN



The Plan proposes all forms of communication and power systems be made available to the community, thereby providing multiple options for new homeowners and renters. When and where required, rooftop solar power will be provided along with required natural gas in order to offer a balanced approach to powering the fixtures within the new units. In addition, fiber optic conduit will be placed in the utility easements for future use by the data services provider(s). See Figure 5I for more information.

5.3 Public Services

This Section describes the public services that serve the Plan Area and evaluates the effect of development on those services.

Police

Police services are provided by the City and are based out of the Paso Robles Police Department offices located at 900 Park Street, 3.5 miles away from the Plan Area.

Fire Protection

Fire protection services are provided by the Paso Robles Department of Emergency Services. The nearest Fire Station, Fire Station No.2, is located at 235 Santa Fe Avenue and is located within 1.5 miles of the Plan Area.

The existing water delivery infrastructure in the streets adjacent to the site is sized to provide the necessary flows for domestic service and fire protection demands. The Paso Robles Capital Improvement Plan shows that a transmission main is to be extended through the Plan Area, and City staff will determine the ultimate size of this needed infrastructure. As part of the development process, new water mains and hydrants will be provided throughout the community as the phases are developed.

Schools

The Plan Area is located within the Paso Robles Joint Unified School District. Schools at all grade levels are located in close proximity to the Plan Area. Virginia Peterson Elementary School is located across the street from the Plan Area at 2501 Beechwood Drive. Daniel E. Lewis Middle School is approximately 2 miles from the Plan Area on Creston Road. Paso Robles High School is located approximately 2 miles north of the Plan Area at 801 Niblick Drive.

5.4 Utilities and Public Services Policies

- BSP-28** All landscaping will include native, drought-tolerant plants and vegetation consistent with Zoning Ordinance Chapter 21.22B (Landscape and Irrigation Ordinance).
- BSP-29** All development shall provide drainage management and water quality features as described in Figure 5D: Stormwater Basin Plan.
- BSP-30** All development shall follow City stormwater post-construction requirements.
- BSP-31** Recycled water shall be used for parks and common landscaped areas.
- BSP-32** All development shall utilize the latest technology in low-flow water fixtures, including water-efficient heating appliances.
- BSP-33** Development shall provide a fully-integrated Low Impact Development (LID) system, in accordance with standards set forth by the State Regional Water Quality Control Board.
- BSP-34** The Plan shall provide an on-site underground wastewater collection system, with two connection points at Silverwood Way and Meadowlark Road, as described in Figure 5C: Sewer Plan. All facilities will meet the engineering requirements established by the City's Master Plan.
- BSP-35** Install recycled water mains ("purple pipe") and irrigation lines for future use of recycled water in public landscape areas such as the community park and parkways within the right-of-way.
- BSP-36** Abandon or transfer ownership of existing water wells to the City for municipal use.
- BSP-37** Provide new water mains and hydrants throughout the community as the phases are developed.

6 Implementation

Chapter 6 describes the Plan’s implementation strategy. The implementation strategy serves as a road map for implementing the Plan vision described in Chapter 1. This chapter describes phasing and financing, including funding approaches for implementation of major public improvements recommended in the Plan, estimated costs of the required facilities, and an outline of the fair-share cost allocation among subareas. This chapter also addresses administration of the Plan, entitlement processes, and actions to implement the Plan.

6.1 Phasing of Build-out and Infrastructure Improvements

The community is anticipated to develop in two major phases, with the timing and order of development of the subareas in each phase to be determined by each property owner. Phase 1 will be initiated with processing and approval of a master tentative tract map (MTTM). Figure 6A: Phasing Map identifies the phasing plan and the estimated distribution of single-family and multi-family units by phase.

FIGURE 6A: PHASING MAP

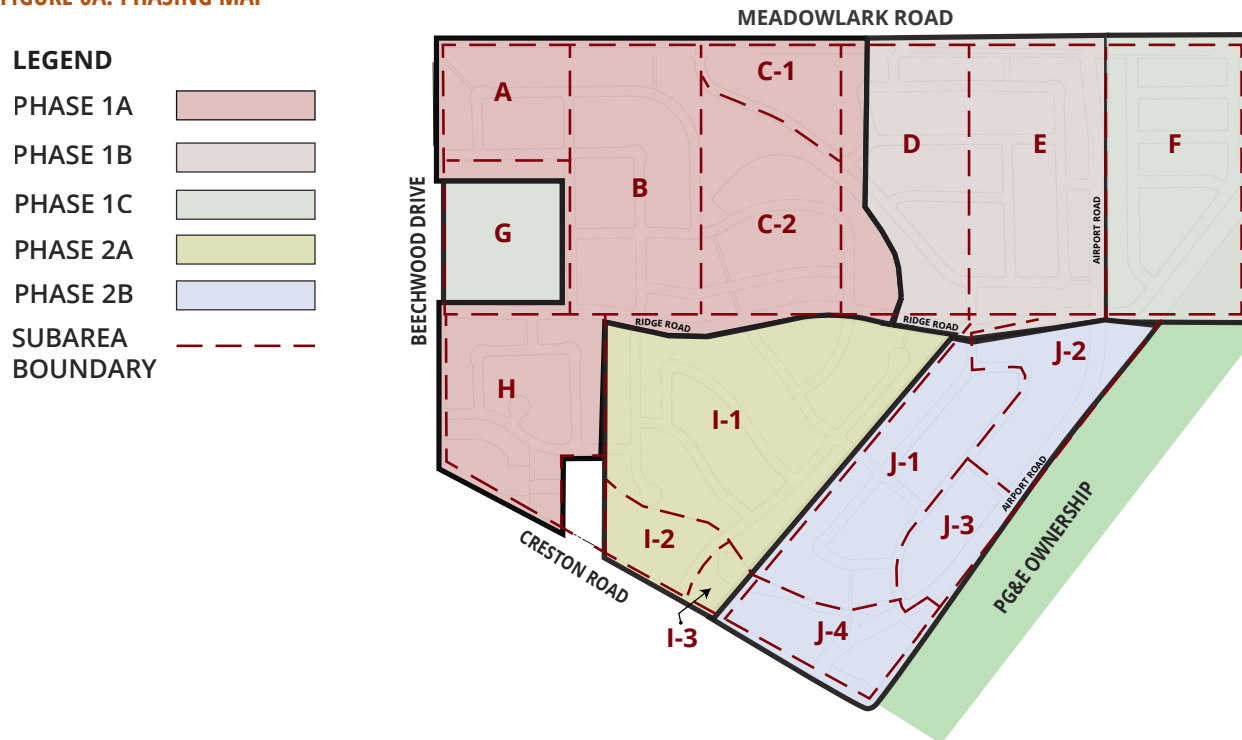


TABLE 6-1: PHASING PLAN

Phase	Single-Family (du)	Multi-Family (du)	Total (du)	Commercial (sf)
1	474	80	554	-
2	184	173	357	47,000
Total	658	253	911	47,000

As shown in Figure 6A: Phasing Map, Phase 1 and 2 are broken down into subdivisions. Phases 1A, 1B, and 1C generally proceed from west to east, as do phases 2A and 2B. There is nothing to preclude a different development order, and in such a case the various improvement components may change to accommodate a realigned development sequence. In addition, the traffic mitigation requirements included herein will be applied to each appropriate phase once the City determines when the traffic mitigation measures must be implemented. All costs are the responsibility of each phase owner unless otherwise specified. All multi-use pathways, attendant landscaping, future recycled irrigation mains and appurtenances, and enhanced pedestrian walkways are a shared cost by all owners.

In general, Phase I proceeds from west to east, with the community park developed near the end of Phase 1. Construction of streets or portions of streets includes curbs, gutters, sidewalks, enhanced sidewalks and multi-use pathways where indicated on Figure 3A, and new street lights as directed by the City and utility companies. In addition to the street improvements listed in Table 6-2, Phase 1A includes an activated pedestrian crossing on Beechwood Drive across from Virginia Peterson School and the mini-roundabout on Meadowlark Road and Oriole Way.

Improvements to utility infrastructure in Phase 1A include installation of a force main and upgrading of sewer lift station #11, a new sewer main to the north of the intersection of Oriole Way and Meadowlark Road, a new sewer main to the west of the same intersection which turns south into the subdivision, and an extension of a new 8" water main to an existing 12" water main. On Beechwood Drive, improvements include installation of new manhole and new sewer main from the intersection of Silverwood Way connecting a new 8" water main to an existing 8" water main in Beechwood Drive, and the removal and replacement of the existing 8" water main in Beechwood Drive with a 12" water main from Ridge Road to Creston Road. On Creston Road, Phase 1A involves the installation of a manhole and gravity sewer line and stub-out to the east for future extension, a new 8" water main from Beechwood Drive, and a new 12" water main and sewer main in Ridge Road, and, on Airport Road, the extension of a new sewer main and new 12" water main from Meadowlark Road.

Phase 1 includes extending gas service facilities to all completed roads, installing wire utilities (power, cable TV, telephone, and fiber optics) as directed by the City and utility companies, and installing irrigation main (purple pipe). Wetland mitigation for impacts within the Phase 1 area is required in Phase 1.

Phases 2A and 2B include the construction, improvements, and completion of Creston Road from Airport Road to west side of NAP property, south side of Ridge Road from west boundary of Area I to Airport Road, and Airport Road from Ridge Road to Creston Road. Sewer and water improvements on Airport Road, Ridge Road, and Creston road include installing sewer main, installing and extending 12" water main, and installing sewer lift station in Area H. Phase 2 also includes installing wire utilities (power, cable TV, telephone, and fiber optics), gas service facilities, and irrigation main (purple pipe) are directed by the City and utility companies. Additionally, installment of new street lights on all completed roads is part of Phase 2.

Infrastructure Improvements

The Plan requires the construction of a range of infrastructure improvements listed below in Table 6-2: On-Site Infrastructure Improvements and Table 6-3: Off-Site Infrastructure Improvements. The Improvement Number corresponds to the anticipated order of construction. For on-site improvements, the timing will ultimately be determined by EIR mitigation and traffic infrastructure needs. Off-site infrastructure improvements, shown in Table 6-3, are required for the purpose of mitigating the project's impacts on traffic and public services. In all cases, construction of improvements is subject to approval by the City Engineer

TABLE 6-2: ON-SITE INFRASTRUCTURE IMPROVEMENTS BY PHASE

Phase 1 (Dwelling Units: 474 SF, 80 MF)		
Type	Number	Improvement
Roads	R1-1	On-site local roads within Phase 1 subdivisions.
	R1-2	Secondary access constructed and available for each individual tract.
	R1-3	Construct Ridge Rd. to full width including 10' multi-use pathways, from Beechwood to Airport Rd.
	R1-4	Construct Airport Rd from Meadowlark Rd to Ridge Rd, including 10' multi-use pathway.
	R1-5	Half-width improvements to Beechwood Dr. including curb, gutter, and sidewalk, including 10' multi-use pathway.
	R1-6	Complete south-side improvements to Meadowlark Rd, including curb, gutter, and sidewalk, and 10' multi-use pathway from the intersection of Beechwood Dr with Meadowlark Rd easterly to the Plan Area boundary. Transitions to the satisfaction of the City Engineer.
	R1-7	Install traffic calming measures on Meadowlark Rd.
	R1-8	Required improvements to Creston Rd with curb, gutter, and sidewalk, including the 10' multi-use pathway from the intersection of Creston Rd and Beechwood Dr. southeasterly to the Phase 1 boundary with transition to the satisfaction of the City Engineer.
	R1-9	Intersection improvements at Creston Rd. and Beechwood Dr, Beechwood Dr and Meadowlark Rd
Sewer	S1-2	Construct on-site sewer within Phase 1 subdivisions
Water	W1-2	Connect to existing 12" water line at Meadowlark Rd. and Deer Springs and as needed
	W1-3	Install on-site water within Phase 1 subdivisions
Other	O1-1	Install required wetland mitigation for impacts within Phase 1 area
	O1-2	Community Park Improvements
	O1-3	Complete 10' multi-use pathways within Phase area
Phase 2 (Dwelling Units: 184 SF, 173 MF)		
Type	Number	Improvement
Roads	R2-1	On-site local roads within Phase 2 subdivisions.
	R2-2	Construct Airport Rd from Ridge Rd to Creston Rd, including 10' multi-use pathway upon initiation of construction within Subarea J.
Sewer	S2-1	Construct on-site sewer within Phase 2 subdivisions.
	S2-4	Construct sewer line in Creston Rd.
	S2-3	Construct sewer lift station on Creston Rd. approx. 600' southeast of Creston Rd and Beechwood Dr. Construct force main from lift station to existing gravity sewer.
Water	W2-1	Construct water line in Creston Road.
	W2-2	Install on-site water within Phase 2 subdivisions.
Other	O2-1	Install required wetland mitigation for impacts within Phase 2 area.
	O2-2	Community Park Improvements

TABLE 6-3: OFF-SITE INFRASTRUCTURE IMPROVEMENTS BY PHASE

Phase 1		
Type	Number	Improvement
Roads	R1-9	Improvements to off-site intersections.
Sewer	S1-1	Connect to existing 8" sewer line in Oriole Way and Silverwood Way.
	S1-3	Construct approx. 600' of 8" sewer line from Meadowlark Rd and Airport Rd to Stag Rd.
Water	W1-1	Connect to existing 8" water line at Silver Oak Dr., Silverwood Way, Beechwood Ct. at Ridge Rd, and at school driveway.

6.2 Maintenance

All infrastructure improvements within the Plan Area will require some degree of maintenance. Maintenance will be funded by a Homeowners Association (HOA), the City of Paso Robles, the property owner, or a service provider. Table 6-4 lists infrastructure improvements by appearance in chapters 2 through 5 of this document.

Two levels of HOA will be formed within the Specific Plan project area to fund and manage certain components or facilities of the Project identified in Table 6.4 below. A Master Home Owners Association (MHOA) will be established to fund and maintain facilities that provide community-wide benefit such as the multi-purpose

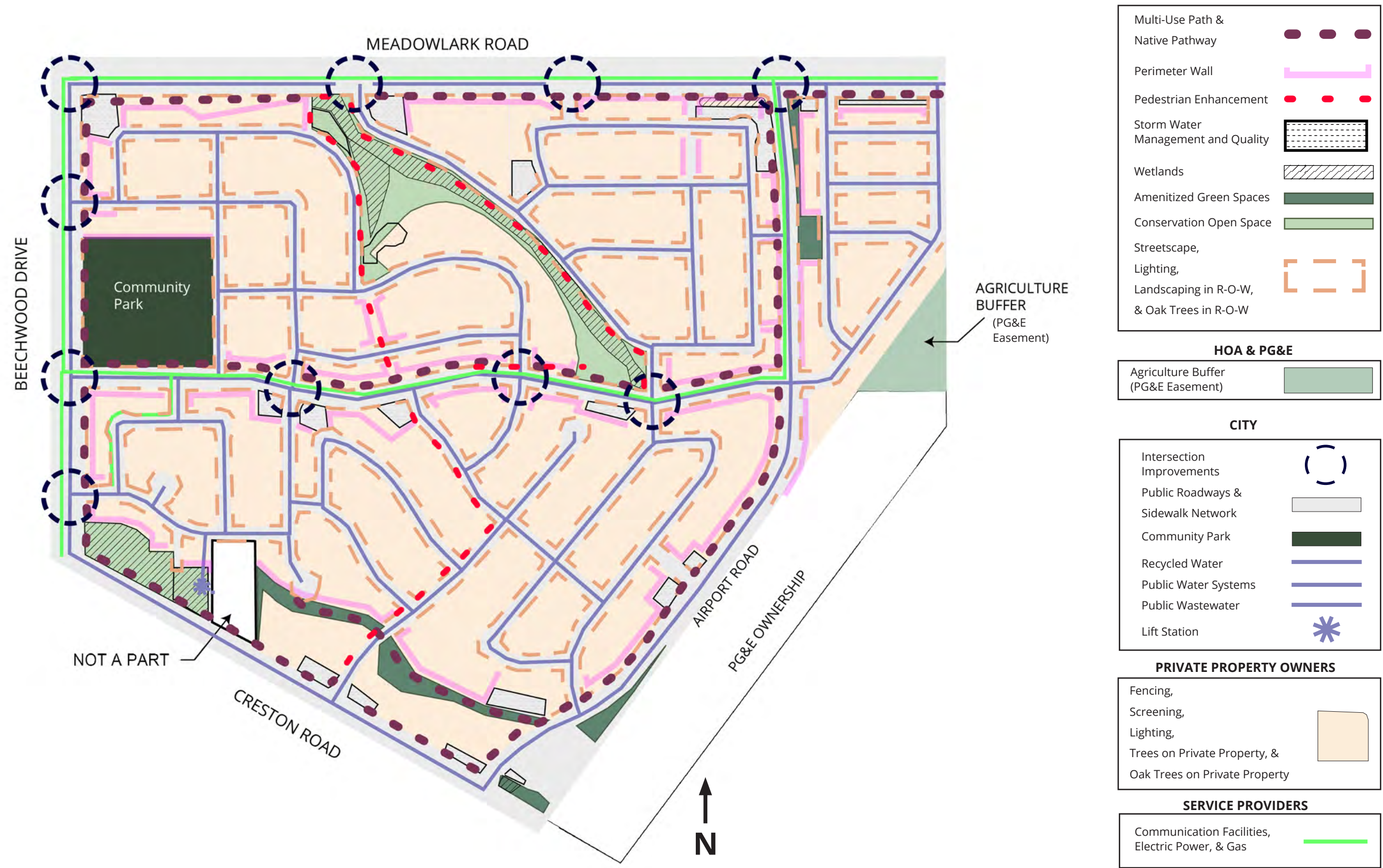
TABLE 6-4: INFRASTRUCTURE IMPROVEMENTS BY MAINTENANCE RESPONSIBILITY SOURCE

Plan Section	No.	Improvement	Figure/Map	Maintenance Responsibility ¹
Section 2.5 Design of the Public Realm	1	Fencing and Screening (Private property only – not project perimeter walls)	No Figure	Private Property Owners
	2	Streetscape and Lighting ²	Figure 2B: Street Tree Plan (Figure does not include lighting)	HOA; Private Property Owners for trees on residential lots
	3	Landscaping within the of-way	No Figure	HOA
Section 3.2 Parks and Open Space	4	Community Park	Figure 3B: Community Park Concept	City
	5	Amenitized Green Space	Figure 3A: Parks, Open Space, and Multi-use Pathways Plan	HOA
	6	Multi-use Pathway (Includes Native Pathway)	Figure 3A: Parks, Open Space, and Multi-use Pathways Plan	HOA
	7	Open Space - Conservation	Figure 3A: Parks, Open Space, and Multi-use Pathways Plan	HOA
Section 3.3 Natural Resources	8	Oak Tree Preservation	Figure 3E: Oak Tree Preservation	HOA; Private Property Owners if on private property
	9	Wetlands	Figure 5D: Storm Water Basin Plan	HOA
	10	Agriculture Buffer (PG&E easement through sub-area F)	Figure 3A: Parks, Open Space, and Multi-use Pathways Plan	HOA/PG&E
Section 4.2 Circulation Plan	11	Public Roadway and Sidewalk Network	Figure 4A: Circulation Plan	City
	12	Intersection Improvements, including colored/specialized paving at crosswalks	Figure 4A: Circulation Plan	City
	13	Pedestrian Enhancements, including public art and speed-reduction measures	Figure 4A: Circulation Plan	HOA
	14	Perimeter Wall	Figure 4L: Perimeter Wall Plan	HOA
Section 5.2 Infrastructure Improvements	15	Public Water Systems (Includes Pump Station)	Figure 5A: Water Master Plan	City
	16	Recycled Water	Figure 5B: Recycled Water Plan	City
	17	Public Wastewater (Includes Lift Station)	Figure 5C: Sewer Plan	City
	18	Storm Water Management and Quality	Figure 5D: Storm Water Basin Plan	HOA
	19	Solid Waste and Recycling	N/A	Service Providers
	20	Communication Facilities, Electric Power, and Gas (Includes fiber-optics)	Figure 5H: Dry Utilities Plan (Figure does not include Gas)	Service Providers

¹ Where HOA is indicated, maintenance responsibility will be either that of the Master Association or the Sub-Association.

² Streetscape maintenance program will be consistent with Zoning Ordinance Chapter 10.04 (Street Tree Planting and Maintenance)

FIGURE 6B: INFRASTRUCTURE IMPROVEMENT BY MAINTENANCE RESPONSIBILITY MAP



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pathway system, landscaped parkways along the major roadways (i.e. Airport Road, Ridge Road, Creston Road, and Beechwood Drive) and other community-wide facilities that will be identified as the Project is developed. Sub-associations and smaller cost centers within the sub-associations will also be established which are intended to fund and maintain facilities that are unique to and/or benefit individual Subareas and subdivisions within the Specific Plan or unique to specific lots and facilities within a subdivision. The organization and formation of the MHOA and the sub-associations/cost centers are subject to review, approval and enforcement by the California Department of Real Estate.

6.3 Subdivision Process

Phase 1 of the Specific Plan will be initiated with processing and approval of a master tentative tract map (MTTM). The MTTM will include all subareas of Specific Plan except Subarea F, and will create large lots intended to be subsequently subdivided. Because the specific plan area is made up of multiple ownerships, the primary purpose of the MTTM is to reserve land necessary for the public improvements required throughout the Specific Plan, such as rights-of-way of the primary streets, important utility facilities, storm drainage, and conservation open space for protection of important environmental resources and mitigation areas. In addition, minor boundary adjustments between ownerships that are necessary along street rights-of-way and to accommodate lotting configurations between ownerships can be completed using the MTTM. Subarea F, also within Phase 1, may develop under a separate subdivision application due to its location that is relatively separate from the majority of the Project. The large lots are created by the MTTM, when subdivided by subsequent TTMs, will provide the final design of development including the location of streets, lot design, open space, and utilities, and construct the required improvements.

Before any application for a TTM can be accepted by the City, the Specific Plan Cost Recovery Fee as discussed in Section 6.5 must be paid. See Table 6-9 for the amounts owed.

6.4 Infrastructure Costs

The total cost of transportation and backbone utility infrastructure required for the Plan build-out is estimated to be approximately \$12,719,000 (see Table 6-5: Estimated Infrastructure Improvement Costs by Subarea). The estimated cost does not include any cost associated with land acquisition for roadway or other infrastructure improvements (if required) or in-tract improvements costs, which developers will assume as their projects are constructed. Also, development impact fees (e.g., transportation, park and recreation, etc.) are not reflected in these costs (see Funding Mechanisms below for a discussion of estimated development impact fees).

Cost of infrastructure improvements are divided by subareas roughly proportional to the infrastructure needs of each subarea. These costs include those related to roadways, multi-use pathway, water, irrigation, sewer, drainage, and dry utilities improvements.

Infrastructure improvement costs are distributed to each subarea owner according to one of the following general methodologies:

- **Per Estimated Dwelling Unit.** Subarea costs are equal to the total cost of infrastructure improvement multiplied by the quotient of maximum allowed units in subarea divided by the maximum number of allowed units in the Plan.

- Commercial square footage is converted into dwelling units at a rate of 1 unit per 1,000 square feet of commercial.
- No distinction in cost is made between single family and multi-family units.
- Example: Subarea cost = total cost of infrastructure x (max. allowed units in subarea / max. allowed units in Specific Plan)
- **By Frontage.** Each subarea owner is responsible for the proportion of total cost equivalent to the percentage of street/infrastructure frontage abutting their subarea.
 - Example: Subarea cost = total cost of infrastructure x (length of subarea frontage along street / total length of street along Specific Plan boundary)

Infrastructure items whose costs are shared across subareas on a Per Estimated Dwelling Unit basis may require developer-developer agreements and/or bonding to ensure construction is appropriately funded.

6.5 Funding

This section presents a summary of potential funding mechanisms that may be used for construction and maintenance of proposed infrastructure and physical improvements; Several or all of these mechanisms may be used.

Funding Mechanisms

Developer Financing

In many cases, developers fund facilities or dedicate land as a means of mitigating the impact of their developments, which may be required as CEQA mitigation measures or could be in-lieu of paying development impact fees or to earn development impact fee credits. For example, the City may impose, as a condition of development, construction of a needed facility, such as a roadway. Once the roadway is constructed and accepted by the City, development impact fees credits equal to the amount of the cost of the facility or the cost of the facility as identified in the City's capital improvement plan, can be issued to the developer. The developer can then apply those credits to offset fees imposed on a current or future development project. In addition, some of the costs in Table 6-5 are not shared costs and will be financed and constructed by the property owner or the developer of a sub area. These costs are allocated based on the proportion of the "frontage" as discussed above.

Development Agreement

Development agreements are mechanisms that provide developers with the assurance that their projects will proceed as originally approved, regardless of any potential changes to land use regulations. This tool establishes this assurance as a vested right via Government Code Section 65864. In return, the developer or owner may agree to one or more conditions, such as public improvements, land dedications, or in-lieu fees as negotiated with the City. A development agreement for the Beechwood Specific plan will serve as a useful tool to provide public improvements called for in the Plan, such as dedicated land for open space or public space improvements.

Development Impact Fees

Allowed under Government Code §66000 et seq., development impact fees (DIF) are payments from new developments required by local governments to offset the cost of improving or expanding City facilities to accommo-

TABLE 6-5: ESTIMATED INFRASTRUCTURE IMPROVEMENT COSTS BY SUBAREA

Sub Area	A	B	C	D	E	F	G	H	Phase 1 (A-H)	I	J	Phase 2 (I-J) ¹	Total
Number of Units	36	86	82	88	88	88	32	54	554	164	193	357	911
Percent of Units	3.95%	9.44%	9.00%	9.66%	9.66%	9.66%	3.51%	5.93%	60.81%	18.00%	21.19%	39.19%	100%
Roadway	\$310,133	\$263,705	\$255,691	\$267,711	\$267,711	\$209,631	\$64,108	\$451,780	\$2,090,471	\$486,967	\$606,940	\$1,093,907	\$3,184,378
Multi-Use Path	\$86,299	\$206,158	\$196,570	\$210,953	\$210,953	\$210,953	\$76,710	\$129,448	\$1,328,043	\$393,139	\$462,658	\$522,587	\$2,183,840
Water ⁴	\$23,755	\$36,987	\$35,423	\$37,768	\$37,768	\$37,768	\$12,507	\$49,360	\$271,337	\$458,224	\$477,029	\$935,253	\$1,206,590
Irrigation ³	\$32,656	\$58,251	\$55,698	\$59,527	\$59,527	\$59,527	\$20,419	\$62,712	\$408,316	\$123,774	\$149,749	\$273,523	\$681,840
Sewer ⁵	\$3,610	\$8,623	\$8,222	\$9,019	\$10,526	\$10,545	\$0	\$0	\$50,544	\$414,689	\$801,657	\$1,216,345	\$1,266,890
Drainage	\$41,667	\$80,714	\$77,085	\$82,528	\$82,528	\$82,528	\$29,028	\$131,915	\$607,992	\$217,874	\$271,173	\$489,047	\$1,097,040
Dry Utilities	\$87,297	\$92,732	\$90,177	\$94,010	\$94,010	\$94,010	\$20,440	\$113,878	\$686,554	\$149,179	\$185,054	\$334,233	\$1,020,788
Off-Site Transportation Improvements	\$124,083	\$296,634	\$282,634	\$303,315	\$303,315	\$303,315	\$110,296	\$186,125	\$1,909,506	\$565,269	\$665,225	\$1,230,494	\$3,140,000
Other ⁶	\$279,525	\$337,844	\$417,474	\$320,829	\$509,129	\$384,929	\$78,156	\$360,488	\$2,688,374	\$705,749	\$3,545,113	\$1,564,626	\$4,253,000
Sub-total: ⁷	\$864,942	\$1,085,013	\$1,136,341	\$1,082,345	\$1,272,152	\$1,089,891	\$2,949,594	\$3,813,138	\$8,131,634	\$2,949,594	\$3,813,138	\$6,762,732	\$14,894,366
20% Construction Contingency	\$172,988	\$217,003	\$227,268	\$216,469	\$254,430	\$217,978	\$60,274	\$259,916	\$1,626,327	\$589,919	\$762,628	\$1,352,546	\$2,978,873
Total ^{2,8,9}	\$1,037,930	\$1,302,016	\$1,363,610	\$1,298,814	\$1,526,582	\$1,307,869	\$361,642	\$1,559,498	\$9,757,961	\$3,539,513	\$4,575,766	\$8,115,279	\$17,873,240

Notes

1) Commercial uses within subareas I and J are apportioned at the rate of 1 EDU per ksf.

2) Costs based on 2018 prices. Inflation rate of 5% per year should be applied beyond 2018.

3) Irrigation includes cost of recycled water infrastructure.

4) Estimate includes \$750,000 booster station.

5) Estimate includes \$100,000 Creston Road sewer lift station.

6) Other includes cost estimates for Community Park, Perimeter Wall, Subdivision Monument Signage, and City Gateway Monument Signage.

7) Sub-total does not include cost of Off-Site Transportation Improvements.

8) This planning-level cost estimate is preliminary only. Rick Engineering Company makes no warranty, either expressed or implied, that actual costs will not vary from the amounts indicated and assumes no liability for such variances.

9) There may be additional shared costs not known at this time, including but not limited to parks and open space, amenitized green spaces, wetland mitigations, and offsite mitigations for traffic, sewer, water, and/or drainage.

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TABLE 6-6: ESTIMATED RESIDENTIAL DEVELOPMENT IMPACT FEES

DIF Category	Fee per Single Family Unit	Total Fees for Single Family Units	Fee per Multi-Family Unit	Total Fees for Multi-Family Units	Category Total
Number of Units	N/A	658	N/A	253	911
Police	\$85	\$55,930	\$99	\$25,047	\$80,977
Fire	\$1,152	\$758,016	\$1,152	\$291,456	\$1,049,472
General Government	\$3,338	\$2,196,404	\$3,338	\$844,514	\$3,040,918
Park and Recreation	\$3,264	\$2,147,712	\$3,264	\$825,792	\$2,973,504
Library	\$1,077	\$708,666	\$1,077	\$272,481	\$981,147
Transportation	\$9,983	\$6,568,814	\$6,880	\$1,740,640	\$8,309,454
Total	\$18,899	\$12,435,542	\$15,810	\$3,999,930	\$16,435,472

Credits will be determined and deducted as stated in development agreement.

TABLE 6-7: ESTIMATED COMMERCIAL DEVELOPMENT IMPACT FEES

DIF Category	Fee per Square foot	Total Fees for Commercial Space
Total Sq. Ft.		47,000 sf
Transportation	\$11.63	\$546,610
Police	\$0.13	\$6,110
Fire	\$0.42	\$19,740
General Government	\$1.21	\$56,870
Park and Recreation	\$0.00	0
Library	\$0.00	0
Total	\$13.39	\$629,330

TABLE 6-8: ESTIMATED WATER AND WASTEWATER FEES AND COSTS

Fee Category	Fee per Single Family Unit*	Total Fees for Single Family Units**	Fee per Multi-Family Unit*	Total Fees for Multi-Family Units	Total Fees for Residential Units	Meter Size	Fee per Meter	# of Meters	Total Fees for Commercial Space
Units / Sq. Ft.	769		142		911	47,000 Sq. Ft.			
Water Connection Fee	\$19,066	\$14,661,754	\$19,066	\$2,707,372	\$17,369,126	1"	\$31,840	3	\$95,520
						2"	\$101,622	1	\$101,622
Water Meter	\$179	\$137,651	\$179	\$25,418	\$163,069	1"	\$219	3	\$657
						2"	\$1,336	1	\$1,336
Wastewater Facility Fees	\$8,093	\$6,223,517	\$8,093	\$1,149,206	\$7,372,723	1"	\$13,515	2	\$27,030
						2"	\$43,134	1	\$43,134
Total	\$27,338	\$21,022,922	\$27,338	\$3,881,996	\$24,904,918	N/A			\$269,299
Total Commercial and Residential Fees									\$25,174,217

Estimated fees based on the October 1, 2017 City of Paso Robles Water and Wastewater Fees

* 3/4" water meter used for calculating fees for single family units and multi-family units

** Calculation includes attached and detached single family units

date the development. To establish the appropriate fee amount, the City determines the specific improvements to be funded and prepares a “nexus” study to demonstrate the relationship between the proposed improvements and new development. The fee program is adopted by City Council.

Pursuant to §66006 of the California Government Code, the City establishes a capital facility account(s) for collected fees. Establishment of this account(s) will prevent commingling of the fees with other City revenues and funds. Interest income earned by fee revenues in these accounts will be deposited in the accounts and applied to facility construction costs. Within 180 days of the close of each fiscal year, the City will make information pertaining to each account (as required by §66006 (b)(1)) available to the public and will review this information at a regularly scheduled public hearing.

Estimated Development Impact Fees for the Plan are included in Table 6-6: Estimated Residential Development Impact Fees and Table 6-7: Estimated Commercial Development Impact Fees under DIF Resolution 17-066 (2018). Total required DIF estimates may be lower if the development provides capital improvements identified by the City.

Statewide Community Infrastructure Program (SCIP)

SCIP is a financing program that enables developers to pay most impact fees and finance public improvements through an acquisition agreement that qualify under the 1913/1915 Act (excluding school fees) via tax-exempt bond issuance proceeds. This highly versatile program can be molded to the needs of each local agency participant of SCIP. As most local agencies require developers to pay impact fees prior to obtaining a permit, SCIP can be used to directly prepay these fees or, alternatively, to reimburse the developer after fee payment. The program can be used to enable developers to pay for, or be reimbursed for, all eligible impact fees or for a single impact fee. Moreover, the program may alleviate the need for a fee deferral program by providing the local agency with necessary funds and eliminating the risk of nonpayment by the developer.

Community Facilities Districts

A Community Facilities District (CFD) is a special district created pursuant to the Mello-Roos Community Facilities Act (California Government Code §53311 et seq.) to finance public infrastructure and service projects through levying of a special tax on property in the district. Public bonds can be issued based on the revenue stream from the special tax. As a primary funding mechanism, a CFD may provide for the purchase, construction, expansion, or rehabilitation of any real or other tangible property with an estimated useful life of at least five years.

Formation of the CFD may be initiated by any one of the following methods: 1) motion by the City Council, 2) a written request signed by two City Council members, 3) a petition signed by 10 percent of the registered voters in the proposed CFD, or 4) a petition signed by property owners accounting for 10 percent of the land in the proposed CFD. Within 90 days of initiating the proceedings, the City Council adopts a resolution of intent to establish the CFD. In not less than 30 days and not more than 90 days from adoption of the resolution, the City Council will hold a public hearing on the formation of the CFD. Finally, as required by Proposition 13, the special tax must be approved by two-thirds of registered voters in the proposed CFD. However, if there are fewer than 12 registered voters re-siding in the proposed district, the vote shall be by the landowners of the proposed CFD, and each landowner shall have one vote for each acre or portion of an acre of land owned within the CFD.

Formation of a CFD commits the City to the ongoing administration of the CFD. A Mello-Roos special tax is not a fixed lien on a parcel, but an annual lien that must be calculated and levied each year. The appropriate spe-

cial tax will be determined by the City or its designee after consideration of annual debt service requirements, direct construction funding, administrative costs of the CFD, prepayments received, and development activity within the CFD. After the special taxes have been calculated each fiscal year, they will be submitted to the County auditor to be included on the secured property tax bill.

Developer Reimbursements

When an individual project is submitted to the City for processing and approval, the facilities required to serve that project must be identified. Due to the incremental nature of development phasing, it is likely that certain projects within the Plan Area will be required to oversize infrastructure improvements to accommodate future development and build-out of the Plan. By evaluating the project's proportional share of infrastructure and facility costs to the total costs of improvements required by the City to allow the project to proceed, an equitable reimbursement to the developer paying for oversized infrastructure improvements can be calculated. The City may administer such a reimbursement program, which could be established through one or more of the funding mechanisms described in Section 6.5.

Specific Plan Cost Recovery Fee Program

All development that occurs under the aegis of the Beechwood Specific Plan will benefit from the preparation of the Specific Plan and infrastructure analysis. The purpose of this section is to document the methodology for calculating proposed Specific Plan Cost Recovery Fees to be collected from property owners that benefit from the Beechwood Specific Plan. The legal authority for the cost recovery program is provided in California Code Section 65456(a):

"The legislative body, after adopting a specific plan, may impose a specific plan fee upon persons seeking governmental approvals which are required to be consistent with the specific plan. The fees shall be established so that, in the aggregate, they defray but as estimated do not exceed, the cost of preparation, adoption, and administration of the specific plan including costs incurred pursuant to Division 13 (commencing with Section 21000) of the Public Resources Code. As nearly as can be estimated, the fee charged shall be a prorated amount in accordance with the applicant's relative benefit derived from the specific plan. It is the intent of the Legislature in providing for such fees to charge persons who benefit from specific plans for the costs of developing those specific plans which result in savings to them by reducing the cost of documenting environmental consequences and advocating changed land uses which may be authorized pursuant to the specific plan."

The cost paid to consultants for the 2019 Beechwood Specific Plan will be prorated among the property owners (subareas) in accordance with the relative benefits derived from the Plan based on the percentage of the total developable acreage in the planning area. Table 6-9 includes a summary of the share of Specific Plan fee broken down by property owner. Property owners or developers will pay their entire Specific Plan fee due at the time of a tract map application for any parcel, as part of the entitlement process. No parcel may be developed without full payment of the Specific Plan fee as indicated in Table 6-9, even if the property owner chooses to sell a property to a third party.

As Harrod Construction has paid for the majority of costs to prepare the Specific Plan, it is not subject to the fee and shall be reimbursed by the other property owners in the amount indicated in the table. The pro-rata fee will increase annually from the adoption date of the Specific Plan at a rate of 8% per year and prorated as necessary.

TABLE 6-9: ESTIMATED SPECIFIC PLAN FEE

Subarea	Owner/Subarea	Amount Owed as of 12/19*	Gross Area (ac)	Percent Ownership of Developable Land and Share of Specific Plan Fee
Harrod			103.52	51.4%
<i>Subarea A</i>	<i>Harrod</i>		9.75	
<i>Subarea B</i>	<i>Harrod</i>		19.80	
<i>Subarea C</i>	<i>Harrod</i>		19.95	
<i>Subarea H</i>	<i>Harrod</i>		15.80	
<i>Subarea J</i>	<i>Harrod</i>		38.22	
Subarea D (Multiple Owners)			19.95	9.9%
<i>Subarea D</i>	<i>Pensco</i>		19.95	
<i>Subarea D</i>	<i>Erskine</i>	\$40,292.44		
<i>Subarea D</i>	<i>Wittstrom</i>	\$6,333.12		
<i>Subarea D</i>	<i>Cagliero</i>	\$25,414.95		
Erskine			57.97	28.8%
<i>Subarea E</i>	<i>Erskine</i>		19.95	
<i>Subarea I</i>	<i>Erskine</i>	\$352,698.32	38.02	
Hubener			19.95	9.9%
<i>Subarea F</i>	<i>Hubener</i>	\$100,294.13	19.95	
TOTAL (excludes PG&E parcel and Subarea G)			201.39	100%

* Amount is subject to change as the plan progresses to completion.

6.6 Administration

The Plan will be built out in phases as outlined above. Changes to the Plan may be required as market and other conditions change. This section outlines the administration of the Plan including procedures for altering the Plan.

Specific Plan Amendment Procedures

This Plan may be amended to address conditions unforeseen at the time of its approval. The procedure is similar to a general plan amendment (Government Code §65350 through 65358). A brief summary of the amendment procedure follows:

- The applicant shall submit a complete Specific Plan amendment application to the Community Development Department which specifies the exact nature of the proposed change(s) and the purpose for the change. The City will assess the application and determine the required environmental documentation,

which may require an Initial Study consistent with the California Environmental Quality Act. Depending on the scope of the amendment request, the City may contract with an independent consultant to undertake a review of the potential impacts of the requested amendment. The applicant seeking the amendment is responsible for the costs of amending this Specific Plan.

- The Specific Plan amendment request will be scheduled for public hearings. All noticing for public hearings shall be in accordance with the City's noticing requirements and State law.
- The following findings shall be made prior to approval of an amendment to the Plan:
 - The proposed Specific Plan amendment is consistent with the goals, objectives, policies, and programs of the General Plan.
 - The proposed Specific Plan amendment will not adversely affect the public health, safety, and welfare, or result in an illogical land use pattern.
 - The proposed Specific Plan amendment will not create internal inconsistencies with the Specific Plan and is compatible with the purpose and intent of the adopted Plan.
- The Planning Commission is the recommending body for Specific Plan amendments; the City Council will take action and is the final decision-making authority on the amendment request.

Specific Plan Interpretation

The Planning Director has the authority to interpret any provision of the Plan. Whenever the Director determines that the meaning or applicability of any Plan requirement is subject to interpretation, the Director may issue an official interpretation in writing. The Director may also refer any issue of interpretation to the Planning Commission for its determination.

If conflicts occur between requirements of this Plan and any other regulations of the City, the Plan requirements shall control. This Plan also controls in the event of any conflict between any private agreement or restriction and the Plan. The City shall not enforce a private covenant or agreement unless it is a party to the covenant or agreement, or a portion thereof.

Where the Plan references applicable provisions of State Law (for example, the California Government Code, Subdivision Map Act, or Public Resources Code), the reference shall be construed to be to the applicable State law provisions as they may be amended from time to time.

All Plan procedures that vary from those established in the City's Zoning Ordinance (e.g., Minor Modifications) are located in Appendix 1 (Development Code).

Enforcement

The procedural requirements of Municipal Code Section 1.02.010 (Violations, penalties and enforcement) apply within the Plan Area.

Local and State Regulations

Development review for all new development within the Plan Area shall comply with Chapter 21.23B of the Paso Robles Zoning Ordinance.

If conflicts occur between requirements of this Plan and any other regulations of the City, the Plan requirements shall control. This Plan also controls in the event of any conflict between any private agreement or

restriction and the Plan. The City shall not enforce a private covenant or agreement unless it is party to the covenant or agreement.

Statement of Severability

If any provision of this Plan or its application to any person or circumstance is held to be unconstitutional or otherwise invalid by any court of competent jurisdiction, the invalidity shall not affect other Plan provisions, clauses or applications which can be implemented without the invalid provision, clause or application, and to this end the provisions and clauses of the Plan are declared to be severable.

Building Permit Consistency Process

The City building permit process of plan-check, inspection, and occupancy release is the final and most detailed step in City review of private site development. No Building Permit or Grading Permit shall be issued by the City unless the proposed construction complies with all applicable provisions of the Plan.

Other Requirements

Nothing in the Plan eliminates the need for obtaining any other permits required by the City, or any permit, approval or entitlement required by any other applicable special district or agency, and/or the regulations of any State, or Federal agency.

6.7 Implementation Actions

The actions to implement the goals of the Plan, as shown in Table 6-10: Implementation Actions Items, are enforced by the City within the Plan Area. The actions are not all intended for immediate and simultaneous enactment, but to be implemented throughout the development and future of the Plan. For potential funding sources for these programs, see the options discussed in Section 6.4

TABLE 6-10: IMPLEMENTATION ACTION ITEMS

Action Item	Responsible Party	Description
B-IA-1	Developer	Work with the City to conduct feasibility study for commercial development in the MU zone in relationship to the demand for multi-family residential.
B-IA-2	Developer	Work with the City to complete the development of the community park along the western boundary at Beechwood Drive and Ridge Road.
B-IA-3	Developer	Develop an incentives program that encourages the private developments to contribute to public amenities that serve a broader area than the development site, such as parkland and streetscape improvements beyond the minimum requirement.
B-IA-4	Developer	Facilitate the development of a Community Facilities District (CFD) and other financing opportunities to support the funding of long-term, more costly infrastructure improvements.
B-IA-5	Developer	Enter into Developer-Developer agreements that ensure financing of shared infrastructure improvement to the satisfaction of the City when needed.
B-IA-6	City	Track entitlements of units to ensure a total of 911 units is not exceed in the Plan Area.
B-IA-7	City	Track issuance of certificates of occupancy to ensure Community Park is constructed prior to occupancy of 500th unit.
B-IA-8	City	Amend the zoning code and map to refer to and be consistent with the Beechwood Specific Plan.
B-IA-9	Developer	Develop landscaping, streetscaping, and lighting plan for plan area consistent with unique zones and/or right-of-way types.
B-IA-10	City	Track development to ensure that required densities are met in subarea I-2, C-1, J-2, and J-3.
B-IA-11	City	Ensure oak tree preservation in accordance with Zoning Ordinance Chapter 10.01 (Oak Tree Preservation), and employ custom grading and foundations, if necessary to avoid removing oak trees.
B-IA-12	Developer	Work with the City to establish a set of triggers for infrastructure improvements that will ensure orderly development of the Plan Area.
B-IA-13	Developer	Mitigate wetland impacts according to the wetland mitigation program, and the grading and drainage design approved with the Tentative Map.

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Appendix A: Architectural Style Guide

The following architectural styles are compatible with the historic context of Paso Robles and appropriate for the Beechwood Plan Area. The range of styles described here will support a diversity of character within the community while ensuring that all residential development complements the region's and the area's architectural character. The style elements described for each architectural style are not exhaustive; rather they provide a general characterization of each style's formal elements.

Craftsman

Craftsman architecture highlights natural materials, simplicity, and extensive built-in elements, treating details such as windows and porches as integral parts of the building design. Open porches feature overhanging beams and exposed rafters. A low-pitched roof, projecting eaves, and occupied attic space with dormer windows are regularly found in this style. Typical details can include shingle siding and stonework, and gables and dormers are accentuated with decorative trim. Porches are often supported with square or round columns and stone supports. The overall effect creates a natural, warm, and livable home of artistic and expressive character. Elements of the Craftsman style include:

- Low sloped roof with smaller gable over the porch or a shed roof facing the front with a broad dormer for an upper story room.
- Open or enclosed front porch serves as an extension of the indoor living space.
- One-story front gable roof with maximum pitch 8:12. Front porch or interior bay is in the front projection, with side bays under eaves.
- Variety of window sizes with various patterns based on style.
- More than one material is utilized, often dividing the main floor from the second story. Typical materials include stucco, brick, or stone.



Farmhouse

Farmhouse architecture is defined by simple, rectangular floor plans. Front porches with a variety of wood columns, masonry base accents, simple massing, a clean roofline, and an open floor plan are a typical mix of style components. Details may include an entry court; multiple breezeways or open-air walkways; classic barn colors such as red, yellow, white or black; shutters; metal roofs; and limited stone accents. Elements of the Farmhouse style include:

- Low pitched roofline with gabled, hipped, shed, or simple single primary roof.
- Decorative vented cupolas.
- Covered porches with square posts and brackets.
- Regularly placed and shaped multi-paned windows that are vertically oriented with divided lights.



Mediterranean

Mediterranean architecture features flat, austere stucco planes and punched, recessed windows and door openings. Window openings are accompanied by small metal balconies, grilles, or awnings, and are deep set to accentuate shadows. Exterior trim is reserved for principal doorways, often framed by pilasters, columns, and capitals. Wood detailing is infrequent and is typically reserved for rafter tails, heavy timber brackets supporting cantilevered balconies, window shutters, or balcony railings. Roofs are always tile and shallow in slope. Elements of the Mediterranean style include:

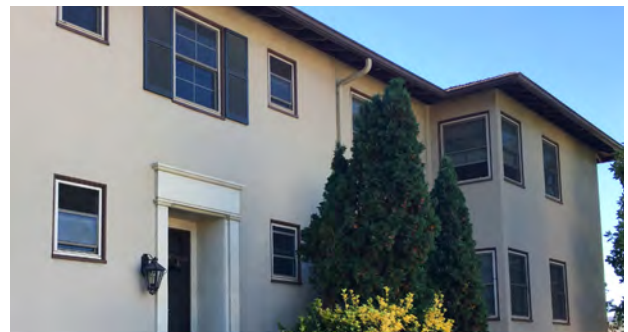
- Shallow slope roof with Roman or Mission tile laid irregularly.
- Flat roof parapets articulated as an extension of the exterior wall.
- Flat roofs may be occupied as balconies or terraces.
- Exterior walls convey a sense of mass and weight and should be expressed as single-plane expanses of plaster wall.



Monterey

Monterey architecture features flat planes with narrow, tall windows. A large balcony often defines the second floor, which may provide shade and enclosure to the floor below. The balcony and a side-facing gables gives the home a dominant rectilinear character. Roofs are generally low-pitched with clay tiles or asphalt shingles, and exterior wall surfaces are generally finished in brick, stucco or clapboard. Double-hung windows and exposed beams are also typical of this style. Elements of the Monterey style include:

- Shallow slope roof with shingles or tiles.
- Large, defined second floor balcony.
- Mix of adobe and colonial features.
- Exterior walls convey a sense of mass and weight and should be expressed as single-plane expanses of plaster wall.



Spanish

Spanish architecture features smooth stucco walls and flat terracotta roofs. Buildings typically include large, defined chimneys and small porches or balconies. Features may include wood casement and double-hung windows, and arcades may define the building frontage. Elements of the Spanish style include:

- Flat terracotta roofs.
- Chimneys, porches, balconies, and/or arcades.
- Wood casement and defined, double-hung windows.
- Exterior walls convey a sense of mass and weight and should be expressed as single-plane expanses of plaster wall.



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Appendix B: Typical Front Yard Landscape Plan

The following pages describe a typical front yard landscape scheme in the Beechwood plan Area. Included are appropriate species of trees, groundcover, shrubs, vines, grasses, perennials, biennials, and annuals.

PLANT PALETTE

TREES

BOTANICAL NAME / COMMON NAME

Acacia baileyana / Bailey Acacia
 Aesculus californica / California Buckeye
 Arbutus menziesii / Madrone
 Arbutus unedo / Strawberry Tree
 Calocedrus decurrens / Incense Cedar
 Cedrus deodara / Deodar Cedar
 Cercis occidentalis / Western Redbud
 Chitalpa tashkentensis / Chitalpa
 Cupressus forbesii / Tecate Cypress
 Cupressus glabra (arizonica) / Arizona Cypress
 Eriobotrya japonica / Loquat
 Ficus carica / Edible Fig
 Fraxinus velutina / Arizona Ash
 Ginkgo biloba / Maidenhair Tree
 Juglans hindsii / California Black Walnut
 Lagerstroemia indica / Crape Myrtle
 Laurus nobilis / Grecian Bay
 Lithocarpus densiflora / Tanbark Oak
 Lyonothamnus floribundus asplenifolius / Catalina Ironwood
 Olea europaea / European Olive
 Pinus coulteri / Coulter Pine
 Pinus sabiniana / Gray Pine
 Pistachia chinensis / Chinese Pistache
 Platanus acerifolia / London Plane Tree
 Platanus racemosa / California Sycamore
 Populus fremontii / Western Cottonwood
 Quercus sp.-Ca. native oaks / Oaks
 Quercus ilex / Holly Oak
 Quercus suber / Cork Oak
 Robinia ambigua 'Idahoensis' / Idaho Locust
 Sequoiadendron giganteum / Giant Sequoia
 Umbellularia californica / California Bay
 Zelkova serrata / Sawleaf Zelkova

GROUND COVER

BOTANICAL NAME / COMMON NAME

Achillea tomentosa / Woolly Yarrow
 Arctostaphylos sp. / Manzanita
 Baccharis pilularis / Dwarf Coyote Bush
 Ceanothus sp. / California Wild Lilac
 Cerastium tomentosum / Snow-In-Summer
 Cistus sp. / Rockrose
 Cotoneaster dammeri / Bearberry Cotoneaster
 Festuca ovina glauca / Blue Fescue
 Hypericum calycinum / St. Johnswort
 Juniperus sp. / Juniper
 Ribes viburnifolium / Catalina Fragrance
 Rosmarinus officinalis 'Prostratus' / Dwarf Rosemary
 Salvia sonomensis / Creeping Sage
 Santolina sp. / Santolina
 Sedum sp. / Stonecrop

SHRUBS

BOTANICAL NAME / COMMON NAME

Abelia g. 'Edward Goucher' / Edward Goucher Abelia
 Arbutus unedo / Strawberry Tree
 Arctostaphylos sp. / Manzanita
 Baccharis pilularis / Dwarf Coyote Bush
 Carpenteria californica / Bush Anemone
 Ceanothus sp. / California Wild Lilac
 Chaenomeles sp. / Flowering Quince
 Chilopsis linearis / Desert Willow
 Choisya ternate / Mexican Orange
 Cistus sp. / Rockrose
 Cotinus coggygria / Smoke Bush
 Cotoneaster sp. / Cotoneaster
 Dendromecon rigida / Bush Poppy
 Eleagnus pungens / Silverberry
 Feijoa sellowiana / Pineapple Guava
 Fremontodendron californicum / Flannel Bush
 Garrya elliptica / Silk Tassel Bush
 Grevillea 'Canberra' / Canberra Gem
 Grevillea noellii / Grevillea noellii
 Heteromeles arbutifolia / Toyon
 Ilex cornuta 'Burfordii' / Burford Holly
 Juniperus sp. / Juniper
 Lagerstroemia indica / Crape Myrtle
 Mahonia aquifolium / Oregon Grape
 Myrica californica / Pacific Wax Myrtle
 Nandina domestica / Heavenly Bamboo
 Nerium oleander / Oleander
 Prunus ilicifolia / Hollyleaf Cherry
 Prunus lyonii / Catalina Cherry
 Punica granatum / Pomegranate
 Pyracantha sp. / Firethorn
 Rhamnus alaternus / Italian Buckthorn
 Rhamnus californica / Coffeeberry
 Rhus ovata / Sugar Bush
 Ribes aureum / Golden Currant
 Ribes sanguineum / Pink Winter Currant
 Ribes speciosum / Fuchsia-Flowered Gooseberry
 Romneya coulteri / Matilija Poppy
 Rosa californica / California Wild Rose
 Rosmarinus officinalis / Rosemary
 Salvia sp. / Sage
 Sambucus Mexicana / Blue Elderberry
 Symphoricarpos albus / Snowberry
 Teucrium fruticans / Bush Germander

VINES

BOTANICAL NAME / COMMON NAME

Gelsemium sempervirens / Carolina Jessamine
 Polygonum aubertii / Silver Lace Vine
 Rosa banksiae / Lady Banks' Rose
 Rosa 'Cecile Brunner' / Cecile Brunner Rose
 Wisteria sinensis / Chinese Wisteria

GRASSES

BOTANICAL NAME / COMMON NAME
<i>Elymus condensatus</i> / Giant Wild Rye
<i>Festuca californica</i> / California Fescue
<i>Muhlenbergia rigens</i> / Deer Grass
<i>Nassella (Stipa) pulchra</i> / Purple Needle Grass

PERENNIALS

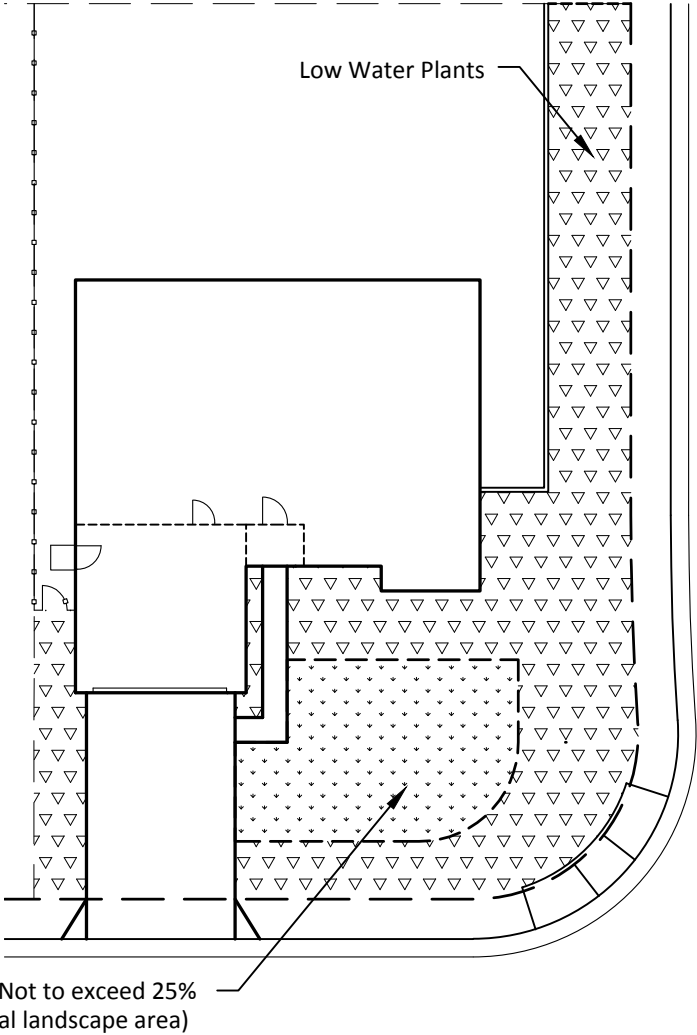
BOTANICAL NAME / COMMON NAME
<i>Achillea</i> sp. / Yarrow
<i>Artemisia</i> sp. / Wormwood
<i>Centranthus ruber</i> / Jupiter's Beard
<i>Ceratostigma plumbaginoides</i> / Dwarf Plumbago
<i>Coreopsis grandiflora</i> / Coreopsis
<i>Echinacea purpurea</i> / Purple Coneflower
<i>Eriogonum</i> sp. / Buckwheat
<i>Erigeron</i> / Fleabane
<i>Gaillardia grandiflora</i> / Blanket Flower
<i>Gaura lindheimeri</i> / Gaura
<i>Helianthemum nummularium</i> / Sunrose
<i>Hemerocallis</i> / Daylily
<i>Heuchera maxima</i> / Island Coral Bells
<i>Hunnemannia fumariifolia</i> / Mexican Tulip Poppy
<i>Iris douglasiana</i> hybrids / Douglas Iris
<i>Iris</i> / Bearded Iris
<i>Kniphofia uvaria</i> / Red-Hot Poker
<i>Lavandula</i> sp. / Lavender
<i>Mimulus aurantiacus</i> / Monkey Flower
<i>Nepeta faassenii</i> / Catmint
<i>Oenothera berlandieri</i> / Mexican Evening Primrose
<i>Penstemon heterophyllus purdyi</i> / Blue Bedder Penstemon
<i>Perovskia atriplicifolia</i> / Russian Sage
<i>Rudbeckia hirta</i> / Gloriosa Daisy
<i>Senecio cineraria</i> / Dusty Miller
<i>Sisyrinchium bellum</i> / Blue-Eyed Grass
<i>Stachys byzantine</i> / Lamb's Ears
<i>Tanacetum parthenium</i> / Feverfew
<i>Teucrium chamaedrys</i> / Germander
<i>Verbena</i> sp. / Verbena
<i>Zauschneria (Epilobium) sp.</i> / California Fuchsia

BIENNIALS

BOTANICAL NAME / COMMON NAME
<i>Amaryllis belladonna</i> / Naked Lady
<i>Crocasmia crocosmiiflora</i> / Montbretia
<i>Narcissus</i> / Daffodil
<i>Watsonia</i> / Watsonia
<i>Zephyranthes candida</i> / Zephyr Flower

ANNUALS

BOTANICAL NAME / COMMON NAME
<i>Alcea rosea</i> / Hollyhock
<i>Calendula officinalis</i> / Calendula
<i>Centaurea cyanus</i> / Cornflower
<i>Clarkia</i> sp. / Godetia
<i>Cosmos</i> / Cosmos
<i>Dimorpotheca sinuate</i> / Cape Marigold
<i>Eschscholzia californica</i> / California Poppy
<i>Helianthus annuus</i> / Sunflower



WATER EFFICIENT LANDSCAPE ORDINANCE (500 SF - 2,499 SF)

- 75% OF LANDSCAPE SHALL CONSIST OF PLANTS THAT AVERAGE A WUCOLS FACTOR OF 0.3
- TURF SHALL NOT EXCEED 25% OF THE LANDSCAPE AREA
- TURF NOT PERMITTED ON SLOPES GREATER THAN 25%
- TURF PROHIBITED IN PARKWAYS
- AREAS LESS THAN 10' WIDE IN ANY DIRECTION SHALL BE IRRIGATED WITH SUBSURFACE IRRIGATION OR OTHER MEANS THAT PRODUCE NO OVERSPRAY OR RUNOFF

FIGURE TYPICAL FRONT YARD LANDSCAPE

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Appendix C: General Plan Consistency Table

General Plan Policy/Action	Description	Beechwood Specific Plan Compliance
Land Use Element		BSP Policy Number
Policy LU-1A: Land Use Categories	Provide an appropriate mix and diversity of land uses.	BSP-1
Policy LU-2B: Visual Identity	Visual Identity. Promote architectural and design excellence by imposing stringent design and construction standards for commercial, industrial, mixed-use, and multi-family projects.	BSP-2
Action LU-2B-2	Adopt design standards to clearly articulate how important public views, gateways and landmarks are to be maintained/enhanced. This is to include but not limited to: enhancing views along highways, roads, streets, and rail corridors with landscaping, building setbacks, enhanced architecture and signage/monuments; ensuring that residential building lots are of sufficient size to preserve the topographic and aesthetic features of the landscape.	BSP-9,BSP-17, BSP-27
Policy LU-2E: "Purple Belt" (Open Space/ Conservation Areas Around the City)	Create a distinct "Purple Belt" surrounding the City by taking actions to retain the rural, open space, and agricultural areas.	BSP-11,BSP-16, BSP-17
Policy LU-2D: Neighborhoods	Strive to maintain and create livable, vibrant neighborhoods and districts with: attractive streetscapes; a pedestrian friendly setting; coordinated site design, architecture, and amenities, adequate public and private spaces; a recognizable and high quality design aesthetic.	BSP-2
Policy LU-2K: Support Environmental Responsibility	Manage the natural landscape to preserve the natural beauty and rural identity of the community, which enhances ecological functions and maintains environmental and public health.	BSP-11, BSP-12, BSP-15, BSP-16, BSP-20

General Plan Policy/Action	Description	Beechwood Specific Plan Compliance
Action LU-4B-5	Facilitate the provision of schools by continuing to work closely with the school districts during the site selection and development process. For example, when development proposals are submitted for large projects triggering needs for additional schools, the districts should determine when parcels would be appropriate school sites, and specify appropriate location, accessibility, and land use compatibility standards for schools site selection.	B-IA-12
Circulation Element		
Action CE-1A-6	Implement the City's Traffic Calming Program as funding is available. Neighborhood preservation and context shall be a factor in the consideration of community mobility objectives.	BSP-19, BSP-23, BSP-24, BSP-25
Action CE-1A-8	Construct roundabouts in lieu of traffic signals where appropriate conditions exist to maximize the efficiency of streets, maintain continuous but moderate traffic flow, reduce accident severity, and enhance pedestrian and cyclist activity.	BSP-19, BSP-21, BSP-22, BSP-23, BSP-24
Action CE-1A-16	View all transportation improvements, new or retrofit, as opportunities to improve safety, access, and mobility for all travelers and recognize bicycle, pedestrian, and transit modes as integral elements of the transportation system.	BSP-19, BSP-21, BSP-22, BSP-23, BSP-24, BSP-25
Action CE-1A-19	Transportation improvements shall improve accessibility and promote physical activity.	BSP-21
Policy CE-1B: Reduce Vehicle Miles Traveled (VMT)	The City shall strive to reduce VMT generated per household per week-day by making efficient use of existing transportation facilities and by providing direct routes for pedestrians and bicyclists through the implementation of sustainable planning principles.	BSP-19, BSP-21
Policy CE-1F: Pedestrian and Bicycle Access	Provide safe and convenient pedestrian and bicycle access to all areas of the city.	BSP-19, BSP-23
Housing Element		
Policy H-1.1	Provide an adequate number of housing sites to accommodate the City's share of regional housing needs and its special housing needs.	BSP-1, BSP-10
Policy H-1.2	Promote and expand housing opportunities for all segments of the community, recognizing such factors as income, age, family size, and physical ability. Integrate such housing opportunities in each neighborhood or planning area so as to avoid concentrations of any type of housing in limited areas of the City.	BSP-10
Action H(5)	Require new specific plans for undeveloped areas (Chandler Ranch, Olsen Ranch, Beechwood Area, and any to follow) to provide a balance of housing opportunities (types and densities) for all income groups.	BSP-1, BSP-3, BSP-10
Policy H-6.1	Develop and redevelop neighborhoods and planning areas using compact urban forms that foster connectivity, walkability, alternative transportation modes.	BSP-19

General Plan Policy/Action	Description	Beechwood Specific Plan Compliance
Action H(23)	Require new specific plans for undeveloped areas (including Beechwood Area) to incorporate land use and circulation patterns that use compact urban forms that foster connectivity, walkability, and alternative transportation modes and to incorporate design principles used in the Uptown/Town Centre Specific Plan for these items as well as other energy-saving and environmental quality protection measures, as appropriate to the topography, vegetation, and location in each specific plan area.	BSP-13, BSP-14, BSP-19, BSP-20
Parks and Recreation Element		
Policy PR-1A: Parks and Recreation Facilities	Strive to achieve a 7-acres per 1,000 population parkland standard.	BSP-1
Conservation Element		
Policy C-1A: Water Source, Supply, and Distribution	Develop and implement various innovative water provision and conservation programs that help to ensure an adequate supply of water for the City.	BSP-35, BSP-37, BSP-36
Policy C-1B: Sewer Service	Provide adequate wastewater conveyance and treatment facilities to serve all parcels in the City.	BSP-34
Policy C-1C: Storm Drainage	Provide storm drain systems that efficiently and safely mitigate flood risk, while effectively managing storm water through implementation of LID features, so that downstream run-off is limited to pre-development volumes and velocity before it is conveyed to the Salinas River, Huerhuero Creek, and their tributaries.	BSP-29, BSP-36, BSP-37
Policy C-5B: Hillsides	Protect hillsides as a visual amenity, by implementing design standards that call for: a) decreasing density as slope increases; b) limiting the amount of grading; c) providing substantial amounts of landscaping; d) incorporating architectural treatment that enhances the form of the hillside rather than conflicting with it; e) limiting the number of building sites that may be placed on prominent ridge lines; f) preventing development of new buildings that project above the ridgeline unless adequately mitigated with landscaping; g) ensuring sensitive design of development on steep slopes, and on crest of major ridgelines. Considerations for development on steep slopes shall include the following: avoid slope stability hazards by restricting development on slopes of 35% or greater; site-specific visual assessments (with and without the project) to thoroughly evaluate the visual effects of development proposals on slopes of 30% or greater; for new development located on ridges and hills consider providing a substantial building setback from the edge of the downhill slope and/or screening landscaping, where the slope exceeds 15%.	BSP-11, BSP-17
Policy C-3A: Oak Trees	Preserve existing oak trees and oak wood-lands. Promote the planting of new oak trees.	BSP-12

General Plan Policy/Action	Description	Beechwood Specific Plan Compliance
Policy C-3B: Sensitive Habitat	Incorporate habitats into project design, as feasible, including: oak woodlands, native grasslands, wetlands, and riparian areas.	BSP-15
Policy C-5A: Visual Resources	Identify important visual resources: gateways, corridors, major arterials, natural/open space areas.	BSP-17
Open Space Element		
Policy OS-1A: Open Space/Purple Belt	Develop an open space plan/program for establishing an open space/purple belt (agricultural preserve area) surrounding the City.	BSP-11
Safety Element		
Policy S-1B: Disaster Response	Transportation improvements shall improve accessibility and promote physical activity.	BSP-20
Action S-1B-4	Incorporate fire and crime prevention measures in the design and construction of new development via the following: a) Seek Fire and Police Department comments on development applications; b) Adopt the latest version of the Uniform Building and Fire Codes and related building safety codes; c) Implement the Building Security Ordinance; d) Incorporate concepts of “defensible space” (these concepts stress the importance of physical design and surveillance as techniques to deter crime) in reviewing development projects.	BSP-2

Appendix D: Definitions

Appendix D provides definitions of terms, phrases, and land uses used in the Plan and/or Code that are technical or specialized, or that may not reflect common usage. For all other definitions, see Zoning Ordinance Chapter 21.08 (Definitions).

Terms

Accessory Use. See Section 21.08.460, “Use, accessory”.

Accessory Dwelling Unit. An attached or detached residential dwelling unit which provides complete independent living facilities for one or more persons, including permanent provisions for living, sleeping, eating, cooking, and sanitation. An accessory dwelling unit is located on the same site as a primary single-unit dwelling and is accessory to that dwelling.

Agriculture Buffer. Designated land area between property with agricultural uses and properties with adjacent, non-agricultural uses, limiting human-occupied structures. Agricultural buffers protect the health and safety of the general public from the noise, dust, odor, and other impacts of typical farming.

Active Ground Floor Use. A use that promotes an active pedestrian environment on the ground floor of a commercial building.

Amenitized Green Space. A small, focused open space available for the recreation of children, informal recreational areas, and gathering spaces.

Architectural Feature. An exterior building feature, including a balcony, canopy, column, door, porch, roof, eave, soffit, window, or other similar element that does not create an interior floor space.

Building Frontage. A building wall adjacent to a parcel or lot boundary that abuts a public right-of-way.

Community Facilities District (CFD). A special district created pursuant to the Mello-Roos Community Facilities Act (California Government Code §53311) to finance public infrastructure and service projects through levying of a special tax on properties in the district.

Development Impact Fees. Fees and payments required by local governments for all new development to offset the cost of improving and expanding City facilities and services.

Director. The Community Development Director of the City of Paso Robles, California.

Enhanced Infrastructure Financing District (EIFD). A mechanism established by SB 628 that finances the construction and/or rehabilitation of a wide range of public infrastructure and private facilities through the collection of tax increment revenue.

Environmental Impact Report (EIR). An Environmental Impact Report as required under the California Environmental Quality Act (CEQA).

Facade, Primary. The principal wall plane of a structure, to which the primary entrance is oriented.

Ground Floor. The primary floor of a building to which pedestrian access is provided from the fronting street, either at the sidewalk level, or not more than six feet above or below the sidewalk.

Impervious Surface. A surface compacted or covered with a layer of material so it is highly resistant to infiltration of water.

Low Impact Development (LID). Development systems and practices that manage storm-water runoff by preserving, restoring, and creating green space using soils, vegetation, and rainwater harvest techniques; and minimizing imperviousness to create functional site drain-age.

Multi-Modal. Transportation infrastructure that supports travel by modes other than by personal vehicle, such as sidewalks, transit, or bicycle lanes.

Open Space, Community. Any usable open space intended for use by a group of residents within a given building or development, including plazas and courtyards.

Open Space, Private. Any usable open space intended for private use by a property owner, including designated yards, porches, and balconies.

Porch, Engaged. A porch within the front setback providing access to the building, with two adjacent sides attached to the building, while the other two sides are open. The porch provides necessary physical separation for the private lot from the private right-of-way.

Porch, Projecting. A porch within the front setback providing access to the building, open on three sides and projecting in front of the primary building wall. The porch provides necessary physical separation for the private lot from the public right-of-way.

Story. The portion of a building included between the upper surface of any floor and the upper surface of the next floor above, except that the upper most story is the portion of a building included between the upper surface of the upper most floor and the upper surface of the roof above.

Universal Design. The design and composition of an environment so that it can be accessed, understood, and used by all people regardless of their age, size, ability, or disability. Universal design features are those that are flexible, intuitive, equitably used by all, and require low physical effort.

Vehicle Miles Traveled (VMT). The total annual miles of vehicle travel in a geographic region over a given period of time, typically a one-year period. VMT is calculated by adding up all the miles driven by all the cars and trucks on all the roadways in a region.

Visitability. A measure of a place's ease of access for people with disabilities. A structure is visitable when it meets three basic requirements: 1) one zero-step entrance, 2) doors with 32 inches of clear passage space, and 3) one wheelchair-accessible bathroom on the main floor.





DRAFT

WATER SUPPLY ASSESSMENT

**BEECHWOOD SPECIFIC
PLAN**

PASO ROBLES

April 15, 2019



**2490 Mariner Square Loop, Suite 215
Alameda, CA 94501
510.747.6920
www.toddgroundwater.com**

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Figure 1. Beechwood Specific Plan Project Location

Figure 2. Beechwood Specific Plan Conceptual Plan

Figure 3. Paso Robles Annual Rainfall

1. INTRODUCTION

This Water Supply Assessment (WSA) was prepared for the Beechwood Specific Plan (Project) in the City of Paso Robles. The Project includes 911 dwelling units with 676 single family homes and 235 multifamily units. The area encompasses 211 acres in the southeast portion of the City (**Figure 1**). About 204 acres are designated residential and the remaining 7 acres are proposed for commercial mixed-use. Of the 211 acres, 30.8 acres will be open space and 7.6 acres of this open space will be drainage facilities and basins (Rick, 2018a). The site will also include trails, bike lanes, pocket parks and a community park. The Project area is bounded by Meadowlark Road, Creston Road, Beechwood Drive and a PG&E easement on the eastern edge of the City limits.

Currently, the Project site contains two single family homes and five mobile homes. The applicant reports that 37.5 acres are planted in vineyards. To the north and west lie residential lands and to the south and east lie agricultural lands.

The Project will be built in two phases. Water supply will be potable water from the City of Paso Robles, which operates and owns a public water system. The City will also provide wastewater collection. Recycled water may be available in the future, but it is not included as a source of supply in this WSA because availability and timing for recycled water delivery to this area are uncertain.

This WSA was prepared in accordance with the City's Rules and Regulations for implementing projects subject to the California Environmental Quality Act (CEQA). The primary purpose of this WSA is to provide an independent evaluation of the Project's water needs and impacts on City water supplies. It documents Project water demand and provides information to verify that the City has sufficient water supply to meet future water demands within the Project area and within the City's water supply service area under normal and dry hydrologic conditions for the next 20 years.

1.1. PROPOSED PROJECT

The proposed Project encompasses 211 acres and will be divided into the subareas listed in **Table 1**. **Figure 2** is a conceptual plan for the Project and depicts the subareas. Most of the subareas will contain residential development (single family (RSF) or multifamily (RMF)) and two subareas (I-3 and J-4) are designated for commercial development (see **Table 1**).

Table 1. Land Use, Beechwood Specific Plan Area, Paso Robles

Subarea	Area (acres)	Land Use	Single Family Dwelling Units	Multifamily Dwelling Units
Phase 1				
A	9.75	RSF (4/6)	42	-
B	19.80	RSF (4/6)	88	-
C	19.95	RSF (4/6)/RMF (12)	40	48
D	19.95	RSF (4/6)	88	-
E	19.95	RSF (4/6)	88	-
F	19.95	RSF (4/6)	88	-
G	9.66	RMF (12)	-	32
H	15.80	RSF (4/6)	68	-
Subtotal			502	80
Phase 2				
I-1	33.92	RSF (4/6)	124	-
I-2	3.10	RMF (12)	-	40
I-3	1.00	COM (MU)	-	-
J-1	16.39	RSF (4/6)	50	-
J-2	9.70	RMF (12)	-	55
J-3	6.13	RMF (20)	-	60
J-4	6.00	COM (MU)	-	-
Subtotal			174	155
Total	211.05	-	676	235
Total Dwelling Units			911	
Total Commercial Development			47,000 square feet	

Information derived from table on Beechwood Specific Plan Phasing Map (Rick, 2018a) and email from Tom Martin (October 3, 2018).

1.2. BACKGROUND

The City of Paso Robles requires that certain CEQA documents (e.g., an Environmental Impact Report or Mitigated Negative Declaration) be informed by an independent evaluation of the project's water supply needs and impacts on the City's water supply. This requirement applies to all general plan amendments that propose an increase in residential, commercial, and/or industrial intensity and all annexations that have not been approved by the City Council as of January 1, 2014. Each independent evaluation is to be prepared by a consultant of the City's choice based on demonstrated competence in water supply assessment and evaluation and familiarity with the UWMP.

The California Water Code Section 10910 (also termed Senate Bill 610 or SB610) requires that a Water Supply Assessment (WSA) be prepared for a project that is subject to CEQA and subject to SB610 as defined in Water Code Section 10912. The Beechwood Specific Plan is subject to CEQA and SB610 because it is a residential development of more than 500 dwelling units. Under SB610, documentation of water supply sources, quantification of water demands, evaluation of drought impacts, and provision of a comparison of water supply and demand are required to assess water supply sufficiency. This WSA follows the guidelines set out in the Guidebook for Implementation of Senate Bill 610 and Senate Bill 221 (DWR, 2003).

A foundational document for preparation of a WSA is an UWMP; the City has prepared and adopted a 2015 UWMP (Todd, 2016) in compliance with the Water Code. The 2015 UWMP details City water supplies and demands to buildout (2045 or later) and includes projected increases in water demand of both residential and non-residential land uses located within the City limits. The Beechwood Specific Plan proposes 911 dwelling units while the Project area is designated in the City's General Plan to allow up to 674 dwelling units – a difference of 237 units. A general plan amendment will be needed to increase the density of the Project. General Plan Amendment 2012-02 takes vacancy rates into account and identifies water supply associated with 594 dwelling units citywide as available to assign to development. These dwelling units were accounted for in the UWMP demand projections. Of these 594 units, 16 have been developed and 341 are allocated to other projects. If approved, the 237 dwelling units not in the General Plan would be part of the 594 available units and thus included in the UWMP projections.¹ However, water use for irrigation of the proposed parkways, parks and basins irrigation and the commercial development water use within the Beechwood Project are not included in the UWMP projections because they had not been established at that time (Gonzalez, 2018b).

1.3. WSA PURPOSE AND ORGANIZATION

The purpose of this WSA is to document the City's existing and future water supplies for its service area and to compare them to the area's future water demand, including that of the proposed Project. This comparison, conducted for both normal and drought conditions in five-year increments over the next 20 years, is the basis for assessing water supply sufficiency in accordance with SB610.

¹ A May 15, 2018 City Council Agenda Report (DeCarli, 2018) identifies 237 remaining surplus density units available to be allocated to the Project. The City Council has taken action to allocate the other 357 units (594-237) for other projects.

The WSA incorporates current and future water supply and demand information from the City's 2015 UWMP, available City and County documents regarding water supplies (groundwater, Nacimiento supply, recycled water), current water use, and estimated water use of the Project and other approved and proposed projects. The analysis extends to 2045 (assumed to be City buildout), addresses water demands in five-year increments, and provides information consistent with SB610 WSA requirements.

While fulfilling SB610 information requirements, this WSA is organized to be easily read and understood, as follows:

- Section 1 introduces the Project and provides background.
- Section 2 focuses on the current and proposed water demands of the Project that is the subject of this WSA.
- Section 3 documents the City's existing and future supplies and demands in normal and drought years. The City currently relies on groundwater, surface water, and Lake Nacimiento water. Recycled water will be available in the future.
- Section 4 provides the comparison of water supply and demand (in normal and drought years) that fulfills the intent of SB610.
- Section 5 summarizes the report's conclusions.

2. PROJECT WATER DEMAND

This section addresses water demands for the existing property and presents water demand estimates for the proposed development.

2.1. CURRENT WATER USE

The Beechwood Specific Plan area currently relies on groundwater for its water supply. Current water use is shown in **Table 2**. Existing groundwater use at the Project site is approximately 67.40 acre-feet per year (AFY). There are six private wells on the site (Rick, 2018d). Four domestic wells serve the homes on the west side, one agricultural well provides water for the vineyard, and two additional irrigation wells are inactive. The domestic wells on the west side of the site provide water to two single family homes and five mobile homes (Rick, 2018c). The applicant has estimated water use at 1.78 AFY for these residences based on a water use rate of 0.253 AFY/residence (Rick, 2018c). This estimated water use rate is within the range of water use rates used in the City's 2015 UMWP. If any of these existing wells are suitable for municipal use, the City may consider incorporating them into the municipal water system. The remaining wells will be properly abandoned by the applicant.

As per the applicant, 37.5 acres of vineyards are irrigated with 65.63 AFY of water based on a rate of 1.75 AFY/acre. The irrigation application rate of 1.75 AFY is reasonable, although slightly higher than estimates of other vineyard irrigation (e.g., Vista Resort WSE (1.5 AFY/acre) or the Cabernet Links WSE (1 AFY/acre)) (Todd, 2017 and Todd, 2015). Past site land use and the resulting water use are similar to current land use as per 2003 to 2017 Google Earth images. About 34.36 acres appear to be planted in crops in the 2017 Google Earth image. While this is slightly smaller than the 37.5 acres estimated by the applicant, the water use numbers provided by the applicant and shown in **Table 2** are within reasonable ranges.

Table 2. Current Water Use, Beechwood Specific Plan Area, Paso Robles

Water Use Category on Project Site	Current Number of Units or Area in Acres ¹	Current Total Water Use, AFY	Current Water Use Sources, AFY			Water Use Rate ¹
			Direct City Supplied Water	Non-Revenue City Water	Private Wells	
Single Family Units	2	0.51	-	-	0.51	85 gpd/person x 2.66 people per house / 892.7 AFY/gpd = 0.253 AFY/house
Mobile Homes	5	1.27	-	-	1.27	
Vineyards	37.5	65.63	-	-	65.63	1.75 AFY/acre
Total Current Water Use		67.40	0.00	0.00	67.40	-

AFY=acre-feet/year

1. Number of units, vineyard area, and water use estimates provided by applicant (Rick, 2018a).

2.2. ESTIMATED FUTURE WATER DEMAND

The Project is proposed to be built in two phases. Subareas A through H will be developed in Phase 1 and Subareas I and J will be developed in Phase 2 (**Table 1**). Water demand projections provided by the applicant are shown in **Table 3**. Once completed, the Project demand is estimated to be 263 AFY or 283 AFY when a 7 percent increase above Project demands is included to account for non-revenue water. Non-revenue water can include unmetered use such as main flushing or firefighting, meter error and leaks. Full Project buildout is anticipated to be reached by 2030.

The applicant used a residential water use rate of 0.253 AFY for the single family and multifamily dwelling units which is slightly higher than water use rate projections used for future development in the City's 2015 UMWP (0.2 AFY for single family homes and 0.18 AFY for multifamily units) (Gonzalez, 2018a). Irrigation of parks, parkways, and basins was estimated to total 23.60 AFY at buildout. This is based on an irrigated area of about 5.4 acres and incorporation of evapotranspiration, irrigation efficiencies, and plant factors (Rick, 2018b). Commercial water use was estimated to be 9.07 AFY based on a water use rate of 1.68 AFY per acre of commercial development. Note that a 7 percent increase was also applied to these water uses to account for non-revenue water. Projections in the 2015 UWMP used a commercial water use rate of 1.43 AFY per acre (Gonzalez, 2018a).

Table 3. Future Water Use, Beechwood Specific Plan Area, Paso Robles

Water Use Category on Project Site	Planned Number of Units or Area in Acres	Buildout Total Water Use, AFY	Buildout Water Use Sources, AFY			Water Use Rate ¹
			Direct City Supplied Water ¹	Non-Revenue City Water ²	Private Wells ³	
By 2020						
Single Family Units	30	8.16	7.59	0.57	0.00	85 gpd/person x 2.66 people per house / 892.7 AFY/gpd = 0.253 AFY/unit
Multi-Family Units	0	0.00	0.00	0.00	0.00	
Irrigation of Parkways, Parks and Basins	-	0.84	0.78	0.06	0.00	Total irrigation demand provided by applicant proportioned by unit count
By 2025						
Single Family Units	345	93.85	87.29	6.57	0.00	85 gpd/person x 2.66 people per house / 892.7 AFY/gpd = 0.253 AFY/unit
Multi-Family Units	185	50.33	46.81	3.52	0.00	
Irrigation of Parkways, Parks and Basins	-	14.76	13.73	1.03	0.00	Total irrigation demand provided by applicant proportioned by unit count
By 2030 (Buildout reached)						
Single Family Units	676	183.90	171.03	12.87	0.00	85 gpd/person x 2.66 people per house / 892.7 AFY/gpd = 0.253 AFY/unit
Multi-Family Units	235	63.93	59.46	4.48	0.00	
Irrigation of Parkways, Parks and Basins	-	25.38	23.60	1.78	0.00	Total irrigation demand provided by applicant proportioned by unit count
Commercial	5.4 acres	9.75	9.07	0.68	0.00	1,500 gpd/acre / 892.7 AFY/gpd = 1.68 AFY/acre
Total at Buildout	-	282.96	263.16	19.81	0.00	-

AFY=acre-feet/year

Preliminary water use estimates may be refined during the Project planning process. Does not include construction water demands.

1. Water use estimates provided by applicant (Rick, 2018b and 2018c). Includes irrigation demand at Buildout: 6.13 AFY for right of way parkways irrigation and 17.47 AFY for parks and basins irrigation.

2. Assumes that non-revenue (unaccounted-for) water is 7% of total water use: (e.g., 7.59 AFY x 0.07/0.93 = 0.57 AFY losses). Non-revenue water typically includes unmetered use (e.g., main flushing or firefighting), meter error, and leaks.

3. Assumes that private well(s) will be properly abandoned by 2020.

3. CITY OF PASO ROBLES WATER SUPPLY AND DEMAND

3.1. CITY SUPPLY AND DEMAND OVERVIEW

The City has relied on groundwater from the Paso Robles Groundwater Basin, water from the Salinas River, and more recently, Lake Nacimiento water for its water supply. The City has fulfilled water demand in years that have included both extreme dry years (such as 2013) and prolonged severe drought extending over seven years (1984-1990) (see **Figure 3** for annual rainfall data). Recycled water is planned for the future. Discussion of current and projected City water demand and supplies has recently been updated and documented in the City's 2015 UWMP and will only be summarized here. The UWMP can be found on the City's website: <https://prcity.com/467/Urban-Water-Management-Plan-PDF>.

Table 4 summarizes projected population and water demands to buildout and the supplies projected to be used to meet those demands.

Table 4. City of Paso Robles Supply and Demand Projections

	2020	2025	2030	2035	2040	Buildout (2045 or later)
Population	32,300	34,400	37,700	39,900	41,900	44,000
Water Demands (AFY)	7,089	7,575	8,061	8,546	9,032	9,519
Water Supply Sources to Meet Demands (AFY)						
Basin Wells	2,600	2,506	2,602	2,124	2,610	2,200
River Wells	3,100	3,500	3,800	4,558	4,558	4,558
Nacimiento Water from Water Treatment Plant	1,120	1,120	1,120	1,120	1,120	2,017
Nacimiento Water from the Recovery Well	269	269	269	269	269	269
Recycled Water for Potable Offset	0	180	270	475	475	475
Total Supply	7,089	7,575	8,061	8,546	9,032	9,519

Note: Supply amounts shown above do not reflect total supply available to the City from each source, nor do they reflect any limits on the City's groundwater rights, but instead the water planned to supply projected demand.

The water demand projections in the 2015 UWMP were developed using representative water demand factors, anticipated future conservation, and City General Plan growth assumptions and buildout conditions. Projected water conservation savings are included in these demand projections. Water demand at buildout is projected to be 9,519 AFY (Todd, 2016).

The supply amounts listed in the table above represent the water planned to supply projected demands and are not the total supply available to the City from each source. More detail on supply sources is provided below.

3.2. CITY OF PASO ROBLES SUPPLIES

3.2.1. Climate

Climate has a notable influence on water availability and demand on a seasonal and annual basis. During drought, influences include greater water demand for outdoor uses, specifically landscape irrigation, and less supply availability because of reduced precipitation and greater evaporation.

Representative climate data for the Paso Robles area are summarized in **Table 5** below, including average monthly rainfall, temperature, and evapotranspiration (ETo). The area has a Mediterranean climate, with moderate temperatures year-round, dry summers and wetter winters. Most of the rainfall occurs between November and April.

Table 5. Climate Data

Month	Average Rainfall ¹ (inches)	Average ETo ² (inches)	Average Temperature ³ (°F)
January	3.45	1.69	46.86
February	3.01	2.24	50.02
March	2.46	3.72	52.98
April	1.01	4.76	56.60
May	0.34	6.03	61.71
June	0.06	6.56	67.44
July	0.05	6.60	71.55
August	0.05	6.30	71.26
September	0.16	4.94	68.12
October	0.59	3.50	61.21
November	1.34	2.02	52.63
December	2.54	1.51	46.74
Average Calendar Year Total	14.76	49.87	-
Monthly Average	1.26	4.16	58.93

1. Precipitation at Paso Robles Station 046730 (Jan 1894-Aug 2018) (WRCC, 2018). Note that *Average Calendar Year Total* is not the sum of numbers above but rather historical annual average.

2. ETo=Average Evapotranspiration at CIMIS Station 163 Atascadero (CIMIS, 2018).

3. Temperature at Paso Robles Station 046730 (Jan 1894-Sep 2018) (WRCC, 2018).

Figure 3 shows annual rainfall for the 1931 to 2017 period with average annual rainfall at 14.63 inches for the 1931 to 2017 period. Historic average rainfall for the 1894 to mid-2018 period is 14.76 inches.

3.2.2. Water Supplies

The City of Paso Robles has historically relied on groundwater from the Paso Robles Groundwater Basin and Salinas River water for its municipal water supply as shown below. This has been supplemented in recent years with water from Lake Nacimiento; recycled water is planned for the future. **Table 6** presents the amount of supply used from each source for the last seven years. A description of the supplies available to the City is provided in the following sections.

Table 6. Past City of Paso Robles Supplies Used to Meet Demands

Water Source (AFY)	2011	2012	2013	2014	2015	2016	2017
Paso Robles Groundwater Basin – Basin Wells	2,327	2,880	3,257	3,497	2,045	951	842
Salinas River – River Wells	4,069	3,814	3,743	2,772	3,021	2,448	3,348
Nacimiento Water Treatment Plant*	0	0	0	0	87	1,763	1,622
Total Groundwater and Surface Water	6,396	6,694	7,000	6,269	5,153	5,162	5,812

Note: Supply amounts shown above do not reflect total supply available to the City from each source, nor do they reflect any limits on the City's groundwater rights, but instead the water used to supply projected demand.

* Nacimiento Water Treatment Plant amount shown does not include surface water augmentation with Nacimiento Project Water during periods of drought.

Groundwater

Groundwater from the Paso Robles Groundwater Basin has been and will continue to be an important component of the City's water supply. The City operates deep wells that pump percolating groundwater from California Department of Water Resources (DWR) Basin No. 3-4.06 (Paso Robles Groundwater Basin) (**Figure 1**). The Paso Robles Groundwater Basin has not been adjudicated but it has been designated as high priority and critically overdrafted by the State, requiring management under the Sustainable Groundwater Management Act. The Paso Robles Groundwater Basin is the water-bearing portion of the upper Salinas River drainage area. The Salinas River system drains the basin area and surrounding uplands and flows north along the western edge of the drainage area.

The major aquifers (or water-bearing units) in the basin include alluvial deposits and the Paso Robles Formation. The alluvial deposits are up to 100 feet in depth and include recent stream-laid sands and gravels along the floodplains of the Salinas River and its tributaries, and older finer-grained terrace deposits along the Salinas River and Estrella River. Wells in alluvium typically produce in excess of 1,000 gallons per minute (gpm) (Fugro, 2002).

The Paso Robles Formation is the most extensive aquifer and consists of sedimentary layers extending from the surface to depths of more than 2,000 feet. It is typically unconsolidated and generally poorly sorted. The water bearing sediments in the basin are 700 to 1,200 feet thick and typically extend to sea level. Paso Robles Formation sediments are relatively thin, often discontinuous sand and gravel layers interbedded with thick layers of silt and clay. Wells generally produce several hundred gpm (Fugro, 2002).

The City operates 13 deep wells that are dispersed across the City east of the Salinas River. All are screened in the Paso Robles Formation as are the many nearby rural residential and agricultural wells surrounding the City.

Groundwater Quality. A general measure of groundwater quality is total dissolved solids (TDS). For drinking water purposes, water with a TDS concentration of 500 mg/L or less is recommended, but can be usable up to 1,000 mg/L. In Paso Robles Groundwater Basin wells, TDS concentrations generally range from 300 to 1,000 mg/L (Fugro, 2002 and 2005).

A survey of local groundwater quality was conducted by the United States Geological Survey (USGS) as part of its Groundwater Ambient Monitoring and Assessment (GAMA) Program (USGS, 2007). The USGS sampled eleven randomly-selected wells located along the major river valleys, including four in or near the City. While trace amounts of pesticides, arsenic, and boron were reported, no constituents of concern were detected above regulatory thresholds.

In general, City water quality is good, but has relatively high TDS and hardness. In response to the hardness, many residents use home water softeners. However, use of water softeners results in addition of salts to the City's wastewater. Nacimiento water is lower in hardness and TDS than groundwater and its provision to City customers may reduce the use of residential water softeners. Reducing or eliminating the use of water softeners will help preserve the quality of local groundwater and advance the use of recycled water for irrigation.

Groundwater Levels and Flow. Groundwater levels in the Paso Robles Groundwater Basin range between 1,500 feet above mean sea level (msl) around the basin margins to below 600 feet msl in the Estrella subarea and along the Salinas River north of the City (Todd, 2007 and GEI, 2011). Groundwater flows generally from the margins toward the center of the basin and to the northwest, where the outlet to the lower Salinas Valley is located.

Surface Water

River Wells. The City currently pumps Salinas River water from river wells pursuant to appropriate surface water rights and a permit issued by the State Water Resources Control Board. The City has eight river wells and one Nacimiento water recovery well. Approximately half of the City's current water supply comes from its shallow Salinas River wells in the Atascadero Area. Groundwater basin boundaries

were modified by the DWR in 2016 and now define the Atascadero Area of the Salinas Valley Groundwater Basin (DWR Basin No. 3-004.11). The City's Permit allows the City to take up to eight cubic feet per second (3,590 gpm) with a maximum diversion of 4,600 AFY (January 1 to December 31). The permit designates a moveable point of diversion within a specific reach of the Salinas River.

Nacimiento Water. The City of Paso Robles holds a 6,488 AFY delivery entitlement for Lake Nacimiento water with the San Luis Obispo County Flood Control and Water Conservation District. In order to directly use its Nacimiento supply, the City constructed a 2.4 million gallon per day (mgd) surface water treatment plant which became fully operational in early 2016. The City anticipates operating the plant approximately five to nine months out of the year to serve peak summer demands, yielding about 1,120 AFY to 2,017 AFY. Treatment plant operation could be increased to provide up to 2,688 AFY.

In addition to direct deliveries, Nacimiento water also can be utilized by the City through a recovery well. This operation allows Nacimiento water to be turned into the Salinas River channel and captured through the recovery well (as distinct from River water that the City produces pursuant to its water rights permit issued by the State Board). It is estimated that the recovery well will be operated at a rate of 400 gpm for five months out of the year, averaging 269 AFY.

Finally, Nacimiento water can be used to augment surface water and improve water supply reliability. Similar to the operation of the recovery well, Nacimiento water can be turned into the Salinas River channel adjacent to City's river wellfield. This allows the river wells to operate when native supplies are low.

Recycled Water

Municipal recycled water is wastewater that has been treated to a specified quality to enable it to be used again. The City currently does not use recycled water but is actively pursuing such use. In 2014, the City completed a Recycled Water Master Plan update (AECOM, 2014) that identified potential recycled water customers, estimated recycled water quality and blending needs, identified recycled water distribution system possibilities, and developed preliminary cost options.

The Recycled Water Master Plan identified the potential to provide approximately 1,530 AFY of recycled water to customers within City boundaries to irrigate City parks, schools, and local government facilities; residential, commercial, and industrial landscape irrigation; and golf course irrigation. This estimate of total recycled water includes potential deliveries that offset potable water demand otherwise served by the City, and deliveries that would offset private well use. This estimate also accounts for blending recycled water with lower salinity sources to make it suitable for agricultural and golf course irrigation.

Recycled water amounts shown in **Table 4** would offset potable water demand (475 AFY by 2035). Additional recycled water that is not needed within City boundaries will be available for use outside City boundaries for such uses as agricultural and vineyard irrigation and groundwater recharge.

New recycled water treatment facilities (tertiary treatment and disinfection) located at the City's municipal wastewater treatment plant are under construction and expected to be completed and operational in early 2019. The first phase of the City's recycled water distribution system will consist of construction of a five to six-mile pipeline in 2020. Recycled water will be piped from the treatment plant to the City's east side with a reservoir in Barney Schwartz Park. Construction may take 18 months. In the

interim, the recycled water will be released into the Salinas River at the current discharge site for treated wastewater.

The recycled water will be available to large centralized irrigation uses within the City like golf courses, parks, and commercial landscaping areas. The system will be expanded in the future to serve additional landscape uses in the City and agricultural irrigation.

3.3. SUSTAINABLE GROUNDWATER MANAGEMENT ACT

The Sustainable Groundwater Management Act (SGMA), which became effective on January 1, 2015, provides a framework for sustainable management of groundwater resources by local agencies, defined as a local public agency with water supply, water management, or land use responsibilities within a groundwater basin.

SGMA establishes a process and timelines for local agencies to achieve sustainable groundwater management in basins designated as medium or high priority by the DWR. The Paso Robles Groundwater Basin is on the following accelerated timeline because it is designated as a high priority basin and is also designated as critically overdrafted:

- Local agencies must form local groundwater sustainability agencies (GSAs) by 2017;
- GSAs must prepare and adopt groundwater sustainability plans (GSPs) by 2020; and
- Once GSPs are adopted, GSAs must implement them and achieve sustainability within 20 years.

In January 2015, the County of San Luis Obispo and Flood Control District Board adopted a SGMA Strategy to “establish community focused Groundwater Sustainability Agencies (GSA) based on cooperative interagency and stakeholder relationships in order to comply with SGMA requirements.” Subsequently, five GSAs were formed and, in September 2017, entered into a Memorandum of Agreement to prepare the Groundwater Sustainability Plan for the Paso Robles Groundwater Basin. The five overlying GSAs, called the Cooperative Committee, are:

- City of Paso Robles
- Paso Basin - County of San Luis Obispo
- San Miguel Community Services District
- Shandon - San Juan Water District
- Heritage Ranch Community Services District

The GSP is in the process of being drafted and sections of that report are available for review on the Paso Robles Groundwater Communication Portal: <http://pasogcp.com>. The Portal also provides meeting information and updates on other SGMA-related activities in the Paso Robles Groundwater Basin. Additional information on the Paso Robles Groundwater Sustainability Plan can be found on the County’s website: [https://www.slocounty.ca.gov/Departments/Public-Works/Committees-Programs/Sustainable-Groundwater-Management-Act-\(SGMA\)/Paso-Robles-Groundwater-Basin.aspx](https://www.slocounty.ca.gov/Departments/Public-Works/Committees-Programs/Sustainable-Groundwater-Management-Act-(SGMA)/Paso-Robles-Groundwater-Basin.aspx).

The GSP preparation process is not yet complete. The basin water budget (including estimation of sustainable yield and any overdraft) has not been presented at time of writing this WSA, nor have the proposed management methods (policies, programs, and projects) been defined, much less implemented. However, compliance with SGMA means that the GSP document will be completed by 2020 and sustainability will be achieved by 2040.

4. COMPARISON OF SUPPLY AND DEMAND

To determine water supply sufficiency, water supply assessments must include a comparison of supply and demand during normal, single dry and multiple dry years during a 20-year projection. **Tables 7 and 8** compare City supply and demand projections in five-year increments between 2020 and buildout (anticipated to occur after 2045) for normal and dry climatic years. These tables are based on 2015 UWMP tables. On an annual basis, the City has been able to provide sufficient supplies to meet demand during normal, single-dry, and multiple-dry year periods. Historical annual pumping has not been greatly affected by drought. The top portions of **Tables 7 and 8** show the City's supply and demands from the 2015 UWMP. Note that the supply totals represent the supply that will be used to meet 2015 UWMP demands.

As discussed in **Section 1.2**, the water supply needed to serve the Project's residential water demand is included in the 2015 UWMP; 674 dwelling units from the City's General Plan and 237 dwelling units from the remaining unassigned City-wide dwelling units associated with General Plan Amendment 2012-02, which takes vacancy rates into account. These units were incorporated into the 2015 UWMP water demand and supply projections. However, irrigation for the proposed parkways, parks and basins and the commercial development water use are not included in the UWMP projections because they had not been established at that time (Gonzalez, 2018b). This additional water use is shown in red at the bottom of **Tables 7 and 8** and totals 35 AFY at Project buildout. The City has the additional 35 AFY of supply available for the commercial and non-residential irrigation portions of the Project.

Table 8 shows supply and demand for single year droughts in five-year increments between 2020 and buildout (2045 or later). Although customer water use in drought years may increase initially as a result of increased irrigation, water use in a drought year was assumed to be the same as a normal year because water use restrictions would limit additional water use, especially for landscape irrigation. Supply totals are the supply that will be used to meet demands. The amount of water supply available in times of drought is deemed the same as that available during normal years, and within historical pumping volumes.

Table 7. City of Paso Robles Normal Year Supply and Demand Projections

<i>Acre-feet/year</i>	2020	2025	2030	2035	2040	Buildout (2045 or later)
UWMP Supply and Demand Projections¹						
Supply totals	7,089	7,575	8,061	8,546	9,032	9,519
Demand totals	7,089	7,575	8,061	8,546	9,032	9,519
Difference	0	0	0	0	0	0
Supply and Demand Projections (including portion of Project not included in UWMP)¹						
Supply totals	7,089	7,575	8,061	8,546	9,032	9,519
Demand totals	7,090	7,590	8,096	8,581	9,067	9,554
Difference	1	15	35	35	35	35

Note: Supply totals are from the 2015 UWMP and represent the supply that will be used to meet 2015 UWMP demands.

1. Demand for a total of 911 additional units was included in the UWMP. The Beechwood Specific Plan proposes 911 dwelling units while the Project area is designated in the City's General Plan to allow up to 674 dwelling units – a difference of 237 units. General Plan Amendment 2012-02 takes vacancy rates into account and identifies water supply associated with 594 dwelling units citywide as available to assign to development. These dwelling units were accounted for in the UWMP demand projections. Of these 594 units, 16 have been developed and 341 are allocated to other projects. If approved, the 237 dwelling units not in the General Plan would be part of the 594 available units and thus included in the UWMP projections. However, water use for irrigation of the proposed parkways, parks and basins irrigation (25.38 AFY) and the commercial development water use (9.75 AFY) within the Beechwood Project are not included in the UWMP projections because they had not been established at that time (Gonzalez, 2018b).

Table 8. City of Paso Robles Single and Multiple Year Supply and Demand Projections

<i>Acre-feet/year</i>	2020	2025	2030	2035	2040	Buildout (2045 or later)
UWMP Supply and Demand Projections¹						
Supply totals	7,089	7,575	8,061	8,546	9,032	9,519
Demand totals	7,089	7,575	8,061	8,546	9,032	9,519
Difference	0	0	0	0	0	0
Supply and Demand Projections (including portion of Project not included in UWMP)¹						
Supply totals	7,089	7,575	8,061	8,546	9,032	9,519
Demand totals	7,090	7,590	8,096	8,581	9,067	9,554
Difference	1	15	35	35	35	35

Note: Supply totals are from the 2015 UWMP and represent the supply that will be used to meet 2015 UWMP demands.

1. Demand for a total of 911 additional units was included in the UWMP. The Beechwood Specific Plan proposes 911 dwelling units while the Project area is designated in the City's General Plan to allow up to 674 dwelling units – a difference of 237 units. General Plan Amendment 2012-02 takes vacancy rates into account and identifies water supply associated with 594 dwelling units citywide as available to assign to development. These dwelling units were accounted for in the UWMP demand projections. Of these 594 units, 16 have been developed and 341 are allocated to other projects. If approved, the 237 dwelling units not in the General Plan would be part of the 594 available units and thus included in the UWMP projections. However, water use for irrigation of the proposed parkways, parks and basins irrigation (25.38 AFY) and the commercial development water use (9.75 AFY) within the Beechwood Project are not included in the UWMP projections because they had not been established at that time (Gonzalez, 2018b).

The Project site is reportedly using about 67 AFY of groundwater as a source of supply (see **Table 2**). If approved, at buildout, the Project will use 283 AFY (**Table 3**) of water provided by the City and no privately-supplied groundwater. Subtracting current use from proposed Project demand results in a net water use increase of 216 AFY (283 - 67).

5. CONCLUSIONS

The findings of this WSA are summarized below.

- The Beechwood Specific Plan Project will be built on a 211-acre site that currently has 7 existing residences (2 single family homes and 5 mobile homes) and vineyards in southeast Paso Robles.
- The Project includes 911 dwelling units with 676 single family homes and 235 multifamily units. The site will also include a commercial mixed-use area, trails, bike lanes, pocket parks and a community park.
- The Project area currently relies on groundwater from private onsite wells for its water supply and uses an estimated 67 AFY. These wells will be either properly abandoned or taken over by the City for municipal use.
- Once completed, the Project will use an estimated 283 AFY of water resulting in a net increase of water use of 216 AFY.
- Water supply needed to serve the Project's residential water demand (248 AFY) is included in the 2015 UWMP. Water supply needed to serve the commercial water demand (about 10 AFY) and the non-residential irrigation water demand (about 25 AFY) are not included in the UWMP projections but the City has the additional 35 AFY of supply available from its water supply portfolio of Nacimiento water, groundwater from the Paso Robles Groundwater Basin and water from the Salinas River.

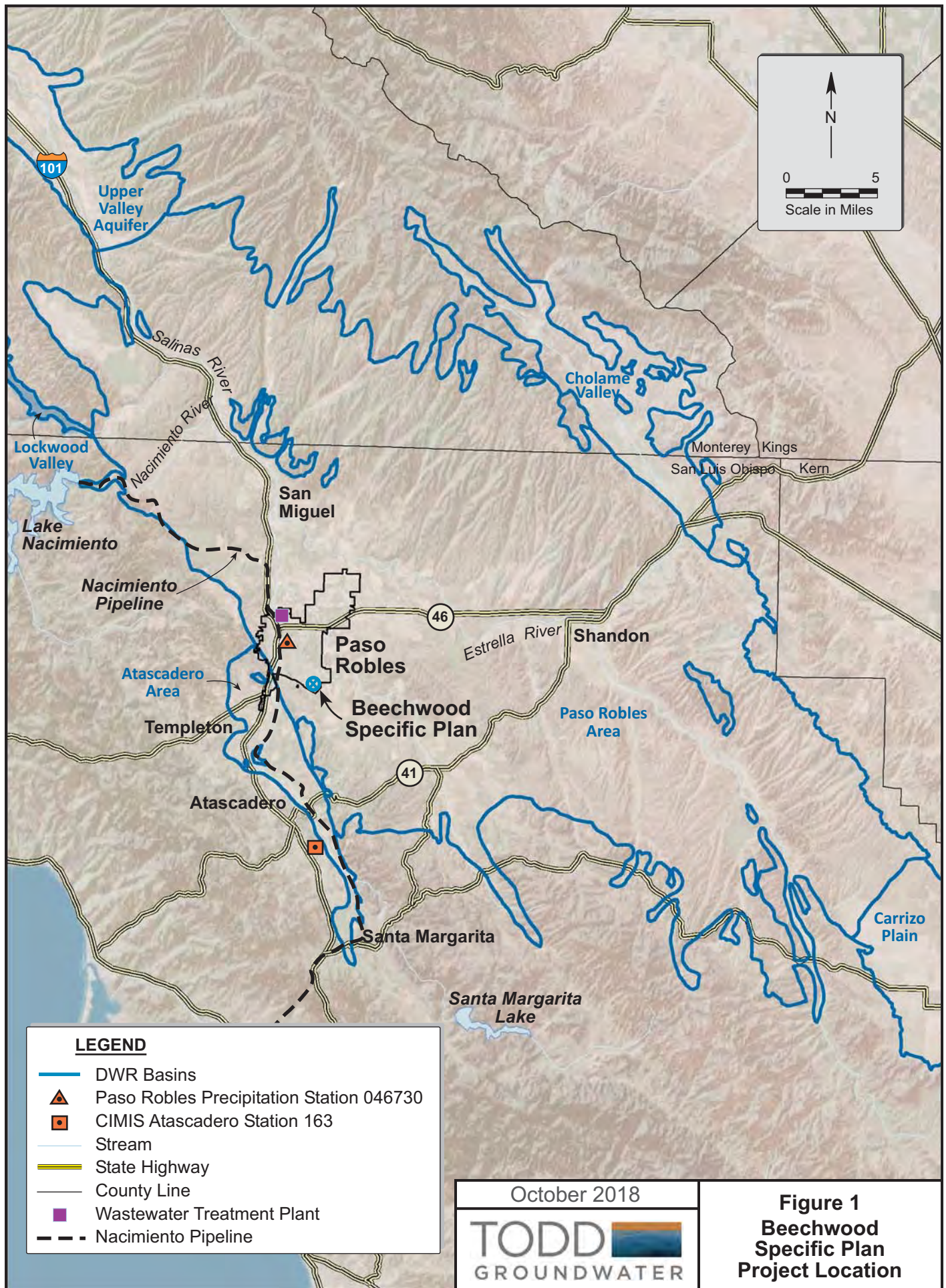
In conclusion:

The City has adequate potable supply to provide a reliable long-term water supply for the Project under normal and drought conditions.

6. REFERENCES

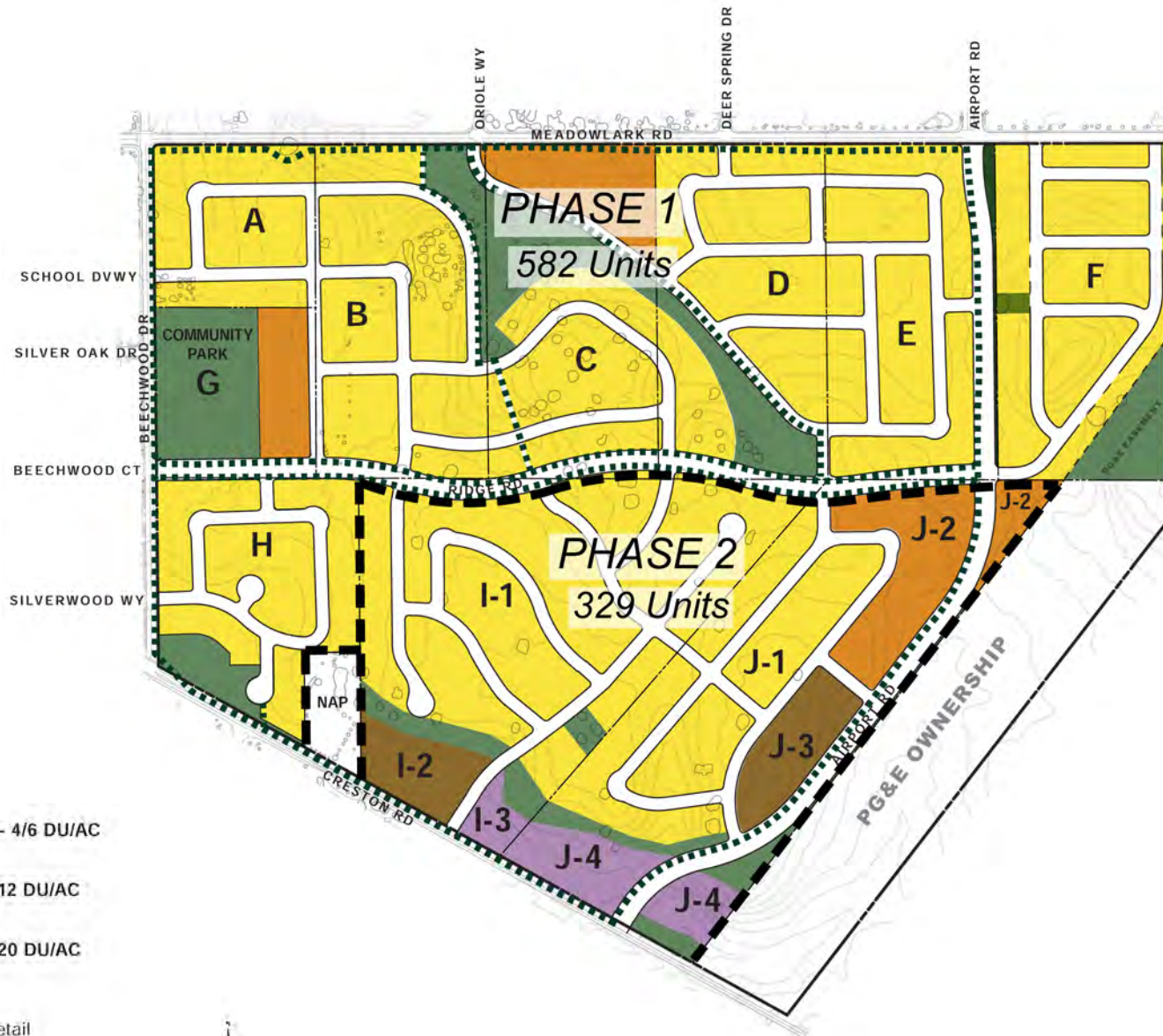
- AECOM, 2014, City of Paso Robles Recycled Water Master Plan Update, March.
<http://www.prcity.com/government/departments/publicworks/wastewater/index.asp>
- California Department of Water Resources (DWR), 2003, Guidebook for Implementation of Senate Bill 610 and Senate Bill 221 of 2001,
www.water.ca.gov/pubs/use/sb_610_sb_221_guidebook/guidebook.pdf
- California Irrigation Management Information System (CIMIS), 2018, CIMIS Weather Station: 163 – Atascadero, <https://www.cimis.water.ca.gov/WSNReportCriteria.aspx>, accessed September 25, 2018.
- Fugro and Cleath and Associates, 2002, Final Report, Paso Robles Groundwater Basin Study, Phase I, prepared for County of San Luis Obispo Public Works Department, August.
<http://www.slocountywater.org/site/Water%20Resources/Reports/>
- Fugro, ETIC Engineering, and Cleath and Associates, 2005, Final Report, Paso Robles Groundwater Basin Study, Phase II, Numerical Model Development, Calibration, and Application, prepared for County of San Luis Obispo Public Works Department, February.
<http://www.slocountywater.org/site/Water%20Resources/Reports/>
- GEI, 2011, *Paso Robles Groundwater Basin Management Plan*, March 2011.
<http://www.prcity.com/government/departments/publicworks/water/groundwater.asp> or
<http://www.slocountywater.org/site/Water%20Resources/Reports/>
- Gonzalez, Kirk, City of Paso Robles, 2018a, email to Kate White, Todd Groundwater, October 22.
- Gonzalez, Kirk, City of Paso Robles, 2018b, email to Kate White, Todd Groundwater, November 8.
- Martin, Tom, Rick Engineering, 2018, email to Kate White, Todd Groundwater, with responses to questions regarding Phasing Map, October 3.
- Rick Engineering Company, 2018a, Beechwood Specific Plan, Phasing Map, September.
- Rick Engineering Company, 2018b, Irrigation Demand Spreadsheets: Park Water Calcs and Irrigation Table Street Parkways, provided July 24.
- Rick Engineering Company, 2018c, Overall Water Use spreadsheet, revised October 12.
- Rick Engineering Company, 2018d, Well Locations map, attachment to email from Tom Martin, August 3.
- Todd Groundwater, 2017, Cabernet Links and RV Resort Water Supply Evaluation, Paso Robles, January 24.
- Todd Groundwater, 2016, City of Paso Robles Final 2015 Urban Water Management Plan, July.
- Todd Groundwater, 2015, Vista Resort Project Water Supply Evaluation, Paso Robles, September 11.
- Todd Engineers, 2007, *Update for the Paso Robles Groundwater Basin*, Report to Paso Robles Groundwater Basin Committee, December.
- United States Geological Survey (USGS), 2007, *Ground-Water Quality Data in the Monterey Bay and Salinas Valley Basins, California, 2005, Results from the California GAMA Program*, Justin T. Kulongoski and Kenneth Belitz, prepared in cooperation with the California State Water Resources Control Board.
- Western Regional Climate Center (WRCC), 2018, Paso Robles Station 046730 Monthly Precipitation and Temperature Data, <http://www.wrcc.dri.edu/cgi-bin/cliMAIN.pl?ca6730>, accessed September 25.

FIGURES



- RESIDENTIAL SINGLE FAMILY – 4/6 DU/AC
Single Level, Two-Story
- RESIDENTIAL MULTI FAMILY – 12 DU/AC
Town Home, Duplex, Triplex
- RESIDENTIAL MULTI FAMILY – 20 DU/AC
Apartments, Condominiums
- COMMERCIAL MIXED USE
Community & Sub-Regional Retail
- PARK / OPEN SPACE

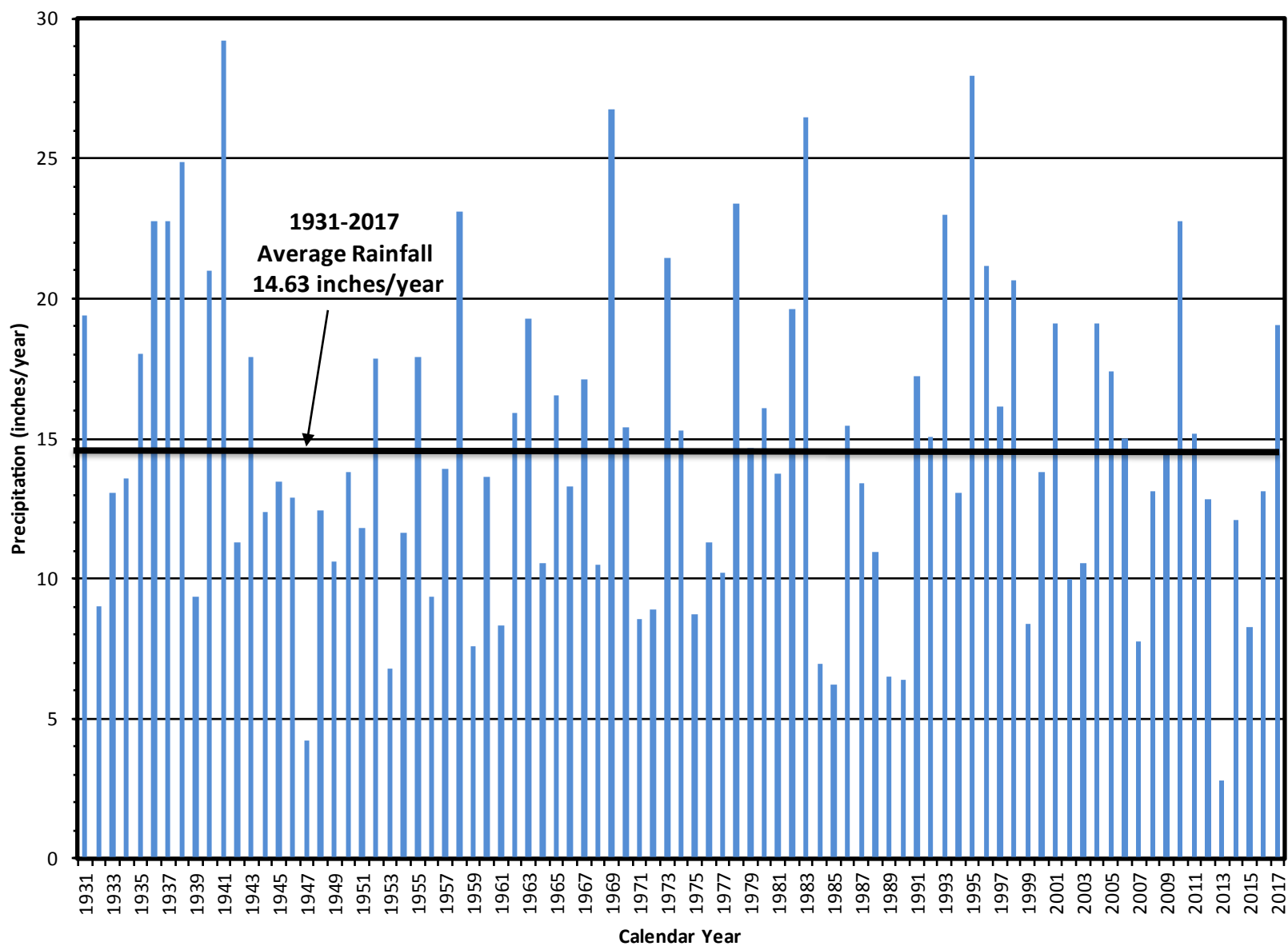
■■■■ PROPOSED TRAIL NETWORK
10-Foot Multipurpose Pathway



October 2018

TODD 
GROUNDWATER

Figure 2
Beechwood
Specific Plan
Conceptual Plan



Precipitation data from Paso Robles Station 046730

October 2018

TODD 
GROUNDWATER

**Figure 3
Paso Robles
Annual Rainfall**

**PRELIMINARY DRAINAGE REPORT
FOR
BEECHWOOD SPECIFIC PLAN**

REC Job Number 17671

Date: May 31, 2019

RICK
RICK ENGINEERING COMPANY
ENGINEERING COMPANY
RICK ENGINEERING CO

**DRAINAGE REPORT
FOR
THE BEECHWOOD SPECIFIC PLAN
(PRELIMINARY ENGINEERING)**

Job Number 17671

Tom Martin, P.E.
R.C.E. # 64222
Exp. 06/30/21

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1160 Marsh Street, Suite 150
San Luis Obispo, California 93401**

May 31, 2019

1.0 INTRODUCTION

1.1 Project Description

This drainage study contains hydrologic and hydraulic analyses for the proposed Beechwood Specific Plan Project in support of Preliminary Engineering. The project site is located within the City of Paso Robles, at the southeast intersection of Meadowlark Road and Beechwood Drive, and is bound to the south by Creston Road; on the east by a Pacific Gas & Electric (PG&E) owned utility corridor and unincorporated County open space land. The project is surrounded by existing rural and residential neighborhoods. Refer to Figure 1 for a vicinity map.

The existing site is a pentagonal shape and is approximately 215 acres, comprised of 12 parcels. Due to separate ownerships, the drainage area for this study is approximately 190 acres. The APNs for the project site are 09-863-01, -02, -03, -04, -06, -07, -08, -09, -10, -11, -12, and -13. APN 09-863-01 is under separate ownership and will be addressed by others, but is included within the same Beechwood Specific Plan. APN 09-863-06 is also under separate ownership, however is incorporated in this drainage study due to the assumed comingling of flows in this area. This area will be further studied in the final engineering phase to determine if it will bypass proposed stormwater management features or if it comingled with on-site drainage. The site is largely undeveloped with only a few buildings located near the intersection of Beechwood Drive and Meadowlark Road adjacent to Cattleman Way, and two buildings located off of Creston Road, on the south side of the site. The proposed project will include single- and multi-family residential housing, commercial retail, streets, utility infrastructure, stormwater management facilities, open space areas, and a community park.

Post-project runoff will be managed via a network of bioretention BMP features, designed pursuant to the guidelines of the Stormwater Technical Guide: Compliance with Stormwater Post-Construction Requirements (PCR's) in the City of Paso Robles, dated June 2016, and the County of San Luis Obispo Post-Construction Requirements Handbook Version 1.2, updated March 2017. Please refer to the report titled, "Preliminary Storm Water Control Plan (SWCP) for the Beechwood Specific Plan," dated May 31, 2019 or any revisions thereafter), prepared by Rick Engineering Company (Job No. 17671), for more information regarding compliance with PCRs.

1.2 Drainage Characteristics

Pre-Project Condition

The project site is primarily undeveloped and comprised of rolling open terrain, with tall prairie grass, scattered old-growth oak trees, and a series of wetland areas. A ridge running east to west divides the site, with approximately half of the site draining to the north towards Beechwood

Drive and half to the south draining towards Creston Road. The project site was divided into nine (9) drainage basins in the existing condition for the purposes of this hydrologic analysis. Five (5) Points of Interest (POIs) were identified and ultimately used to compare with the Post-Project Drainage Conditions. The POIs are located at discharge locations from the site or at locations where flow rate information is important (i.e., upstream of wetland locations). Stormwater runoff was calculated for the five (5) POIs for the 2-, 5-, 10-, 25-, 50-, and 100-Year storm events. For calculations, refer to Section 2.0 of this drainage study.

The *Draft Report Storm Drain Master Plan for Paso Robles, California* by Schaaf & Wheeler Consulting Civil Engineers, dated March 2007, was referenced in the preparation of this drainage study. In Chapter 5 Storm Drain Collection Systems and Chapter 7 Capital Improvements, Meadowlark Road and Running Stag Way were identified as high priority improvement areas due to street flooding depths greater than one foot in these storm drain collection systems analyzed with a 25-year storm. It should be noted that information found from this report will be incorporated in the design of the Tentative Map and Final Engineering Phases.

Post-Project Condition

The post-project drainage patterns will remain similar to those of the pre-project condition. The site will include bioretention BMPs which also provide detention, existing and mitigated wetland areas, inlets, and storm drain in order to maintain similar drainage patterns found in the existing condition.

Five (5) drainage basins were identified in the post-project condition. The same five (5) Points of Interest (POIs) identified during pre-project analysis were used in analyzing the post-project condition, finding flows at these points for the 2-, 10-, 50-, and 100-Year storm events. Due to the increase in imperviousness of the site, runoff has increased. This increase will be detained back to pre-project flows for the aforementioned storm events through accordingly sized bioretention BMPs which also provide detention. The project site will also utilize underground infiltration chambers as a method of detaining to the pre-project condition. Refer to Map Pocket 2 for the post-project drainage exhibit, which includes BMP locations.

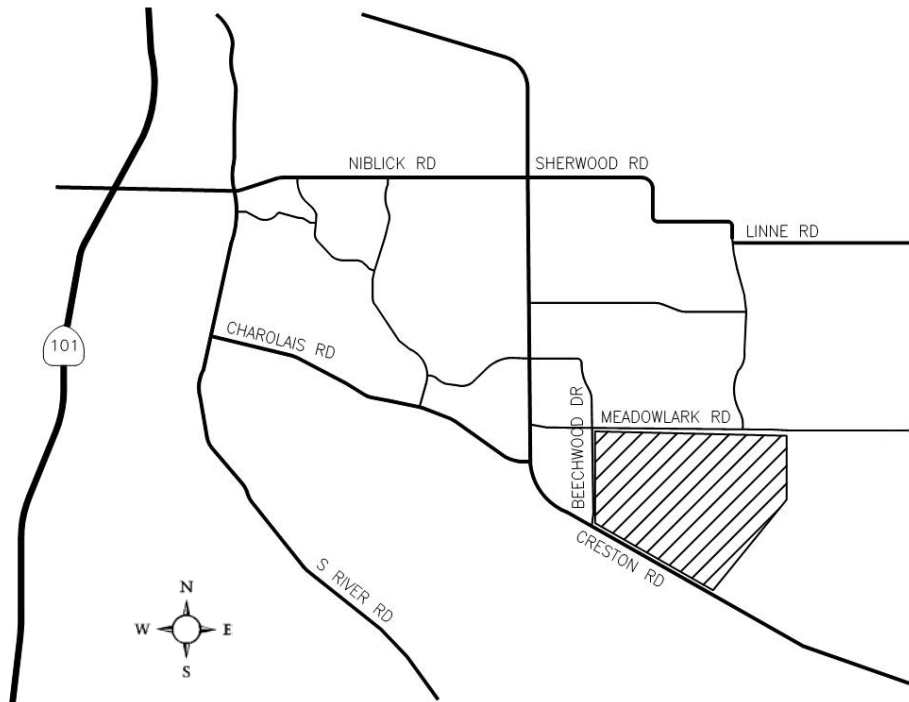


Figure 1. Vicinity Map

2.0 HYDROLOGY

2.1 Methodology

The City of Paso Robles' Standard Details & Specifications, Section 5: Storm Drains, Storm Water Quality, and Watershed Protection states that the Rational Method shall be used for the analysis of a development with an area less than 200 acres. For preliminary purposes, the analysis for this drainage study was completed using the Hydraflow extension of AutoCAD Civil 3D utilizing the Rational Method to generate flows, and NCRS TR-55 methodology to calculate times of concentration (T_c).

The Rational Method utilizes parameters such as tributary drainage area in acres, runoff coefficient based on land cover/ percent impervious, and intensity of precipitation in inches per hour. The intensity of precipitation is based on the T_c determined from the TR-55 Method. The TR-55 method differentiates between sheet, shallow concentrated, and channelized flow to determine the T_c . Precipitation frequency values were obtained from NOAA Atlas 14 for the project site. Refer to Appendix A for precipitation depths.

2.2 Hydrologic Results

Rational Method Results

The 2-, 5-, 10-, 25-, 50-, and 100-Year peak flow rates at the POIs are summarized in Table 2.2.1 for pre-project conditions.

Table 1. Hydrologic Summary for Pre-Project Conditions

Basin ID	Area (ac)	T_c (min)	Q_2 (cfs)	Q_5 (cfs)	Q_{10} (cfs)	Q_{25} (cfs)	Q_{50} (cfs)	Q_{100} (cfs)
POI 1	25.6	39.0	6.81	8.91	10.7	13.2	15.2	17.4
POI 2	83.8	37.0	22.8	29.9	35.8	44.3	51.0	58.3
POI 2A	10.4	27.0	3.26	4.26	5.10	6.32	7.28	8.33
POI 3 (Total) ²	45.8	33.0	12.6	16.4	19.7	24.4	28.1	32.1
POI 3 (On-Site) ³	23.8	33.0	6.55	8.53	10.2	12.7	14.6	16.7
POI 4	32.5	39.0	8.57	11.2	13.4	16.7	19.2	21.9
POI 5 (total) ⁴	48.6	38.0	12.5	16.3	19.5	24.2	27.9	31.8
POI 5 (On-Site) ⁵	27.2	38.0	7.0	9.13	10.9	13.6	15.6	17.8

Note:

1. POI 2A is for sub-basin 2100 and is tributary to POI 2.

2. POI 3 is a combination of basins 3000, 4000, and 5000. A portion of basin 3000 and all of basins 4000 and 5000 are part of an off-site parcel that is not a part of this project.

3. POI 3 includes a portion of off-site area that is not a part of the project; therefore, the on-site flow has been determined based on area-weighting. On-site drainage area for this POI is 23.8 acres; off-site drainage area is 22.1 acres.
4. POI 5 is a combination of basins 8000 and 9000. A portion of basin 9000 is part of an off-site parcel that is not a part of this project.
5. POI 5 includes a portion of off-site area that is not a part of the project; therefore, the on-site flow has been determined based on area-weighting. On-site drainage area for this POI is 21.5 acres; off-site drainage area is 27.2 acres.

The 2-, 5-, 10-, 25-, 50-, and 100-Year peak flow rates for each post-project Basin and at POIs are summarized in Table 2.2.2 for post-project conditions.

Table 2. Hydrologic Summary for Post-Project Conditions (Undetained)

Basin ID	Area (ac)	T _c	Q ₂ (cfs)	Q ₅ (cfs)	Q ₁₀ (cfs)	Q ₂₅ (cfs)	Q ₅₀ (cfs)	Q ₁₀₀ (cfs)
POI 1	21.5	36.0	11.9	15.5	18.6	23.0	26.5	30.3
POI 2	87.2	27.0	27.3	35.7	42.7	53.0	61.0	69.8
POI 2A	18.8	10.0	18.3	23.9	28.5	35.2	40.7	46.9
POI 3 (On-Site)	16.1	10.0	16.8	21.9	26.0	32.2	37.3	42.9
POI 4	38.8	10.0	37.8	49.4	58.7	72.7	84.0	96.8
POI 5 (Total)	26.8	10.0	26.2	34.2	40.7	50.4	58.3	67.1

Notes:

1. POI 2A is for sub-basin 2100 and is tributary to POI 2.
2. POI 2A, 3, 4, and 5 use minimum T_c of 10 minutes

It can be observed that the un-detained peak discharge rates from the post-project condition are greater than those of the pre-project. Bioretention basins will be sized and placed at various locations throughout the project site to detain peak discharge rates of the post-project condition back to that of the pre-project conditions as applicable. Drainage patterns and contributing area per POI in the post-project condition have remained similar to those in the existing condition. It should be noted that a portion of the contributing area for POI 3 includes APN 09-863-01, which is under separate ownership and is therefore not included as part of this project. Similarly, POI 5 contains a PG&E Utility Easement that is not a part of this project. Therefore, a “Total” and “On-Site” condition is provided for both the pre- and post- project conditions for comparison purposes.

Refer to Section 4.0 for more information regarding detention requirements. Also, refer to Map Pocket 1 and 2 for the pre-project and post-project drainage exhibits, respectively. Refer to Appendix A and Appendix B for a sub-basin level summary of peak flows pre- and post-project, respectively.

3.0 HYDRAULICS

3.1 Hydraulic Methodology and Criteria

The 100-year post-project peak flow rates determined using Hydraflow were used to evaluate the hydraulic capacity of the proposed storm drain system (i.e., inlets and storm drains).

3.2. Pipe Sizing

Storm drain has been sized for Preliminary Engineering using Normal Depth calculations. Refer to Appendix C for preliminary storm drain sizing.

3.3 Overflow Structure Sizing

Overflow structures will be designed and provided as a part of Tentative Map and Final Engineering phases using the following convention:

To size the bioretention BMP Outlet structures (i.e. – overflow) and other grate inlets, the weir and orifice equations were used.

The Weir Equation is:

$$Q = C_w L H^{3/2}$$

Where:

Q – flow over weir (ft³/s);

L – length of weir (ft)

H – head above weir (excluding velocity head) (ft)

C_w – weir coefficient =3.0

The Orifice Equation is:

$$Q = C_o A_o (2 g H)^{1/2}$$

Where:

Q – orifice flow discharge (ft³/s);

A_o – cross-sectional orifice area of flow (ft²)

H – effective head above orifice (ft)

G – gravitational acceleration (32.2 ft/s²)

C_o – orifice discharge coefficient =0.6

Refer to Appendix C of this report for the emergency overflow structure rating curves and typical cross section details.

4.0 DETENTION BASIN

Proposed bioretention basins include 2.0 feet of ponding above the required retention ponding depth (1 foot) for preliminary detention purposes. Additionally, 1 foot of conveyance and freeboard was included in proposed BMPs for a total depth of 4.0 feet. Preliminary calculations and detention volumes will be provided during the Tentative Map Phase.

Bioretention planters and/or vegetated swales will be placed in strategic locations along roadways during Final Engineering of the project to provide additional stormwater benefits. Refer to Map Pocket 1 for locations of proposed BMPs.

5.0 CONCLUSION

This drainage study presents the hydrologic and hydraulic analyses for Beechwood project, in support of Preliminary Engineering. The project includes the development an approximately 215-acre site including single/multi-family residential areas, commercial retail, streets, water quality/detention basins, open space areas and a community park. The pre- and post-project condition peak discharge rates for preliminary engineering were determined using the Rational Method and the Hydraflow extension of AutoCAD Civil 3D with local precipitation data from NOAA Atlas 14.

The runoff from the project area is generally divided in half, draining to the north and the south, draining to five Points of Interest (POIs) from six different drainage basins. Analysis of these five POIs demonstrate that the post-project flows for 2-, 5-, 10-, 25-, 100-Year storm events were greater than those of the pre-project condition; therefore, detention will be necessary. The post-project flows will be detained back to match pre-project conditions for the 2- through 10- year storm events and the 100-year event within bioretention BMPs and underground infiltration chambers which will be further developed during the Tentative Map and Final Engineering phases of this project. These BMPs are subject to change and will be finalized in the Final Engineering phase.

Water quality and PCR standards are discussed within the project's Storm Water Control Plan (SWCP). Please refer to the report titled, "Storm Water Control Plan for Beechwood," dated May 31, 2019 (or any revision thereof), prepared by Rick Engineering Company (Job No. 17671), for more information on water quality and PCRs. The Stormwater Control Plan Exhibit has been included in Map Pocket 3 of this Drainage Report for reference purposes.

APPENDIX A
Hydrologic Results
[Pre-project]

Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	Rational	6.814	1	39	15,944	-----	-----	-----	BASIN 1000
2	Rational	22.83	1	37	50,692	-----	-----	-----	BASIN 2000
3	Rational	9.463	1	33	18,736	-----	-----	-----	BASIN 3000
4	Rational	1.415	1	31	2,632	-----	-----	-----	BASIN 4000
5	Rational	2.103	1	39	4,920	-----	-----	-----	BASIN 5000
6	Rational	5.164	1	39	12,083	-----	-----	-----	BASIN 6000
7	Rational	3.500	1	38	7,981	-----	-----	-----	BASIN 7000
8	Rational	1.202	1	22	1,587	-----	-----	-----	BASIN 8000
9	Rational	12.14	1	38	27,688	-----	-----	-----	BASIN 9000
10	Rational	3.261	1	27	5,283	-----	-----	-----	BASIN 2100
11	Combine	12.47	1	38	29,275	8, 9,	-----	-----	POI 5
12	Combine	8.572	1	39	20,064	6, 7,	-----	-----	POI 4
13	Combine	12.57	1	33	26,289	3, 4, 5,	-----	-----	POI #3
PreliminaryTc_PRE.gpw					Return Period: 2 Year			Monday, 05 / 20 / 2019	

Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	Rational	8.914	1	39	20,860	-----	-----	-----	BASIN 1000
2	Rational	29.87	1	37	66,312	-----	-----	-----	BASIN 2000
3	Rational	12.38	1	33	24,503	-----	-----	-----	BASIN 3000
4	Rational	1.851	1	31	3,442	-----	-----	-----	BASIN 4000
5	Rational	2.751	1	39	6,437	-----	-----	-----	BASIN 5000
6	Rational	6.755	1	39	15,808	-----	-----	-----	BASIN 6000
7	Rational	4.579	1	38	10,441	-----	-----	-----	BASIN 7000
8	Rational	1.571	1	22	2,074	-----	-----	-----	BASIN 8000
9	Rational	15.89	1	38	36,222	-----	-----	-----	BASIN 9000
10	Rational	4.263	1	27	6,906	-----	-----	-----	BASIN 2100
11	Combine	16.32	1	38	38,295	8, 9,	-----	-----	POI 5
12	Combine	11.21	1	39	26,249	6, 7,	-----	-----	POI 4
13	Combine	16.43	1	33	34,382	3, 4, 5,	-----	-----	POI #3
PreliminaryTc_PRE.gpw					Return Period: 5 Year			Monday, 05 / 20 / 2019	

Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	Rational	10.68	1	39	24,986	-----	-----	-----	BASIN 1000
2	Rational	35.77	1	37	79,410	-----	-----	-----	BASIN 2000
3	Rational	14.81	1	33	29,327	-----	-----	-----	BASIN 3000
4	Rational	2.214	1	31	4,119	-----	-----	-----	BASIN 4000
5	Rational	3.295	1	39	7,711	-----	-----	-----	BASIN 5000
6	Rational	8.092	1	39	18,935	-----	-----	-----	BASIN 6000
7	Rational	5.485	1	38	12,505	-----	-----	-----	BASIN 7000
8	Rational	1.877	1	22	2,477	-----	-----	-----	BASIN 8000
9	Rational	19.03	1	38	43,382	-----	-----	-----	BASIN 9000
10	Rational	5.097	1	27	8,258	-----	-----	-----	BASIN 2100
11	Combine	19.54	1	38	45,859	8, 9,	-----	-----	POI 5
12	Combine	13.43	1	39	31,439	6, 7,	-----	-----	POI 4
13	Combine	19.67	1	33	41,156	3, 4, 5,	-----	-----	POI #3
PreliminaryTc_PRE.gpw					Return Period: 10 Year			Monday, 05 / 20 / 2019	

Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	Rational	13.24	1	39	30,971	-----	-----	-----	BASIN 1000
2	Rational	44.34	1	37	98,427	-----	-----	-----	BASIN 2000
3	Rational	18.36	1	33	36,347	-----	-----	-----	BASIN 3000
4	Rational	2.744	1	31	5,104	-----	-----	-----	BASIN 4000
5	Rational	4.084	1	39	9,557	-----	-----	-----	BASIN 5000
6	Rational	10.03	1	39	23,470	-----	-----	-----	BASIN 6000
7	Rational	6.798	1	38	15,500	-----	-----	-----	BASIN 7000
8	Rational	2.325	1	22	3,069	-----	-----	-----	BASIN 8000
9	Rational	23.58	1	38	53,772	-----	-----	-----	BASIN 9000
10	Rational	6.317	1	27	10,233	-----	-----	-----	BASIN 2100
11	Combine	24.22	1	38	56,841	8, 9,	-----	-----	POI 5
12	Combine	16.65	1	39	38,970	6, 7,	-----	-----	POI 4
13	Combine	24.38	1	33	51,009	3, 4, 5,	-----	-----	POI #3
PreliminaryTc_PRE.gpw					Return Period: 25 Year			Monday, 05 / 20 / 2019	

Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	Rational	15.23	1	39	35,644	-----	-----	-----	BASIN 1000
2	Rational	51.03	1	37	113,296	-----	-----	-----	BASIN 2000
3	Rational	21.14	1	33	41,851	-----	-----	-----	BASIN 3000
4	Rational	3.160	1	31	5,878	-----	-----	-----	BASIN 4000
5	Rational	4.701	1	39	11,000	-----	-----	-----	BASIN 5000
6	Rational	11.54	1	39	27,012	-----	-----	-----	BASIN 6000
7	Rational	7.824	1	38	17,840	-----	-----	-----	BASIN 7000
8	Rational	2.680	1	22	3,538	-----	-----	-----	BASIN 8000
9	Rational	27.14	1	38	61,890	-----	-----	-----	BASIN 9000
10	Rational	7.277	1	27	11,789	-----	-----	-----	BASIN 2100
11	Combine	27.88	1	38	65,428	8, 9,	-----	-----	POI 5
12	Combine	19.16	1	39	44,851	6, 7,	-----	-----	POI 4
13	Combine	28.07	1	33	58,729	3, 4, 5,	-----	-----	POI #3
PreliminaryTc_PRE.gpw					Return Period: 50 Year			Monday, 05 / 20 / 2019	

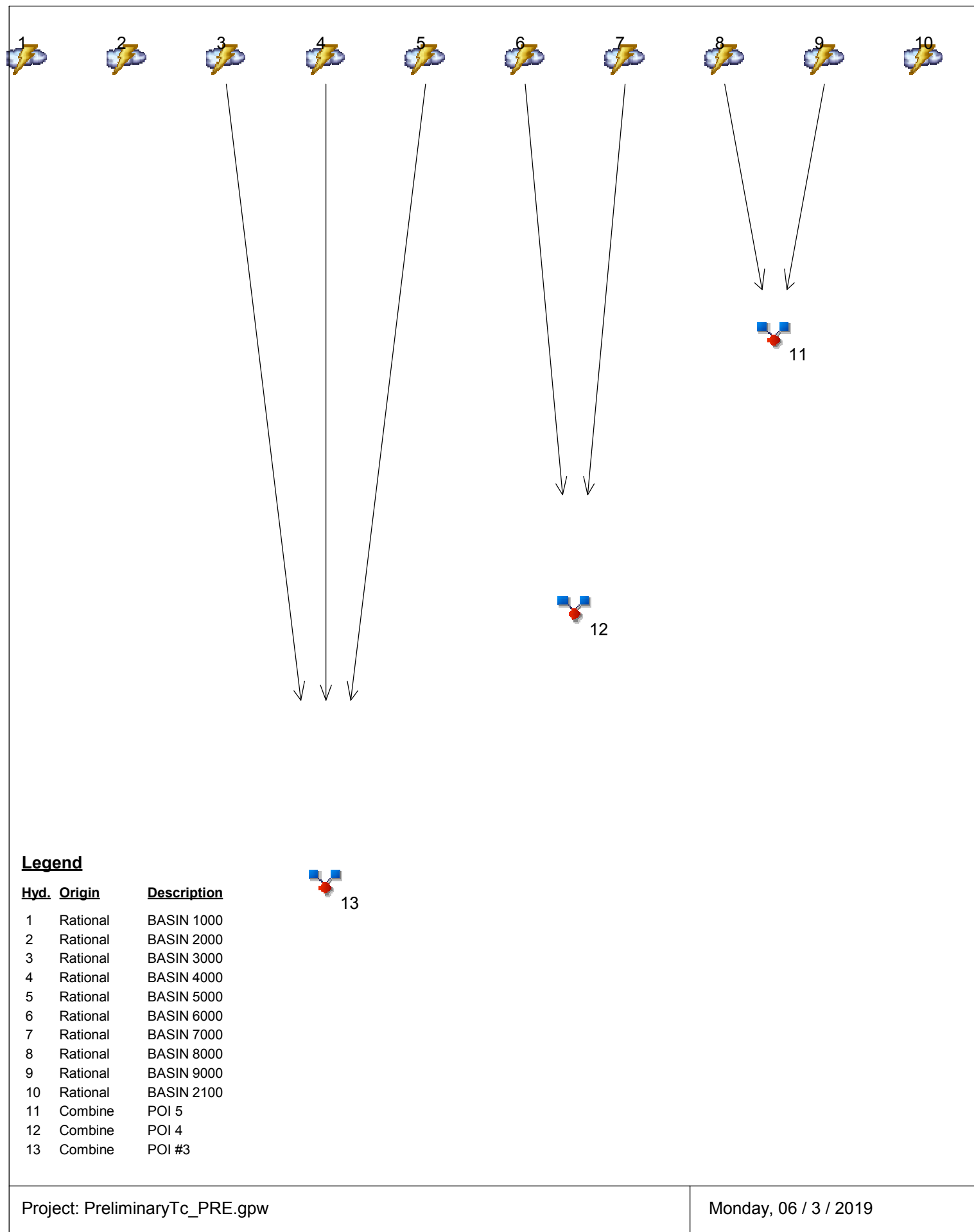
Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	Rational	17.39	1	39	40,692	-----	-----	-----	BASIN 1000
2	Rational	58.28	1	37	129,389	-----	-----	-----	BASIN 2000
3	Rational	24.16	1	33	47,834	-----	-----	-----	BASIN 3000
4	Rational	3.614	1	31	6,722	-----	-----	-----	BASIN 4000
5	Rational	5.366	1	39	12,557	-----	-----	-----	BASIN 5000
6	Rational	13.18	1	39	30,837	-----	-----	-----	BASIN 6000
7	Rational	8.934	1	38	20,370	-----	-----	-----	BASIN 7000
8	Rational	3.072	1	22	4,055	-----	-----	-----	BASIN 8000
9	Rational	30.99	1	38	70,668	-----	-----	-----	BASIN 9000
10	Rational	8.329	1	27	13,494	-----	-----	-----	BASIN 2100
11	Combine	31.83	1	38	74,723	8, 9,	-----	-----	POI 5
12	Combine	21.88	1	39	51,207	6, 7,	-----	-----	POI 4
13	Combine	32.08	1	33	67,113	3, 4, 5,	-----	-----	POI #3
PreliminaryTc_PRE.gpw					Return Period: 100 Year			Monday, 05 / 20 / 2019	

Watershed Model Schematic

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12



Hydrograph Report

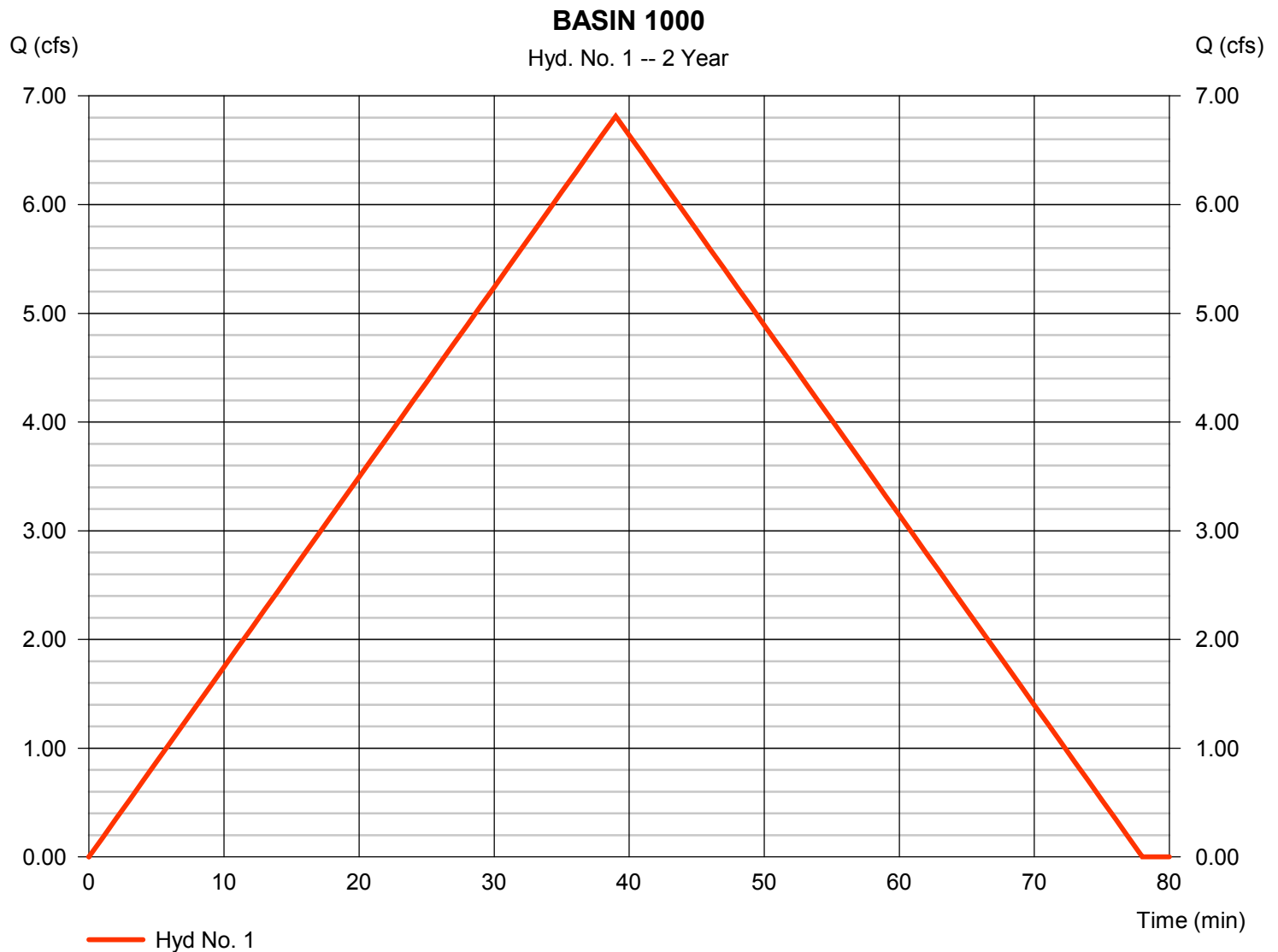
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Monday, 05 / 20 / 2019

Hyd. No. 1

BASIN 1000

Hydrograph type	= Rational	Peak discharge	= 6.814 cfs
Storm frequency	= 2 yrs	Time to peak	= 39 min
Time interval	= 1 min	Hyd. volume	= 15,944 cuft
Drainage area	= 25.600 ac	Runoff coeff.	= 0.4
Intensity	= 0.665 in/hr	Tc by TR55	= 39.00 min
IDF Curve	= 17671-PRECIP-3.IDF	Asc/Rec limb fact	= 1/1



TR55 Tc Worksheet

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Hyd. No. 1

BASIN 1000

<u>Description</u>	<u>A</u>	<u>B</u>	<u>C</u>	<u>Totals</u>			
Sheet Flow							
Manning's n-value	= 0.150	0.011	0.011				
Flow length (ft)	= 300.0	0.0	0.0				
Two-year 24-hr precip. (in)	= 2.37	0.00	0.00				
Land slope (%)	= 1.86	0.00	0.00				
Travel Time (min)	= 28.23	+	0.00	+	0.00	=	28.23
Shallow Concentrated Flow							
Flow length (ft)	= 945.00	650.00	0.00				
Watercourse slope (%)	= 2.07	2.64	0.00				
Surface description	= Unpaved	Unpaved	Paved				
Average velocity (ft/s)	=2.32	2.62	0.00				
Travel Time (min)	= 6.78	+	4.13	+	0.00	=	10.92
Channel Flow							
X sectional flow area (sqft)	= 0.00	0.00	0.00				
Wetted perimeter (ft)	= 0.00	0.00	0.00				
Channel slope (%)	= 0.00	0.00	0.00				
Manning's n-value	= 0.015	0.015	0.015				
Velocity (ft/s)	=0.00	0.00	0.00				
Flow length (ft)	(0)0.0	0.0	0.0				
Travel Time (min)	= 0.00	+	0.00	+	0.00	=	0.00
Total Travel Time, Tc				39.00 min			

Hydrograph Report

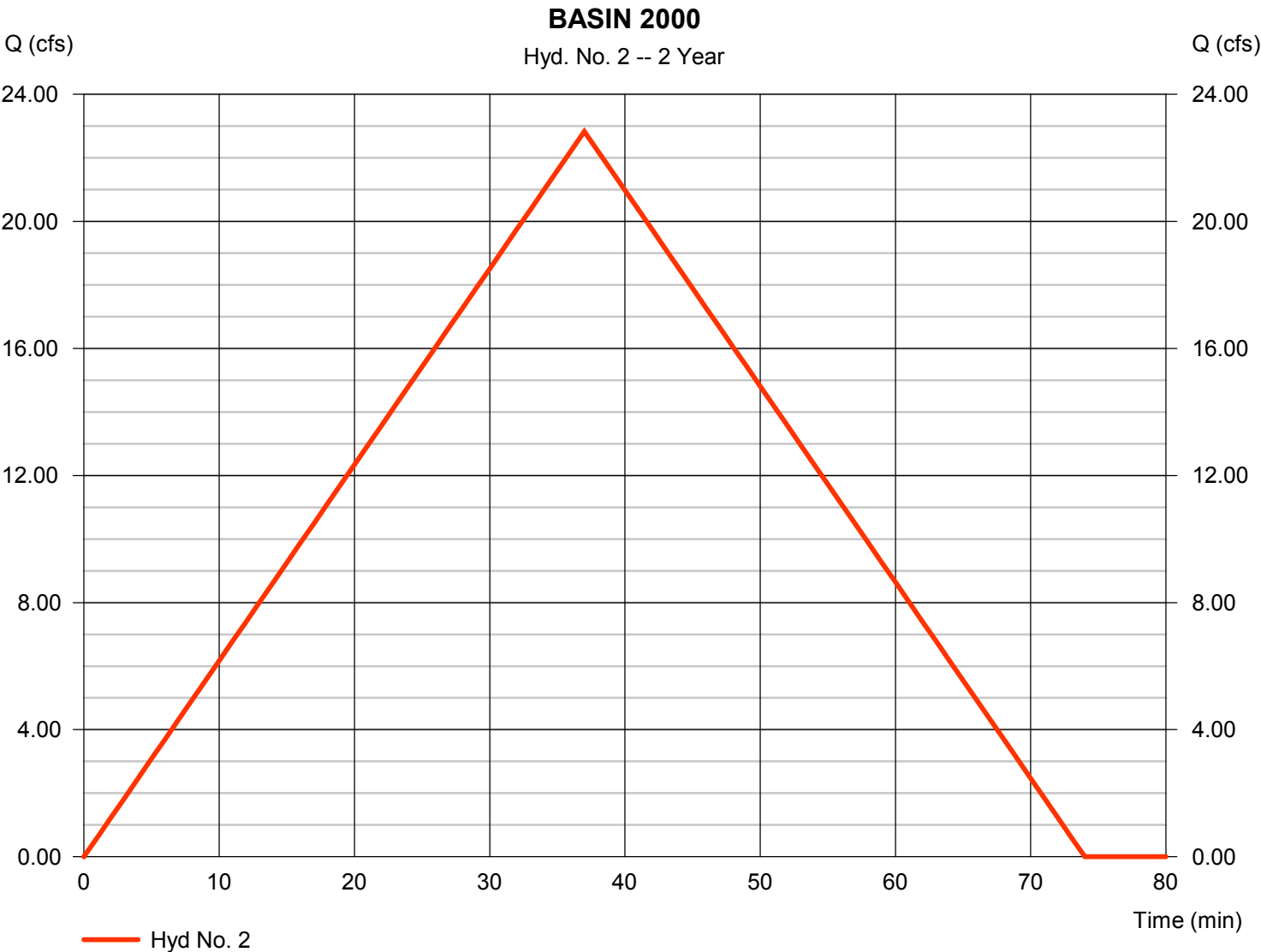
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Monday, 05 / 20 / 2019

Hyd. No. 2

BASIN 2000

Hydrograph type	= Rational	Peak discharge	= 22.83 cfs
Storm frequency	= 2 yrs	Time to peak	= 37 min
Time interval	= 1 min	Hyd. volume	= 50,692 cuft
Drainage area	= 83.800 ac	Runoff coeff.	= 0.4
Intensity	= 0.681 in/hr	Tc by TR55	= 37.00 min
IDF Curve	= 17671-PRECIP-3.IDF	Asc/Rec limb fact	= 1/1



TR55 Tc Worksheet

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Hyd. No. 2

BASIN 2000

<u>Description</u>	<u>A</u>	<u>B</u>	<u>C</u>	<u>Totals</u>			
Sheet Flow							
Manning's n-value	= 0.150	0.011	0.011				
Flow length (ft)	= 300.0	0.0	0.0				
Two-year 24-hr precip. (in)	= 2.37	0.00	0.00				
Land slope (%)	= 2.51	0.00	0.00				
Travel Time (min)	= 25.04	+	0.00	+	0.00	=	25.04
Shallow Concentrated Flow							
Flow length (ft)	= 453.00	1343.00	0.00				
Watercourse slope (%)	= 3.90	2.29	0.00				
Surface description	= Unpaved	Unpaved	Paved				
Average velocity (ft/s)	=3.19	2.44	0.00				
Travel Time (min)	= 2.37	+	9.17	+	0.00	=	11.54
Channel Flow							
X sectional flow area (sqft)	= 0.00	0.00	0.00				
Wetted perimeter (ft)	= 0.00	0.00	0.00				
Channel slope (%)	= 0.00	0.00	0.00				
Manning's n-value	= 0.015	0.015	0.015				
Velocity (ft/s)	=0.00	0.00	0.00				
Flow length (ft)	(0)0.0	0.0	0.0				
Travel Time (min)	= 0.00	+	0.00	+	0.00	=	0.00
Total Travel Time, Tc				37.00 min			

Hydrograph Report

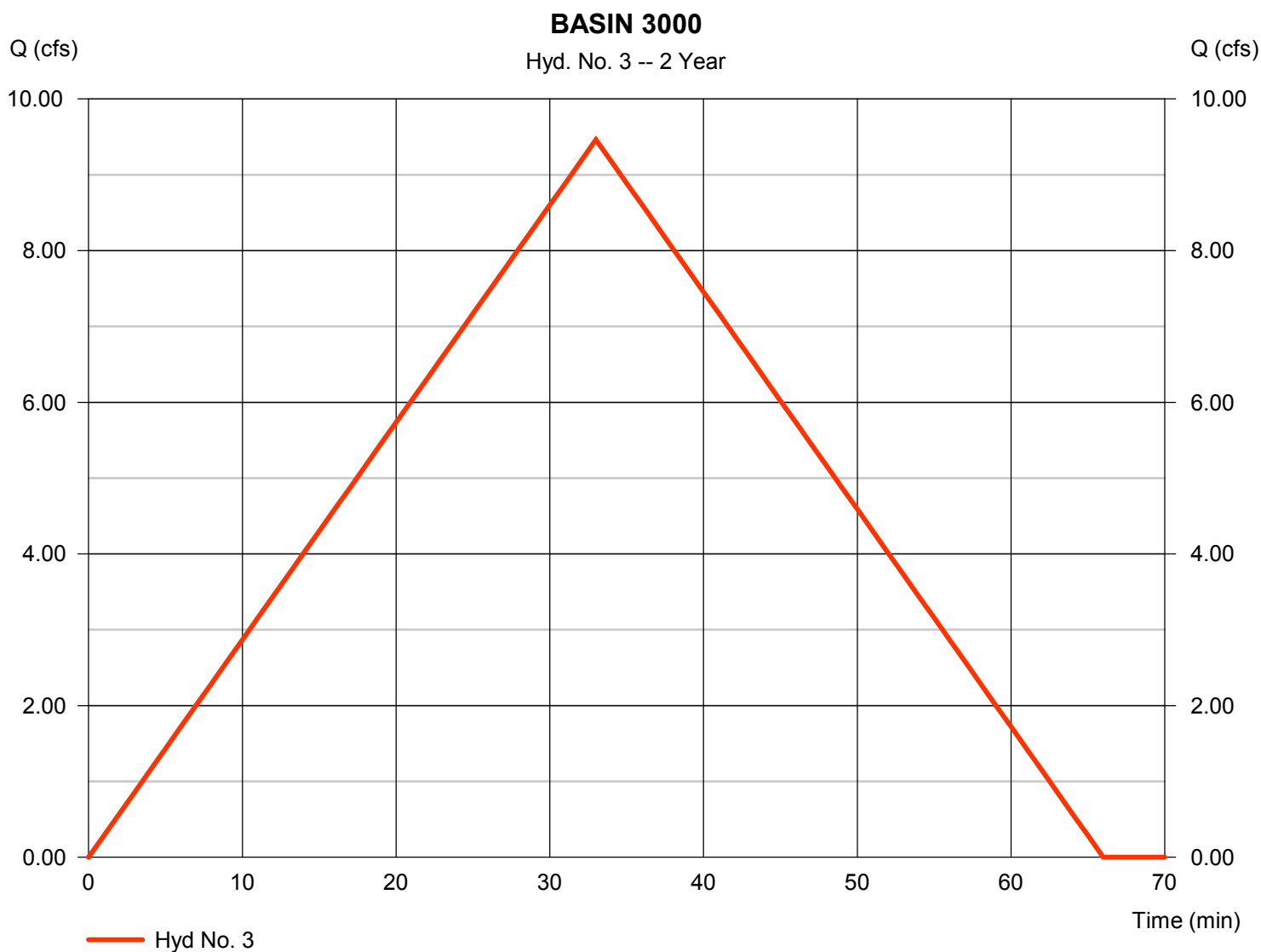
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Monday, 05 / 20 / 2019

Hyd. No. 3

BASIN 3000

Hydrograph type	= Rational	Peak discharge	= 9.463 cfs
Storm frequency	= 2 yrs	Time to peak	= 33 min
Time interval	= 1 min	Hyd. volume	= 18,736 cuft
Drainage area	= 33.000 ac	Runoff coeff.	= 0.4
Intensity	= 0.717 in/hr	Tc by TR55	= 33.00 min
IDF Curve	= 17671-PRECIP-3.IDF	Asc/Rec limb fact	= 1/1



TR55 Tc Worksheet

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Hyd. No. 3

BASIN 3000

<u>Description</u>	<u>A</u>	<u>B</u>	<u>C</u>	<u>Totals</u>			
Sheet Flow							
Manning's n-value	= 0.150	0.011	0.011				
Flow length (ft)	= 300.0	0.0	0.0				
Two-year 24-hr precip. (in)	= 2.37	0.00	0.00				
Land slope (%)	= 5.13	0.00	0.00				
Travel Time (min)	= 18.81	+	0.00	+	0.00	=	18.81
Shallow Concentrated Flow							
Flow length (ft)	= 173.00	1348.00	0.00				
Watercourse slope (%)	= 4.31	1.07	0.00				
Surface description	= Unpaved	Unpaved	Paved				
Average velocity (ft/s)	=3.35	1.67	0.00				
Travel Time (min)	= 0.86	+	13.46	+	0.00	=	14.32
Channel Flow							
X sectional flow area (sqft)	= 0.00	0.00	0.00				
Wetted perimeter (ft)	= 0.00	0.00	0.00				
Channel slope (%)	= 0.00	0.00	0.00				
Manning's n-value	= 0.015	0.015	0.015				
Velocity (ft/s)	=0.00	0.00	0.00				
Flow length (ft)	(0)0.0	0.0	0.0				
Travel Time (min)	= 0.00	+	0.00	+	0.00	=	0.00
Total Travel Time, Tc				33.00 min			

Hydrograph Report

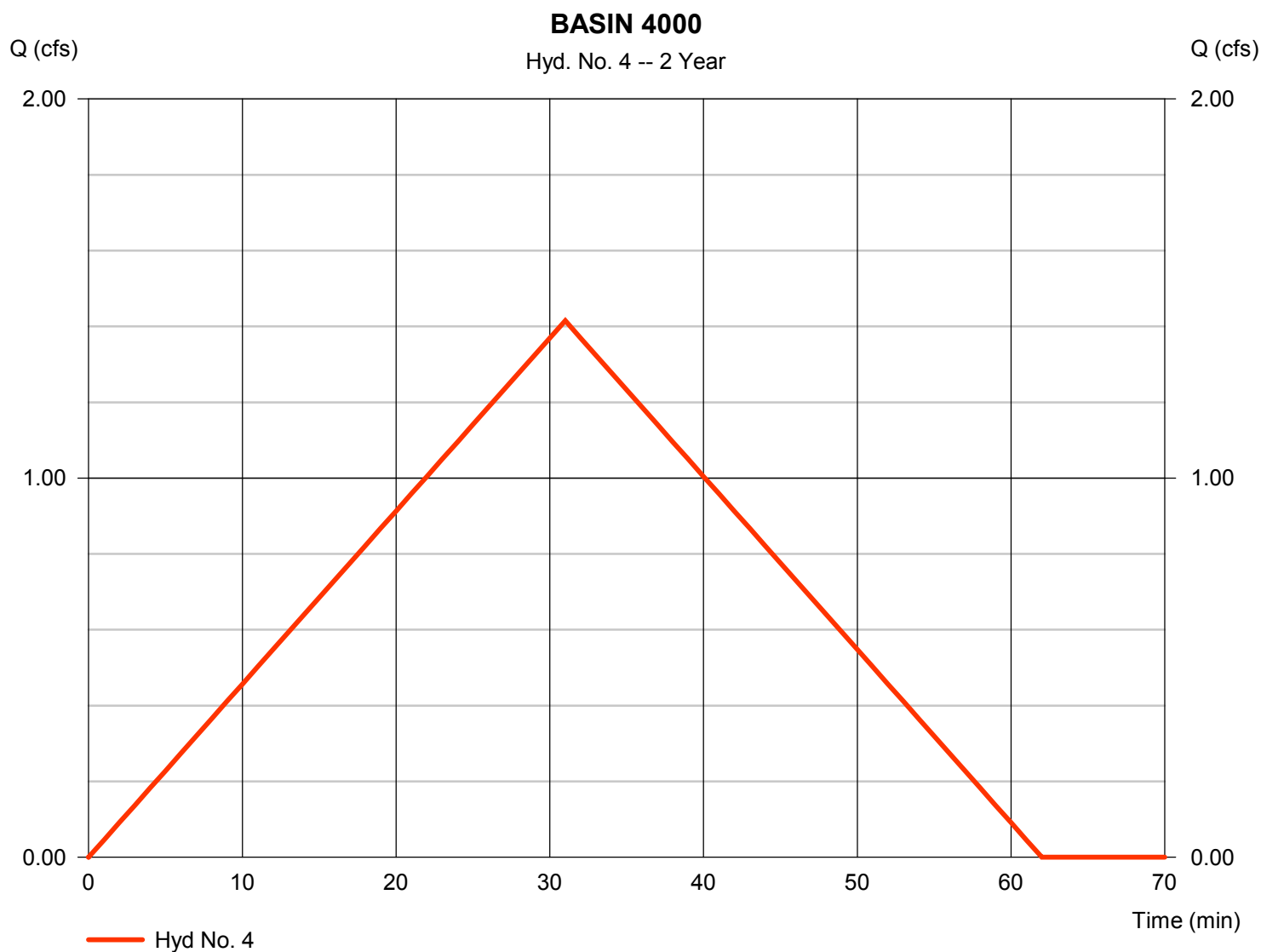
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Monday, 05 / 20 / 2019

Hyd. No. 4

BASIN 4000

Hydrograph type	= Rational	Peak discharge	= 1.415 cfs
Storm frequency	= 2 yrs	Time to peak	= 31 min
Time interval	= 1 min	Hyd. volume	= 2,632 cuft
Drainage area	= 4.800 ac	Runoff coeff.	= 0.4
Intensity	= 0.737 in/hr	Tc by TR55	= 31.00 min
IDF Curve	= 17671-PRECIP-3.IDF	Asc/Rec limb fact	= 1/1



TR55 Tc Worksheet

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Hyd. No. 4

BASIN 4000

<u>Description</u>	<u>A</u>	<u>B</u>	<u>C</u>	<u>Totals</u>			
Sheet Flow							
Manning's n-value	= 0.150	0.011	0.011				
Flow length (ft)	= 300.0	0.0	0.0				
Two-year 24-hr precip. (in)	= 2.37	0.00	0.00				
Land slope (%)	= 6.86	0.00	0.00				
Travel Time (min)	= 16.75	+	0.00	+	0.00	=	16.75
Shallow Concentrated Flow							
Flow length (ft)	= 205.00	335.00	0.00				
Watercourse slope (%)	= 3.87	0.07	0.00				
Surface description	= Unpaved	Unpaved	Paved				
Average velocity (ft/s)	=3.17	0.43	0.00				
Travel Time (min)	= 1.08	+	13.08	+	0.00	=	14.16
Channel Flow							
X sectional flow area (sqft)	= 0.00	0.00	0.00				
Wetted perimeter (ft)	= 0.00	0.00	0.00				
Channel slope (%)	= 0.00	0.00	0.00				
Manning's n-value	= 0.015	0.015	0.015				
Velocity (ft/s)	=0.00	0.00	0.00				
Flow length (ft)	(0)0.0	0.0	0.0				
Travel Time (min)	= 0.00	+	0.00	+	0.00	=	0.00
Total Travel Time, Tc				31.00 min			

Hydrograph Report

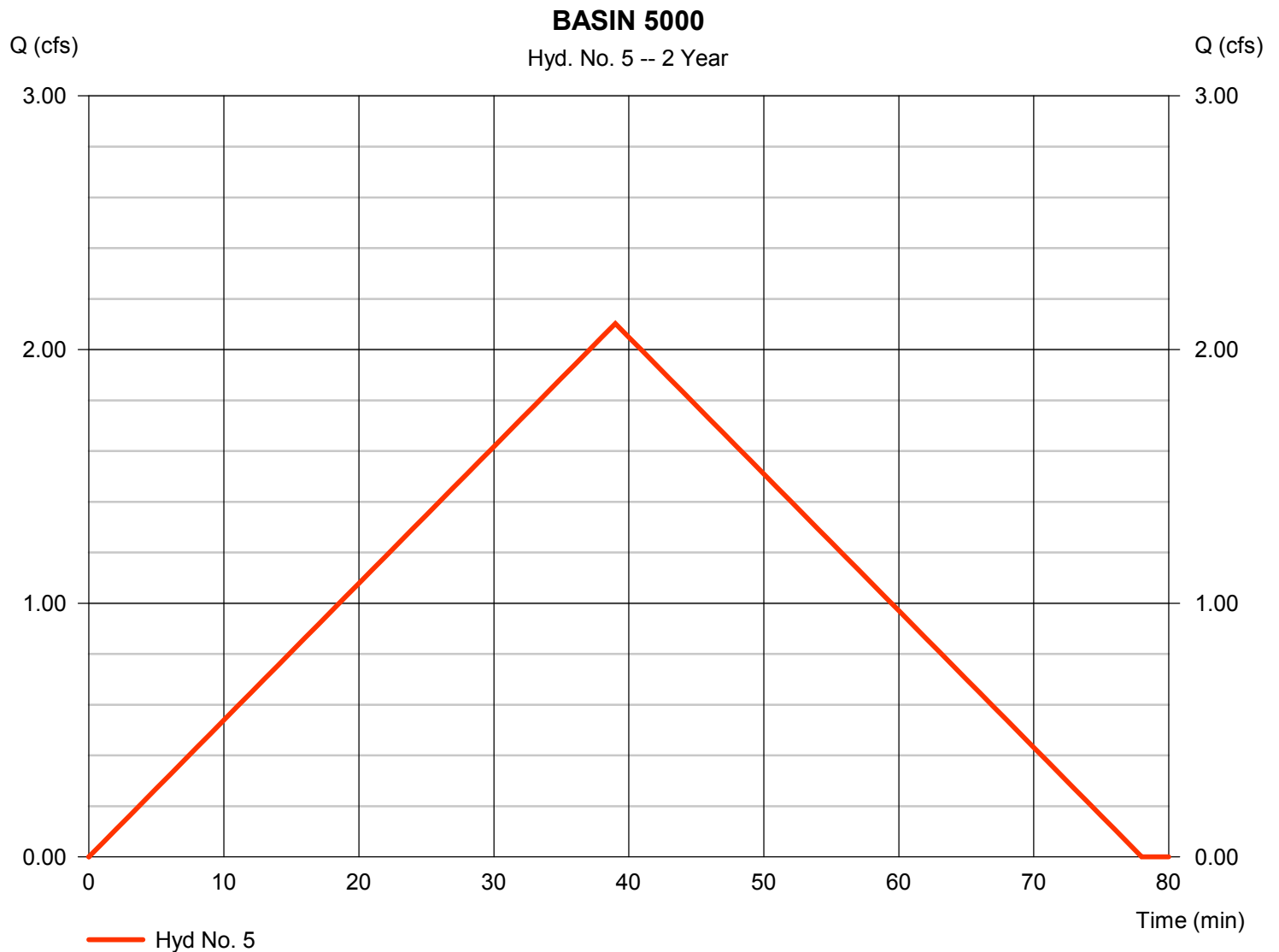
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Monday, 05 / 20 / 2019

Hyd. No. 5

BASIN 5000

Hydrograph type	= Rational	Peak discharge	= 2.103 cfs
Storm frequency	= 2 yrs	Time to peak	= 39 min
Time interval	= 1 min	Hyd. volume	= 4,920 cuft
Drainage area	= 7.900 ac	Runoff coeff.	= 0.4
Intensity	= 0.665 in/hr	Tc by TR55	= 39.00 min
IDF Curve	= 17671-PRECIP-3.IDF	Asc/Rec limb fact	= 1/1



TR55 Tc Worksheet

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Hyd. No. 5

BASIN 5000

<u>Description</u>	<u>A</u>	<u>B</u>	<u>C</u>	<u>Totals</u>			
Sheet Flow							
Manning's n-value	= 0.150	0.011	0.011				
Flow length (ft)	= 300.0	0.0	0.0				
Two-year 24-hr precip. (in)	= 2.37	0.00	0.00				
Land slope (%)	= 7.27	0.00	0.00				
Travel Time (min)	= 16.36	+	0.00	+	0.00	=	16.36
Shallow Concentrated Flow							
Flow length (ft)	= 200.00	810.00	827.00				
Watercourse slope (%)	= 9.00	2.32	0.26				
Surface description	= Unpaved	Unpaved	Unpaved				
Average velocity (ft/s)	=4.84	2.46	0.82				
Travel Time (min)	= 0.69	+	5.49	+	16.75	=	22.94
Channel Flow							
X sectional flow area (sqft)	= 0.00	0.00	0.00				
Wetted perimeter (ft)	= 0.00	0.00	0.00				
Channel slope (%)	= 0.00	0.00	0.00				
Manning's n-value	= 0.015	0.015	0.015				
Velocity (ft/s)	=0.00	0.00	0.00				
Flow length (ft)	(0)0.0	0.0	0.0				
Travel Time (min)	= 0.00	+	0.00	+	0.00	=	0.00
Total Travel Time, Tc					39.00 min		

Hydrograph Report

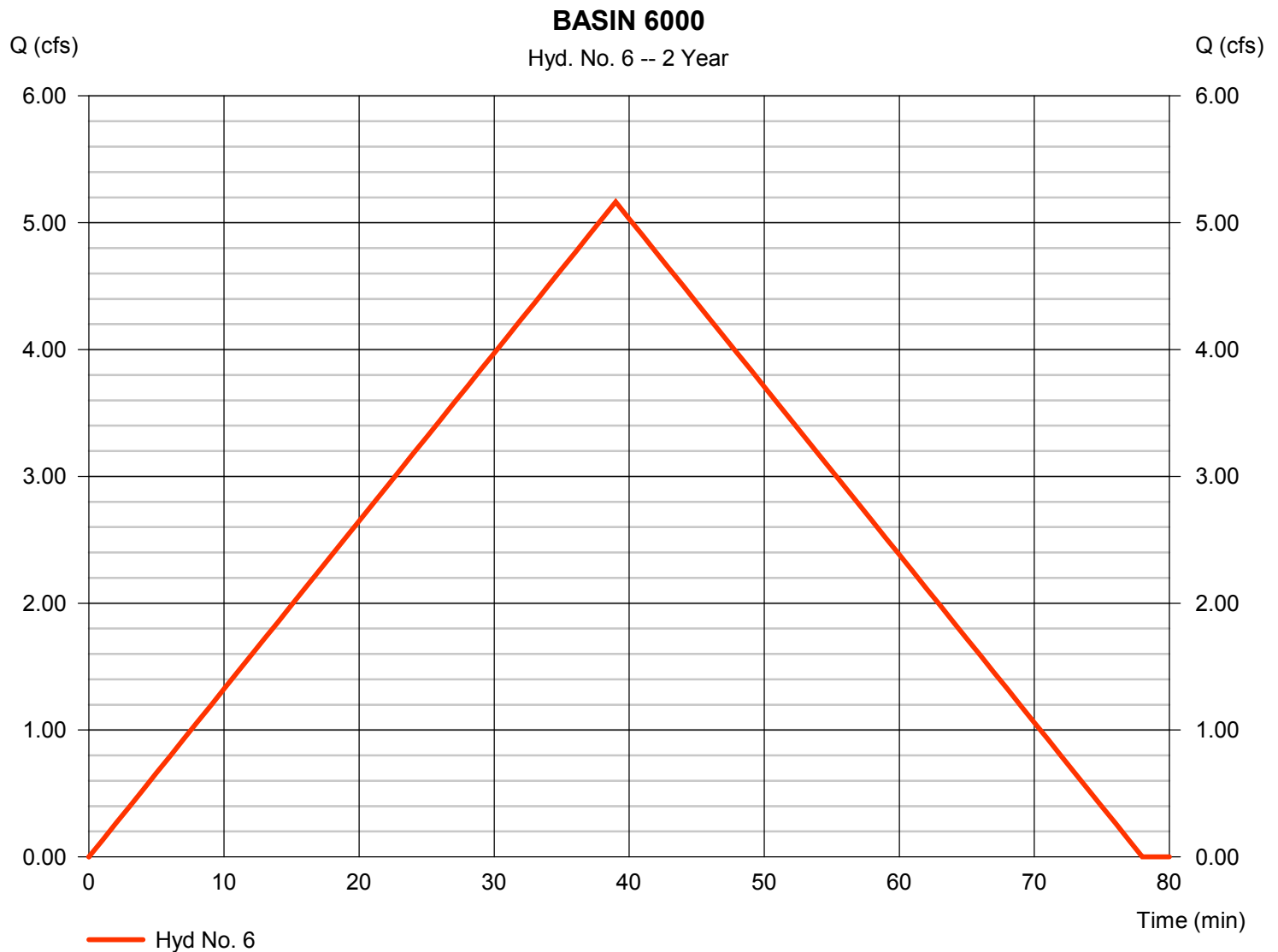
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Monday, 05 / 20 / 2019

Hyd. No. 6

BASIN 6000

Hydrograph type	= Rational	Peak discharge	= 5.164 cfs
Storm frequency	= 2 yrs	Time to peak	= 39 min
Time interval	= 1 min	Hyd. volume	= 12,083 cuft
Drainage area	= 19.400 ac	Runoff coeff.	= 0.4
Intensity	= 0.665 in/hr	Tc by TR55	= 39.00 min
IDF Curve	= 17671-PRECIP-3.IDF	Asc/Rec limb fact	= 1/1



TR55 Tc Worksheet

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Hyd. No. 6

BASIN 6000

<u>Description</u>	<u>A</u>	<u>B</u>	<u>C</u>	<u>Totals</u>			
Sheet Flow							
Manning's n-value	= 0.150	0.011	0.011				
Flow length (ft)	= 300.0	0.0	0.0				
Two-year 24-hr precip. (in)	= 2.37	0.00	0.00				
Land slope (%)	= 3.28	0.00	0.00				
Travel Time (min)	= 22.50	+	0.00	+	0.00	=	22.50
Shallow Concentrated Flow							
Flow length (ft)	= 465.00	390.00	0.00				
Watercourse slope (%)	= 3.86	0.78	0.00				
Surface description	= Unpaved	Unpaved	Paved				
Average velocity (ft/s)	=3.17	1.42	0.00				
Travel Time (min)	= 2.44	+	4.56	+	0.00	=	7.01
Channel Flow							
X sectional flow area (sqft)	= 0.00	0.00	0.00				
Wetted perimeter (ft)	= 0.00	0.00	0.00				
Channel slope (%)	= 0.00	0.00	0.00				
Manning's n-value	= 0.015	0.015	0.015				
Velocity (ft/s)	=0.00	0.00	0.00				
Flow length (ft)	(0)0.0	0.0	0.0				
Travel Time (min)	= 0.00	+	0.00	+	0.00	=	0.00
Total Travel Time, Tc					39.00 min		

Hydrograph Report

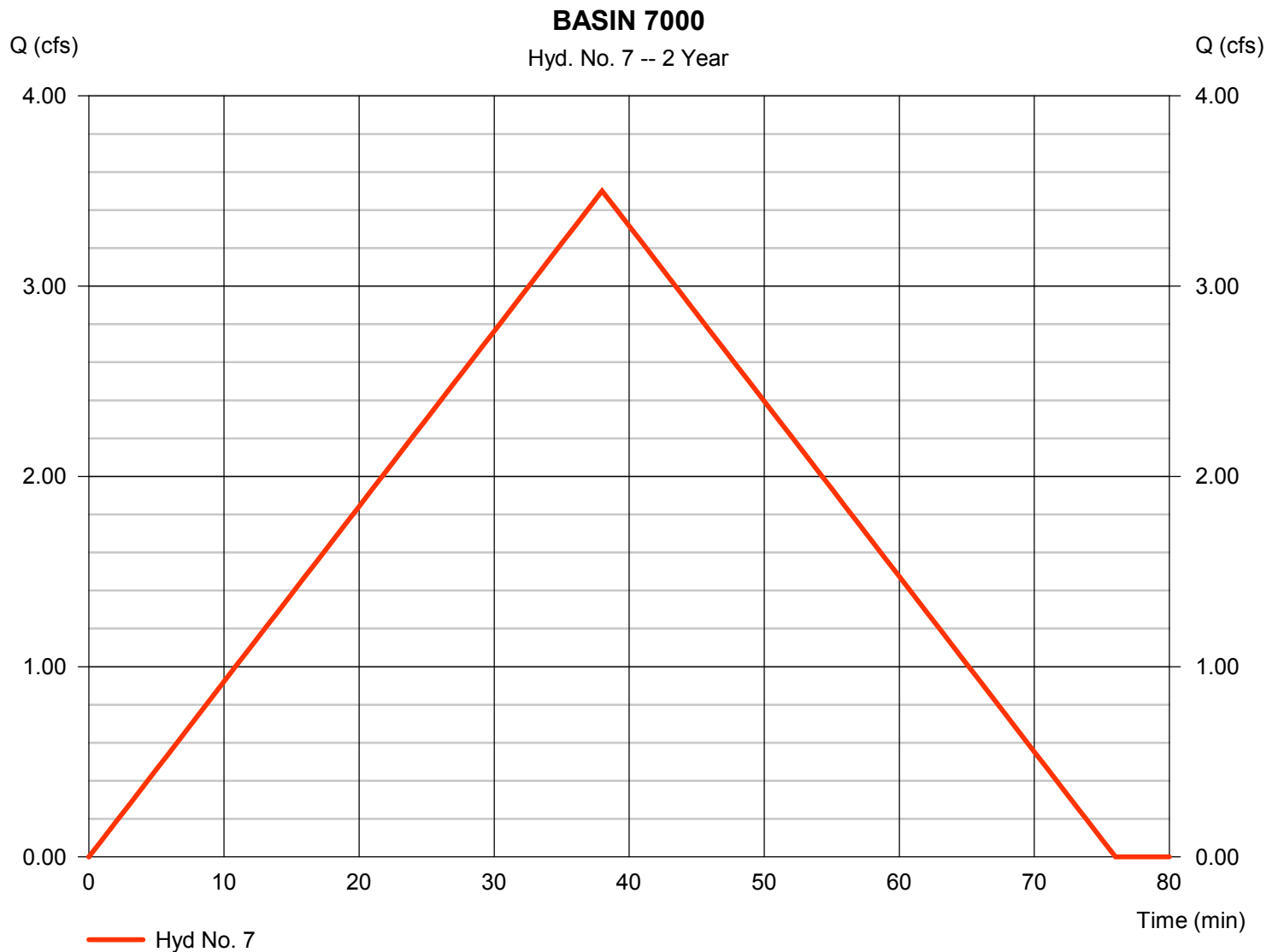
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Monday, 05 / 20 / 2019

Hyd. No. 7

BASIN 7000

Hydrograph type	= Rational	Peak discharge	= 3.500 cfs
Storm frequency	= 2 yrs	Time to peak	= 38 min
Time interval	= 1 min	Hyd. volume	= 7,981 cuft
Drainage area	= 13.000 ac	Runoff coeff.	= 0.4
Intensity	= 0.673 in/hr	Tc by TR55	= 38.00 min
IDF Curve	= 17671-PRECIP-3.IDF	Asc/Rec limb fact	= 1/1



TR55 Tc Worksheet

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Hyd. No. 7

BASIN 7000

<u>Description</u>	<u>A</u>	<u>B</u>	<u>C</u>	<u>Totals</u>			
Sheet Flow							
Manning's n-value	= 0.150	0.011	0.011				
Flow length (ft)	= 300.0	0.0	0.0				
Two-year 24-hr precip. (in)	= 2.37	0.00	0.00				
Land slope (%)	= 5.89	0.00	0.00				
Travel Time (min)	= 17.80	+	0.00	+	0.00	=	17.80
Shallow Concentrated Flow							
Flow length (ft)	= 140.00	260.00	1025.00				
Watercourse slope (%)	= 7.02	2.78	0.34				
Surface description	= Unpaved	Unpaved	Unpaved				
Average velocity (ft/s)	=4.27	2.69	0.94				
Travel Time (min)	= 0.55	+	1.61	+	18.16	=	20.32
Channel Flow							
X sectional flow area (sqft)	= 0.00	0.00	0.00				
Wetted perimeter (ft)	= 0.00	0.00	0.00				
Channel slope (%)	= 0.00	0.00	0.00				
Manning's n-value	= 0.015	0.015	0.015				
Velocity (ft/s)	=0.00	0.00	0.00				
Flow length (ft)	(0)0.0	0.0	0.0				
Travel Time (min)	= 0.00	+	0.00	+	0.00	=	0.00
Total Travel Time, Tc				38.00 min			

Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Monday, 05 / 20 / 2019

Hyd. No. 8

BASIN 8000

Hydrograph type	= Rational	Peak discharge	= 1.202 cfs
Storm frequency	= 2 yrs	Time to peak	= 22 min
Time interval	= 1 min	Hyd. volume	= 1,587 cuft
Drainage area	= 3.500 ac	Runoff coeff.	= 0.4
Intensity	= 0.859 in/hr	Tc by TR55	= 22.00 min
IDF Curve	= 17671-PRECIP-3.IDF	Asc/Rec limb fact	= 1/1



TR55 Tc Worksheet

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Hyd. No. 8

BASIN 8000

<u>Description</u>	<u>A</u>	<u>B</u>	<u>C</u>	<u>Totals</u>			
Sheet Flow							
Manning's n-value	= 0.150	0.011	0.011				
Flow length (ft)	= 300.0	0.0	0.0				
Two-year 24-hr precip. (in)	= 2.37	0.00	0.00				
Land slope (%)	= 6.67	0.00	0.00				
Travel Time (min)	= 16.94	+	0.00	+	0.00	=	16.94
Shallow Concentrated Flow							
Flow length (ft)	= 690.00	0.00	0.00				
Watercourse slope (%)	= 1.70	0.00	0.00				
Surface description	= Unpaved	Unpaved	Paved				
Average velocity (ft/s)	=2.10	0.00	0.00				
Travel Time (min)	= 5.47	+	0.00	+	0.00	=	5.47
Channel Flow							
X sectional flow area (sqft)	= 0.00	0.00	0.00				
Wetted perimeter (ft)	= 0.00	0.00	0.00				
Channel slope (%)	= 0.00	0.00	0.00				
Manning's n-value	= 0.015	0.015	0.015				
Velocity (ft/s)	=0.00	0.00	0.00				
Flow length (ft)	(0)0.0	0.0	0.0				
Travel Time (min)	= 0.00	+	0.00	+	0.00	=	0.00
Total Travel Time, Tc				22.00 min			

Hydrograph Report

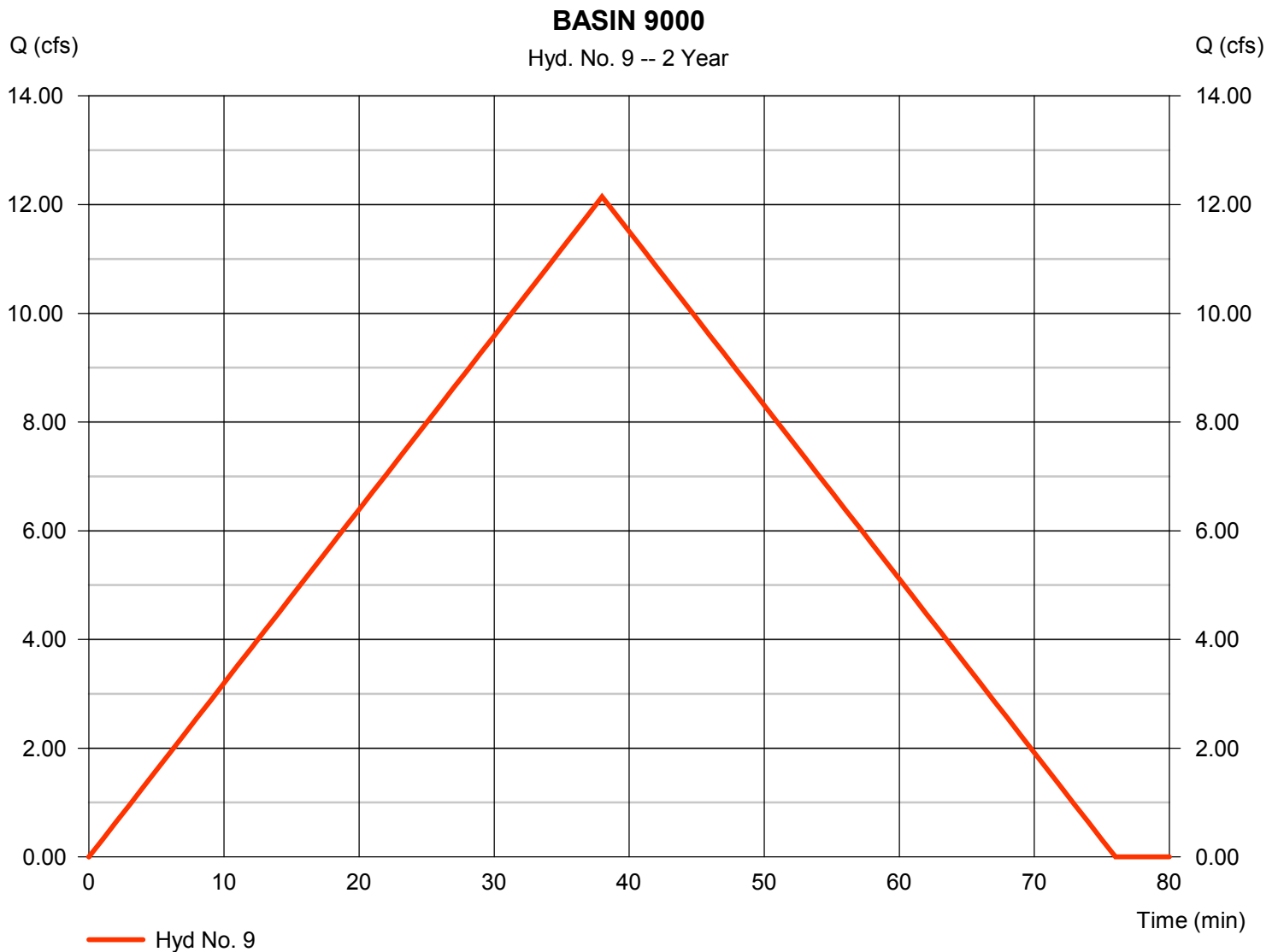
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Monday, 05 / 20 / 2019

Hyd. No. 9

BASIN 9000

Hydrograph type	= Rational	Peak discharge	= 12.14 cfs
Storm frequency	= 2 yrs	Time to peak	= 38 min
Time interval	= 1 min	Hyd. volume	= 27,688 cuft
Drainage area	= 45.100 ac	Runoff coeff.	= 0.4
Intensity	= 0.673 in/hr	Tc by TR55	= 38.00 min
IDF Curve	= 17671-PRECIP-3.IDF	Asc/Rec limb fact	= 1/1



TR55 Tc Worksheet

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Hyd. No. 9

BASIN 9000

<u>Description</u>	<u>A</u>	<u>B</u>	<u>C</u>	<u>Totals</u>			
Sheet Flow							
Manning's n-value	= 0.150	0.011	0.011				
Flow length (ft)	= 300.0	0.0	0.0				
Two-year 24-hr precip. (in)	= 2.37	0.00	0.00				
Land slope (%)	= 7.00	0.00	0.00				
Travel Time (min)	= 16.61	+	0.00	+	0.00	=	16.61
Shallow Concentrated Flow							
Flow length (ft)	= 850.00	1705.00	0.00				
Watercourse slope (%)	= 2.11	1.35	0.00				
Surface description	= Unpaved	Unpaved	Paved				
Average velocity (ft/s)	=2.34	1.87	0.00				
Travel Time (min)	= 6.04	+	15.16	+	0.00	=	21.20
Channel Flow							
X sectional flow area (sqft)	= 0.00	0.00	0.00				
Wetted perimeter (ft)	= 0.00	0.00	0.00				
Channel slope (%)	= 0.00	0.00	0.00				
Manning's n-value	= 0.015	0.015	0.015				
Velocity (ft/s)	=0.00	0.00	0.00				
Flow length (ft)	(0)0.0	0.0	0.0				
Travel Time (min)	= 0.00	+	0.00	+	0.00	=	0.00
Total Travel Time, Tc				38.00 min			

Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Monday, 05 / 20 / 2019

Hyd. No. 10

BASIN 2100

Hydrograph type	= Rational	Peak discharge	= 3.261 cfs
Storm frequency	= 2 yrs	Time to peak	= 27 min
Time interval	= 1 min	Hyd. volume	= 5,283 cuft
Drainage area	= 10.400 ac	Runoff coeff.	= 0.4
Intensity	= 0.784 in/hr	Tc by TR55	= 27.00 min
IDF Curve	= 17671-PRECIP-3.IDF	Asc/Rec limb fact	= 1/1



TR55 Tc Worksheet

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Hyd. No. 10

BASIN 2100

<u>Description</u>	<u>A</u>	<u>B</u>	<u>C</u>	<u>Totals</u>			
Sheet Flow							
Manning's n-value	= 0.150	0.011	0.011				
Flow length (ft)	= 300.0	0.0	0.0				
Two-year 24-hr precip. (in)	= 2.37	0.00	0.00				
Land slope (%)	= 2.51	0.00	0.00				
Travel Time (min)	= 25.04	+	0.00	+	0.00	=	25.04
Shallow Concentrated Flow							
Flow length (ft)	= 453.00	0.00	0.00				
Watercourse slope (%)	= 3.90	0.00	0.00				
Surface description	= Unpaved	Paved	Paved				
Average velocity (ft/s)	=3.19	0.00	0.00				
Travel Time (min)	= 2.37	+	0.00	+	0.00	=	2.37
Channel Flow							
X sectional flow area (sqft)	= 0.00	0.00	0.00				
Wetted perimeter (ft)	= 0.00	0.00	0.00				
Channel slope (%)	= 0.00	0.00	0.00				
Manning's n-value	= 0.015	0.015	0.015				
Velocity (ft/s)	=0.00	0.00	0.00				
Flow length (ft)	(0)0.0	0.0	0.0				
Travel Time (min)	= 0.00	+	0.00	+	0.00	=	0.00
Total Travel Time, Tc				27.00 min			

Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

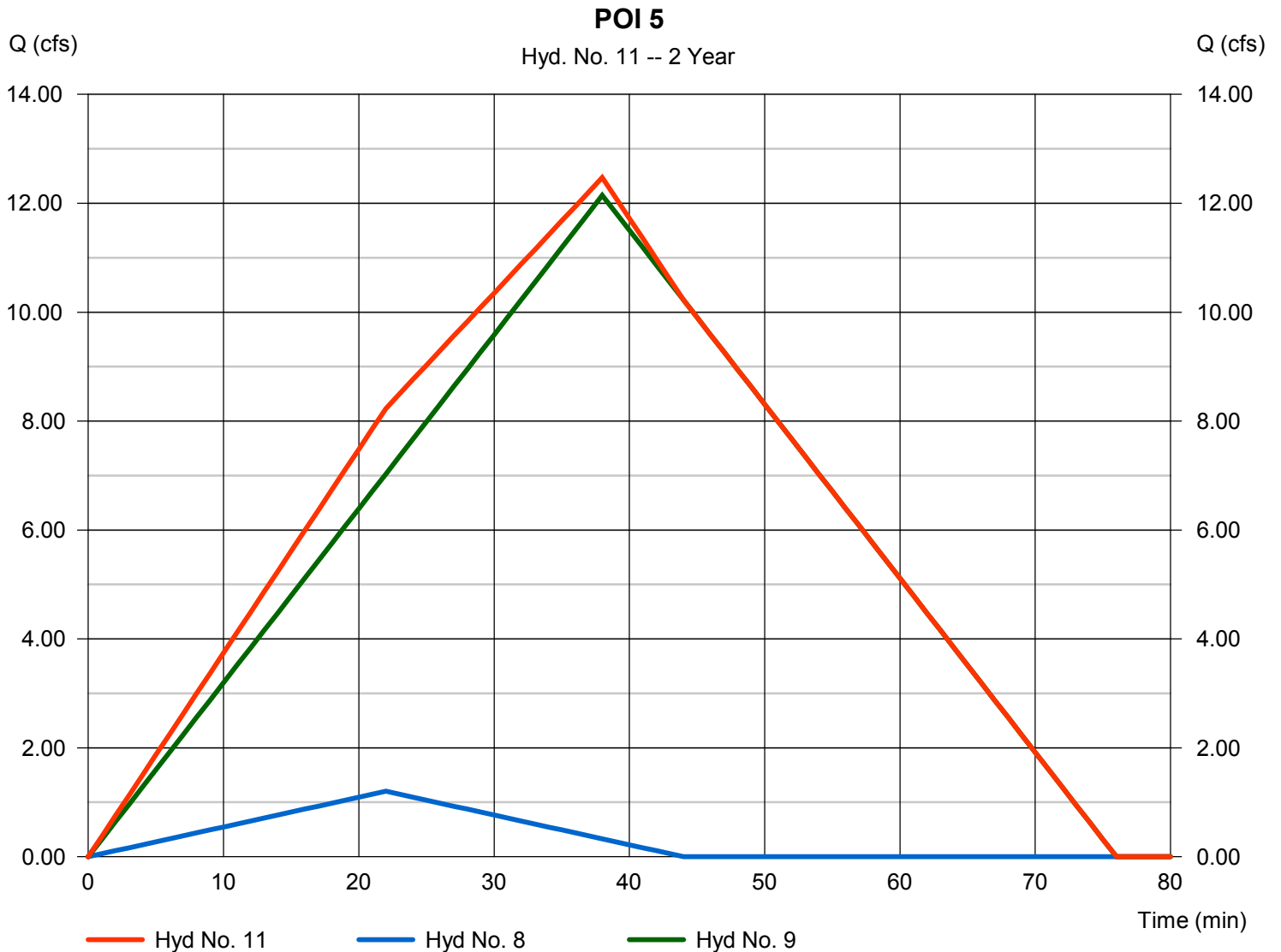
Monday, 05 / 20 / 2019

Hyd. No. 11

POI 5

Hydrograph type = Combine
 Storm frequency = 2 yrs
 Time interval = 1 min
 Inflow hyds. = 8, 9

Peak discharge = 12.47 cfs
 Time to peak = 38 min
 Hyd. volume = 29,275 cuft
 Contrib. drain. area = 48.600 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

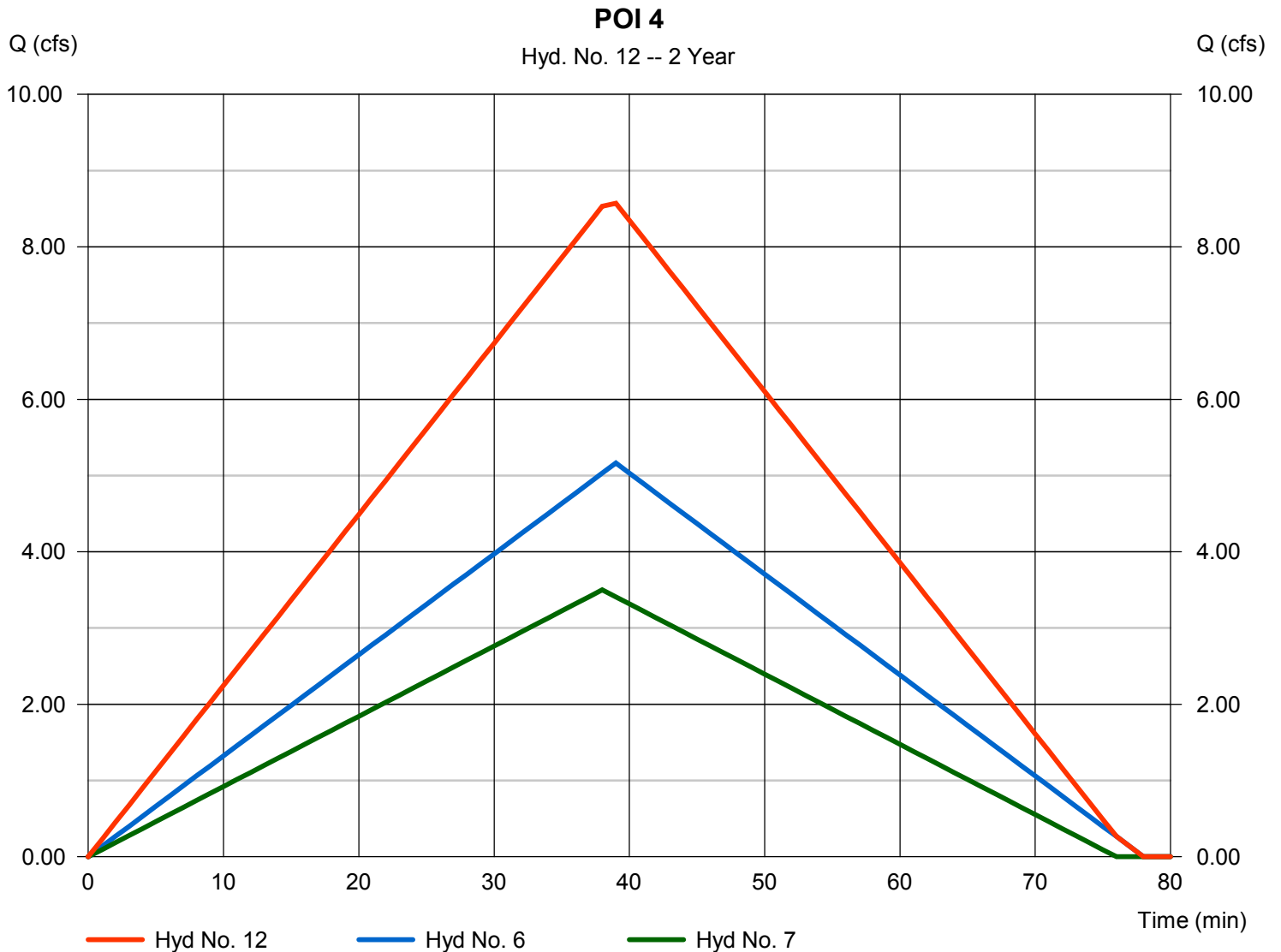
Monday, 05 / 20 / 2019

Hyd. No. 12

POI 4

Hydrograph type = Combine
 Storm frequency = 2 yrs
 Time interval = 1 min
 Inflow hyds. = 6, 7

Peak discharge = 8.572 cfs
 Time to peak = 39 min
 Hyd. volume = 20,064 cuft
 Contrib. drain. area = 32.400 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

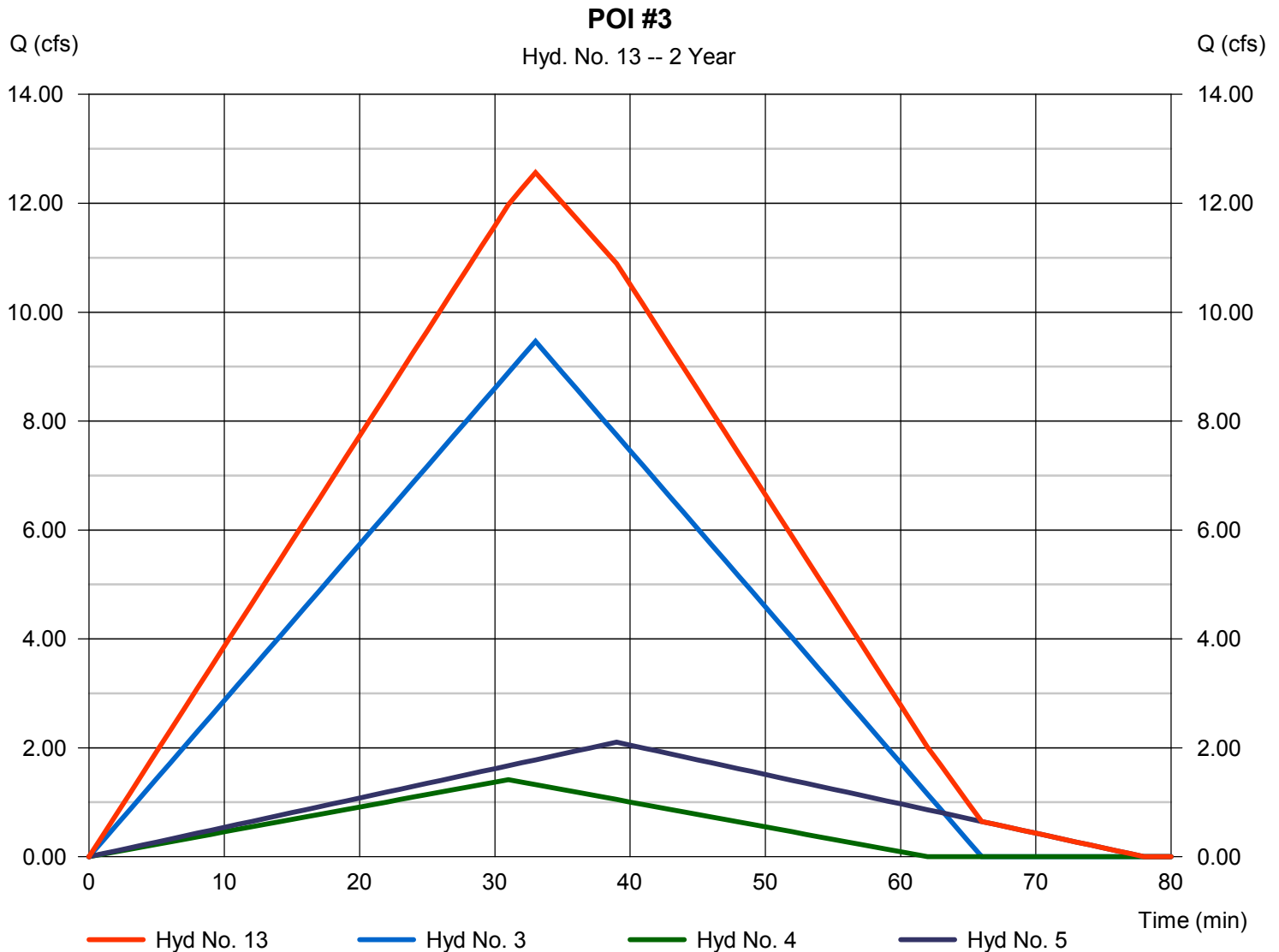
Monday, 05 / 20 / 2019

Hyd. No. 13

POI #3

Hydrograph type = Combine
Storm frequency = 2 yrs
Time interval = 1 min
Inflow hyds. = 3, 4, 5

Peak discharge = 12.57 cfs
Time to peak = 33 min
Hyd. volume = 26,289 cuft
Contrib. drain. area = 45.700 ac



Hydrograph Report

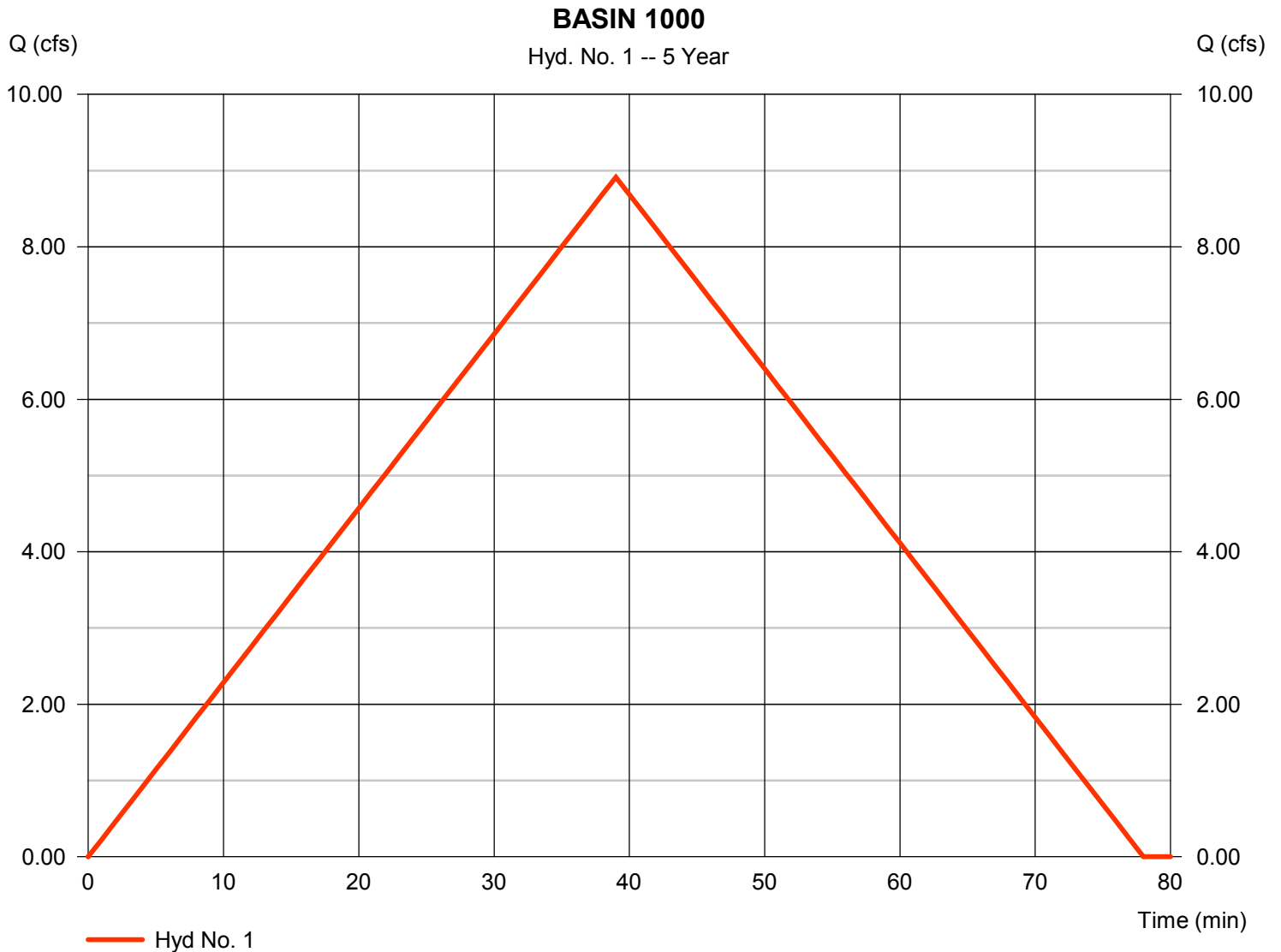
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Monday, 05 / 20 / 2019

Hyd. No. 1

BASIN 1000

Hydrograph type	= Rational	Peak discharge	= 8.914 cfs
Storm frequency	= 5 yrs	Time to peak	= 39 min
Time interval	= 1 min	Hyd. volume	= 20,860 cuft
Drainage area	= 25.600 ac	Runoff coeff.	= 0.4
Intensity	= 0.871 in/hr	Tc by TR55	= 39.00 min
IDF Curve	= 17671-PRECIP-3.IDF	Asc/Rec limb fact	= 1/1



Hydrograph Report

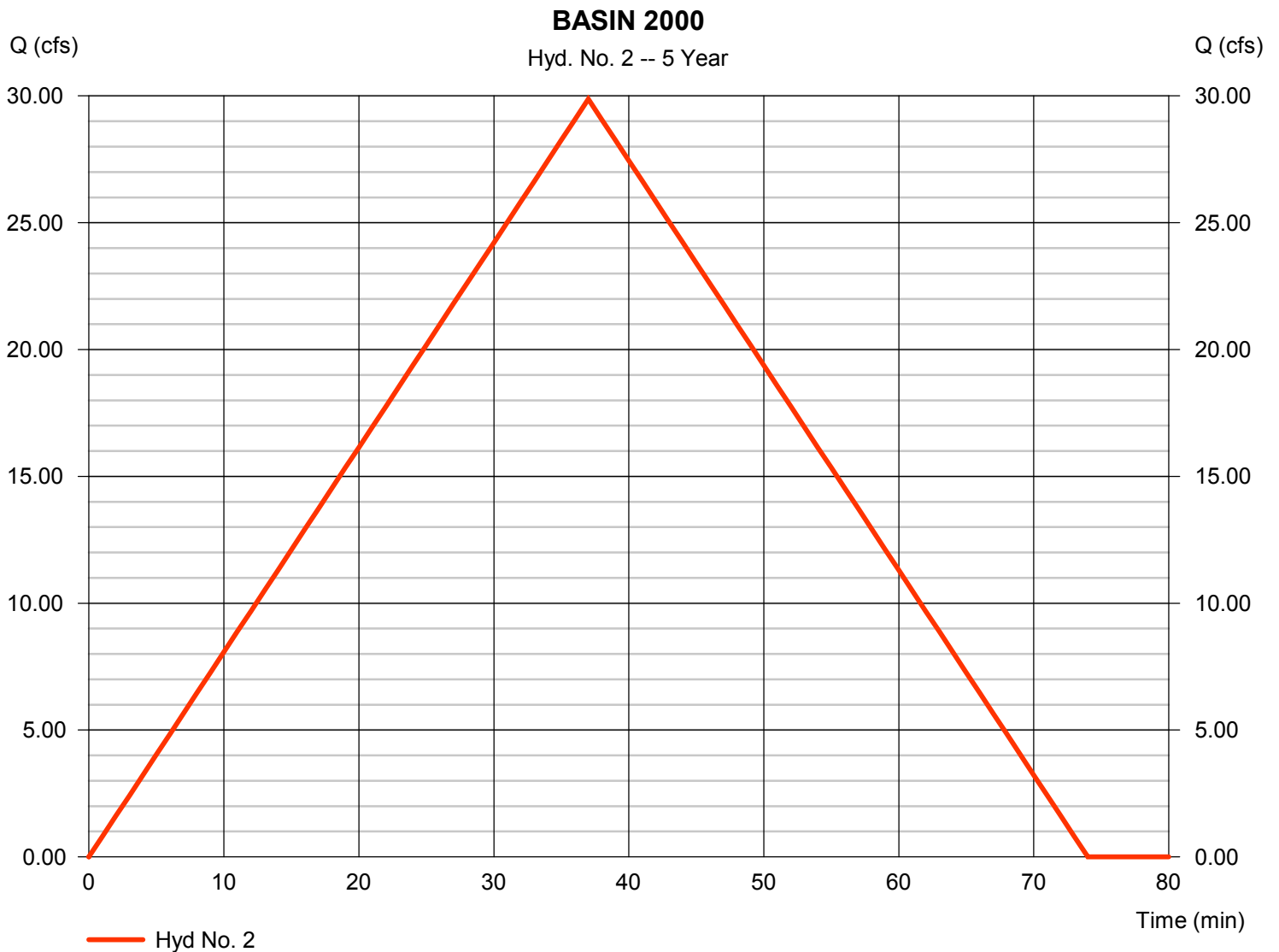
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Monday, 05 / 20 / 2019

Hyd. No. 2

BASIN 2000

Hydrograph type	= Rational	Peak discharge	= 29.87 cfs
Storm frequency	= 5 yrs	Time to peak	= 37 min
Time interval	= 1 min	Hyd. volume	= 66,312 cuft
Drainage area	= 83.800 ac	Runoff coeff.	= 0.4
Intensity	= 0.891 in/hr	Tc by TR55	= 37.00 min
IDF Curve	= 17671-PRECIP-3.IDF	Asc/Rec limb fact	= 1/1



Hydrograph Report

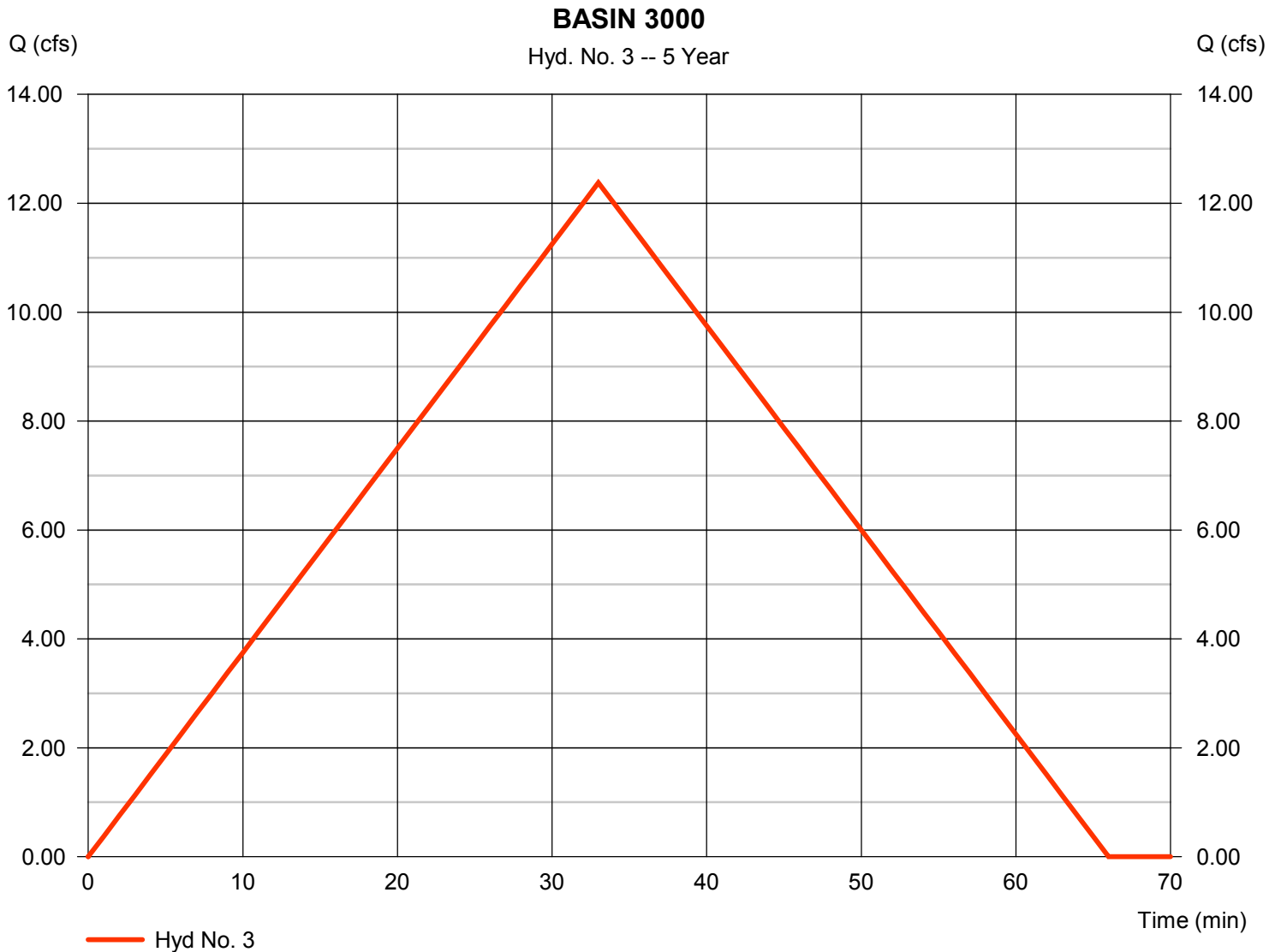
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Monday, 05 / 20 / 2019

Hyd. No. 3

BASIN 3000

Hydrograph type	= Rational	Peak discharge	= 12.38 cfs
Storm frequency	= 5 yrs	Time to peak	= 33 min
Time interval	= 1 min	Hyd. volume	= 24,503 cuft
Drainage area	= 33.000 ac	Runoff coeff.	= 0.4
Intensity	= 0.938 in/hr	Tc by TR55	= 33.00 min
IDF Curve	= 17671-PRECIP-3.IDF	Asc/Rec limb fact	= 1/1



Hydrograph Report

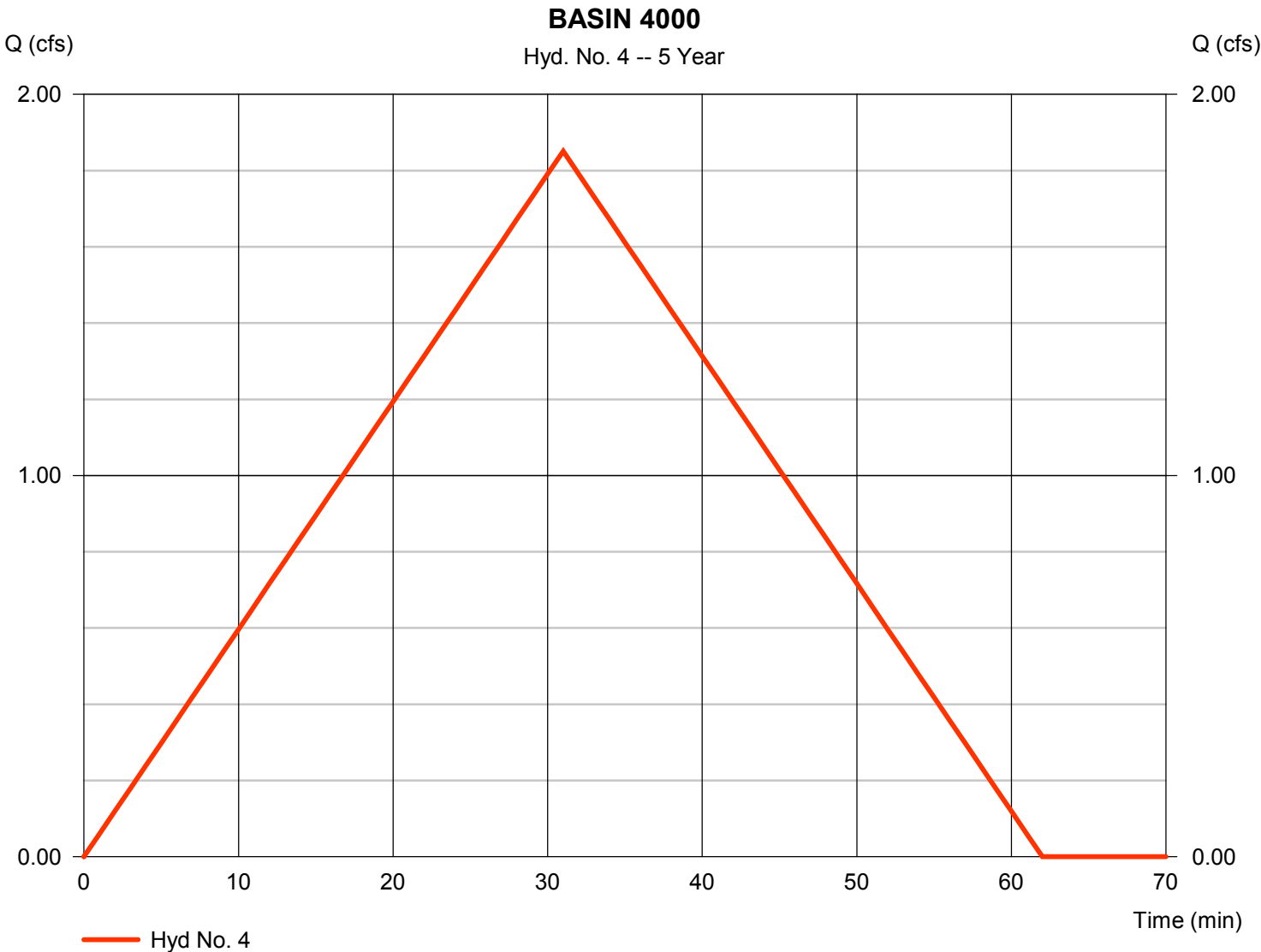
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Monday, 05 / 20 / 2019

Hyd. No. 4

BASIN 4000

Hydrograph type	= Rational	Peak discharge	= 1.851 cfs
Storm frequency	= 5 yrs	Time to peak	= 31 min
Time interval	= 1 min	Hyd. volume	= 3,442 cuft
Drainage area	= 4.800 ac	Runoff coeff.	= 0.4
Intensity	= 0.964 in/hr	Tc by TR55	= 31.00 min
IDF Curve	= 17671-PRECIP-3.IDF	Asc/Rec limb fact	= 1/1



Hydrograph Report

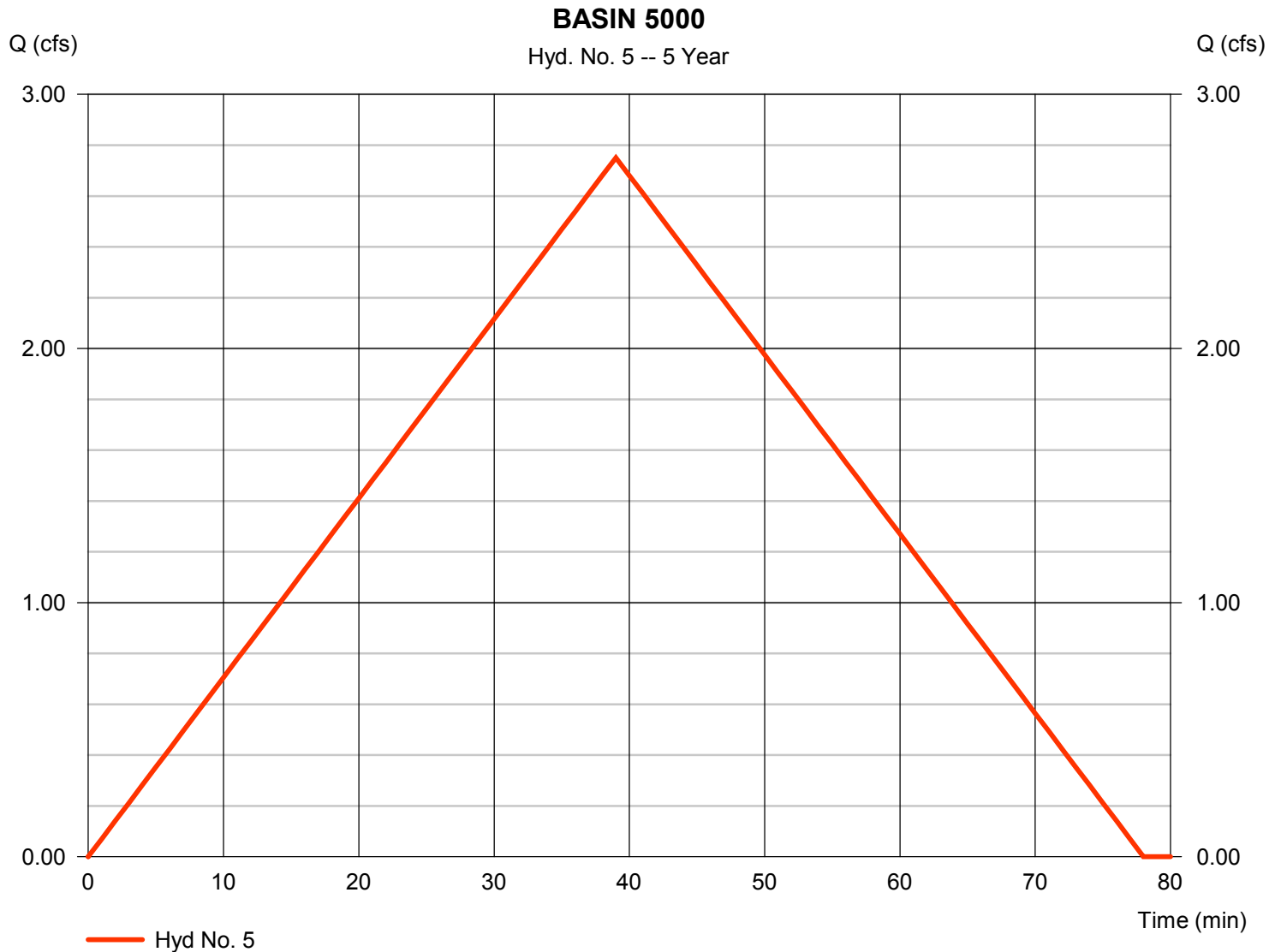
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Monday, 05 / 20 / 2019

Hyd. No. 5

BASIN 5000

Hydrograph type	= Rational	Peak discharge	= 2.751 cfs
Storm frequency	= 5 yrs	Time to peak	= 39 min
Time interval	= 1 min	Hyd. volume	= 6,437 cuft
Drainage area	= 7.900 ac	Runoff coeff.	= 0.4
Intensity	= 0.871 in/hr	Tc by TR55	= 39.00 min
IDF Curve	= 17671-PRECIP-3.IDF	Asc/Rec limb fact	= 1/1



Hydrograph Report

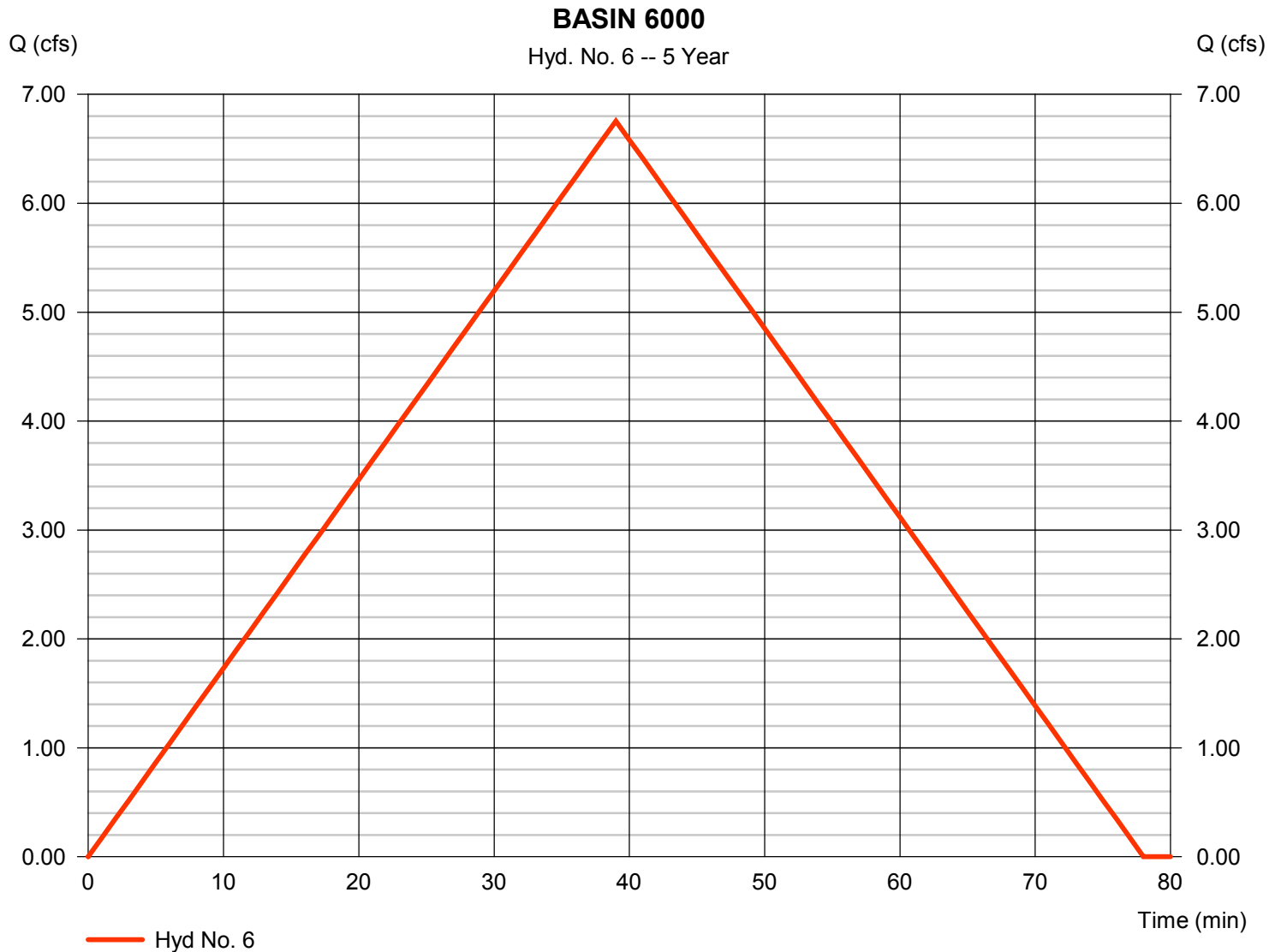
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Monday, 05 / 20 / 2019

Hyd. No. 6

BASIN 6000

Hydrograph type	= Rational	Peak discharge	= 6.755 cfs
Storm frequency	= 5 yrs	Time to peak	= 39 min
Time interval	= 1 min	Hyd. volume	= 15,808 cuft
Drainage area	= 19.400 ac	Runoff coeff.	= 0.4
Intensity	= 0.871 in/hr	Tc by TR55	= 39.00 min
IDF Curve	= 17671-PRECIP-3.IDF	Asc/Rec limb fact	= 1/1



Hydrograph Report

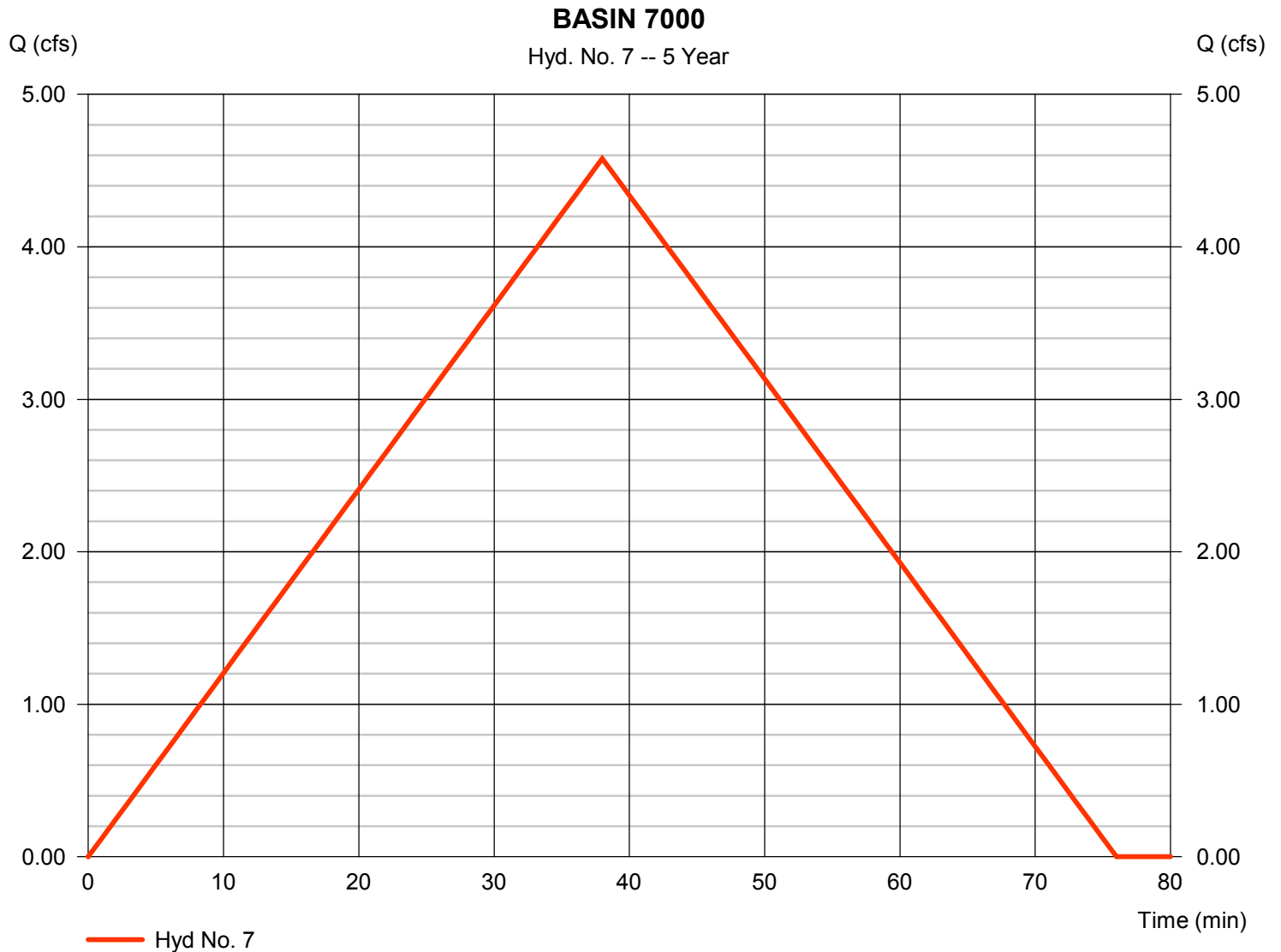
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Monday, 05 / 20 / 2019

Hyd. No. 7

BASIN 7000

Hydrograph type	= Rational	Peak discharge	= 4.579 cfs
Storm frequency	= 5 yrs	Time to peak	= 38 min
Time interval	= 1 min	Hyd. volume	= 10,441 cuft
Drainage area	= 13.000 ac	Runoff coeff.	= 0.4
Intensity	= 0.881 in/hr	Tc by TR55	= 38.00 min
IDF Curve	= 17671-PRECIP-3.IDF	Asc/Rec limb fact	= 1/1



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Monday, 05 / 20 / 2019

Hyd. No. 8

BASIN 8000

Hydrograph type	= Rational	Peak discharge	= 1.571 cfs
Storm frequency	= 5 yrs	Time to peak	= 22 min
Time interval	= 1 min	Hyd. volume	= 2,074 cuft
Drainage area	= 3.500 ac	Runoff coeff.	= 0.4
Intensity	= 1.122 in/hr	Tc by TR55	= 22.00 min
IDF Curve	= 17671-PRECIP-3.IDF	Asc/Rec limb fact	= 1/1



Hydrograph Report

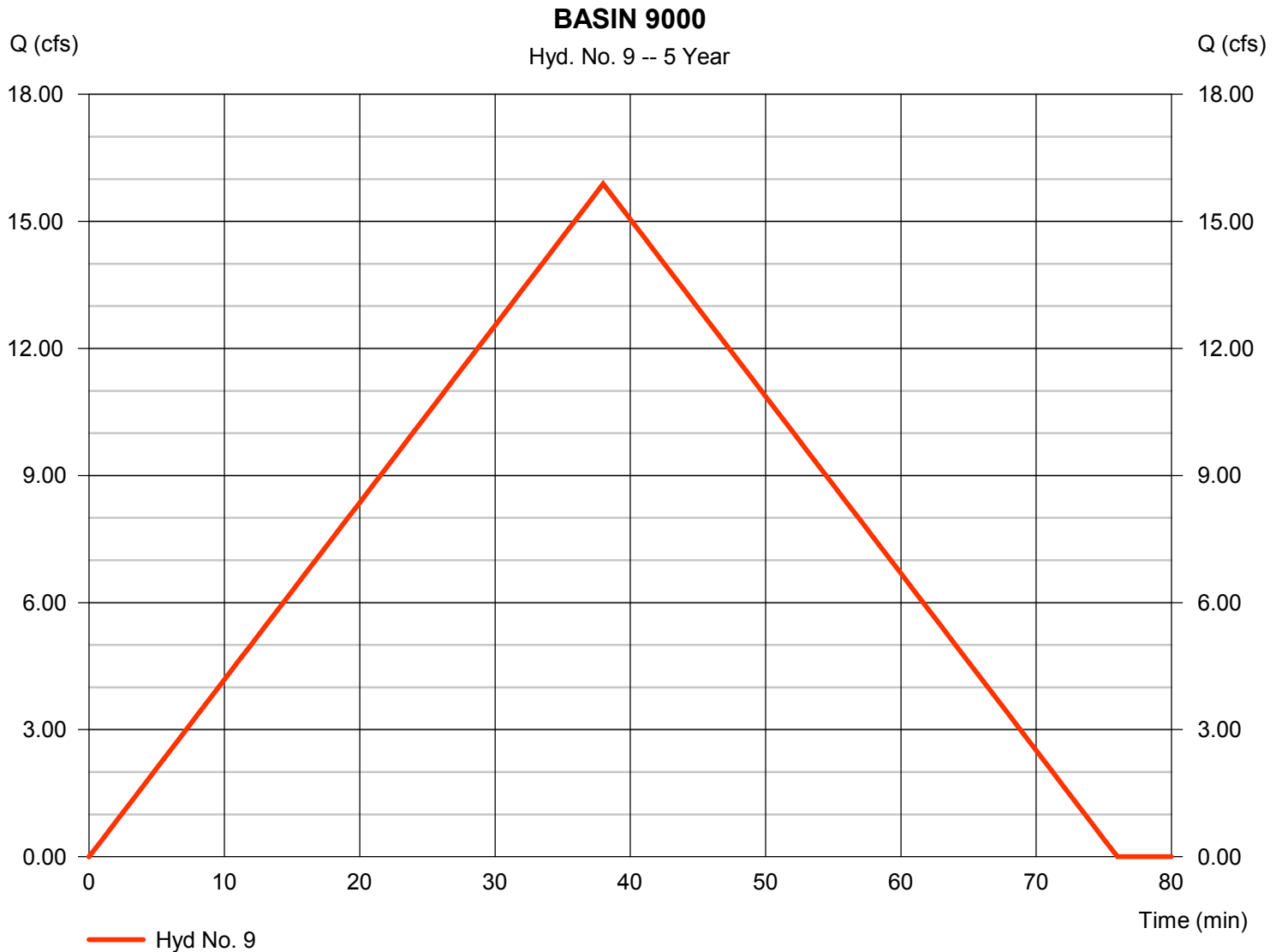
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Monday, 05 / 20 / 2019

Hyd. No. 9

BASIN 9000

Hydrograph type	= Rational	Peak discharge	= 15.89 cfs
Storm frequency	= 5 yrs	Time to peak	= 38 min
Time interval	= 1 min	Hyd. volume	= 36,222 cuft
Drainage area	= 45.100 ac	Runoff coeff.	= 0.4
Intensity	= 0.881 in/hr	Tc by TR55	= 38.00 min
IDF Curve	= 17671-PRECIP-3.IDF	Asc/Rec limb fact	= 1/1



Hydrograph Report

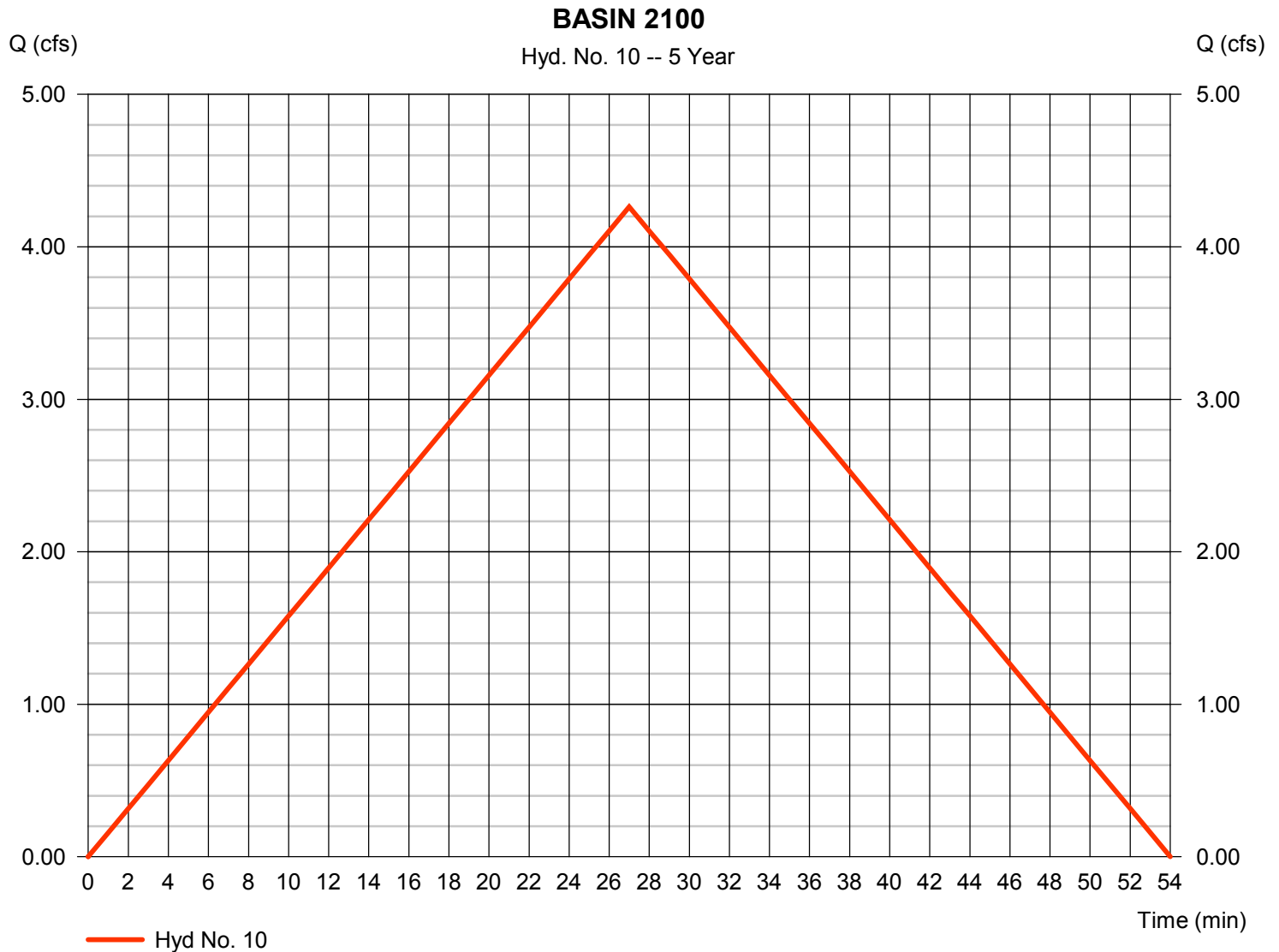
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Monday, 05 / 20 / 2019

Hyd. No. 10

BASIN 2100

Hydrograph type	= Rational	Peak discharge	= 4.263 cfs
Storm frequency	= 5 yrs	Time to peak	= 27 min
Time interval	= 1 min	Hyd. volume	= 6,906 cuft
Drainage area	= 10.400 ac	Runoff coeff.	= 0.4
Intensity	= 1.025 in/hr	Tc by TR55	= 27.00 min
IDF Curve	= 17671-PRECIP-3.IDF	Asc/Rec limb fact	= 1/1



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

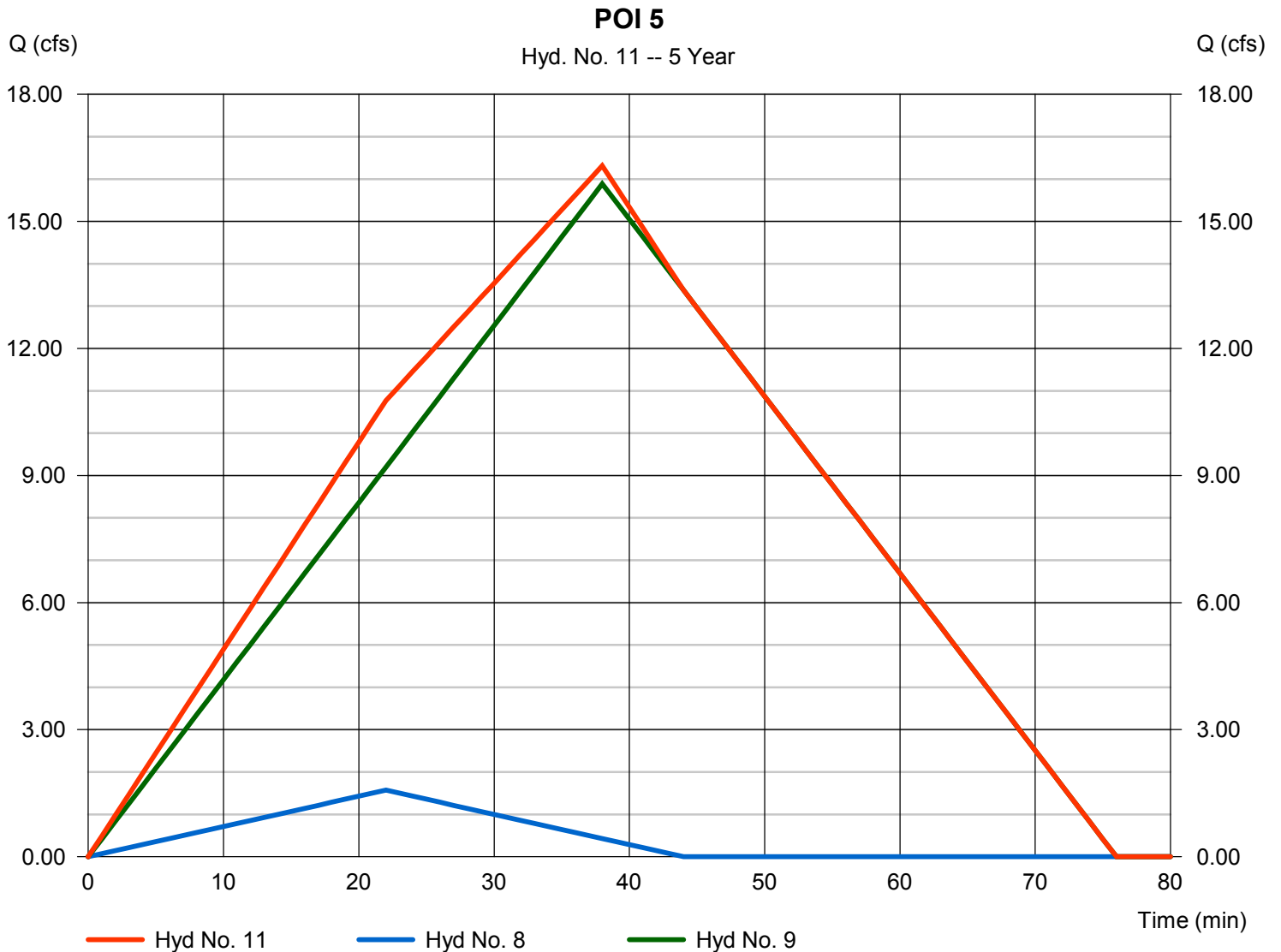
Monday, 05 / 20 / 2019

Hyd. No. 11

POI 5

Hydrograph type = Combine
Storm frequency = 5 yrs
Time interval = 1 min
Inflow hyds. = 8, 9

Peak discharge = 16.32 cfs
Time to peak = 38 min
Hyd. volume = 38,295 cuft
Contrib. drain. area = 48.600 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

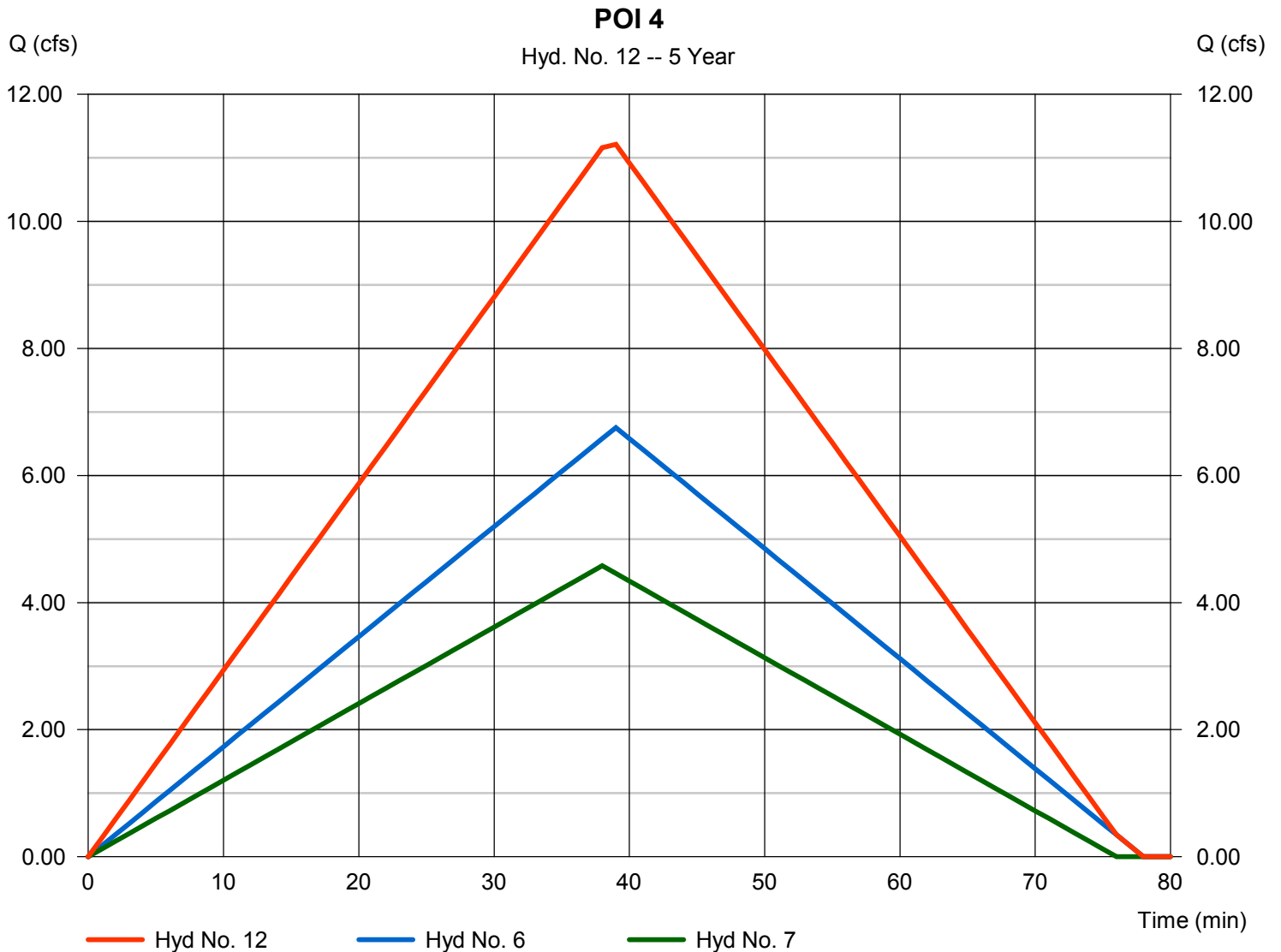
Monday, 05 / 20 / 2019

Hyd. No. 12

POI 4

Hydrograph type = Combine
 Storm frequency = 5 yrs
 Time interval = 1 min
 Inflow hyds. = 6, 7

Peak discharge = 11.21 cfs
 Time to peak = 39 min
 Hyd. volume = 26,249 cuft
 Contrib. drain. area = 32.400 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

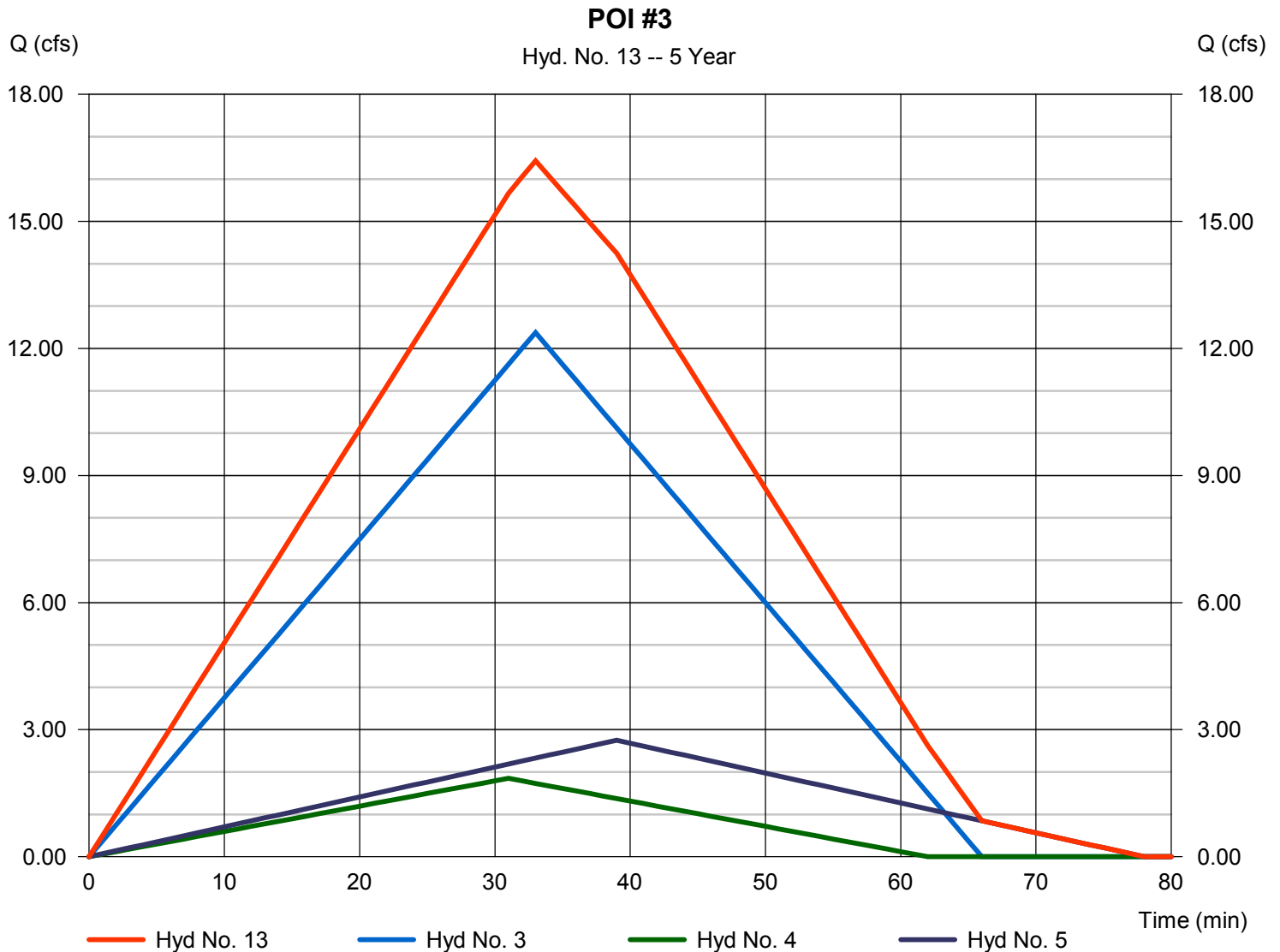
Monday, 05 / 20 / 2019

Hyd. No. 13

POI #3

Hydrograph type = Combine
Storm frequency = 5 yrs
Time interval = 1 min
Inflow hyds. = 3, 4, 5

Peak discharge = 16.43 cfs
Time to peak = 33 min
Hyd. volume = 34,382 cuft
Contrib. drain. area = 45.700 ac



Hydrograph Report

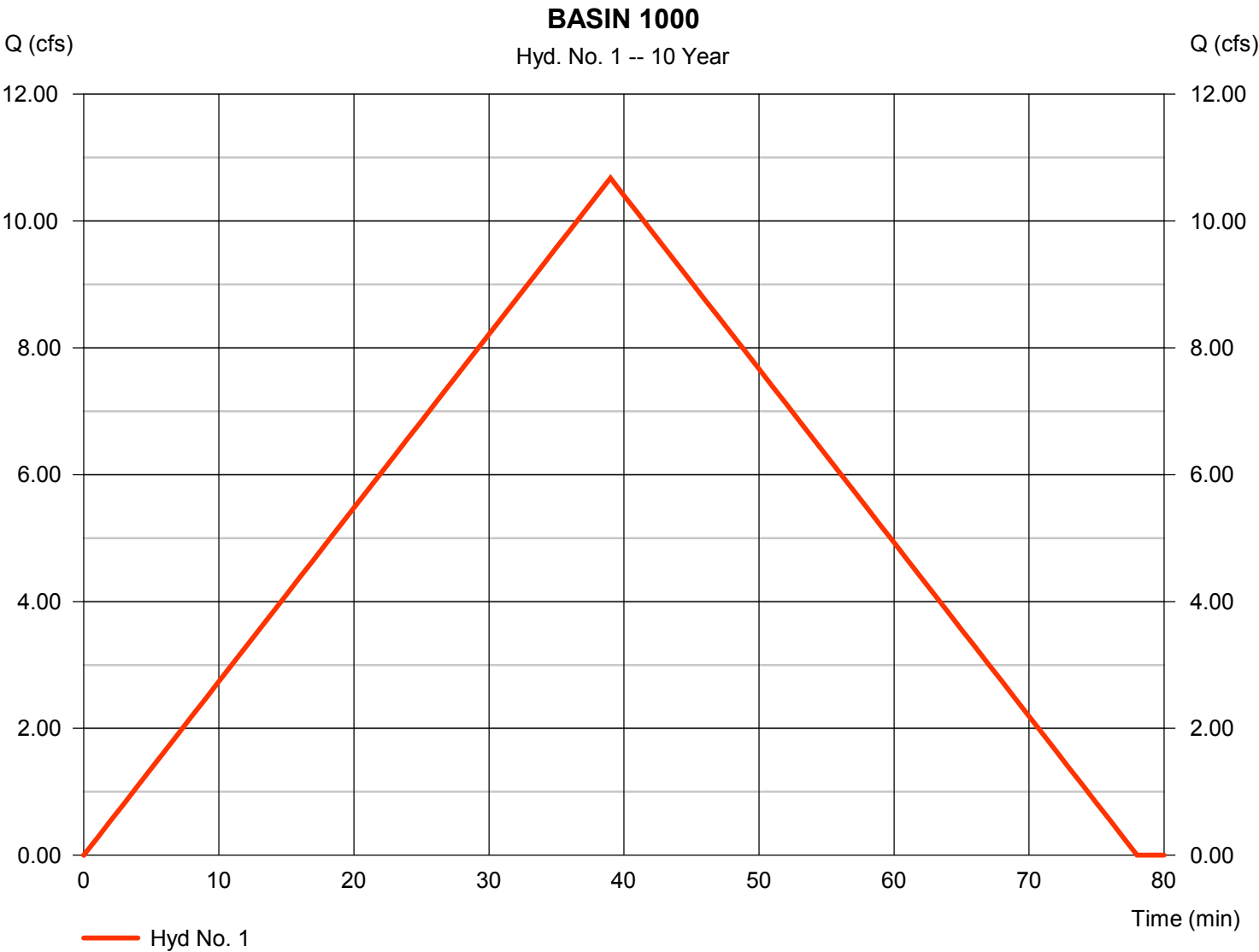
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Monday, 05 / 20 / 2019

Hyd. No. 1

BASIN 1000

Hydrograph type	= Rational	Peak discharge	= 10.68 cfs
Storm frequency	= 10 yrs	Time to peak	= 39 min
Time interval	= 1 min	Hyd. volume	= 24,986 cuft
Drainage area	= 25.600 ac	Runoff coeff.	= 0.4
Intensity	= 1.043 in/hr	Tc by TR55	= 39.00 min
IDF Curve	= 17671-PRECIP-3.IDF	Asc/Rec limb fact	= 1/1



Hydrograph Report

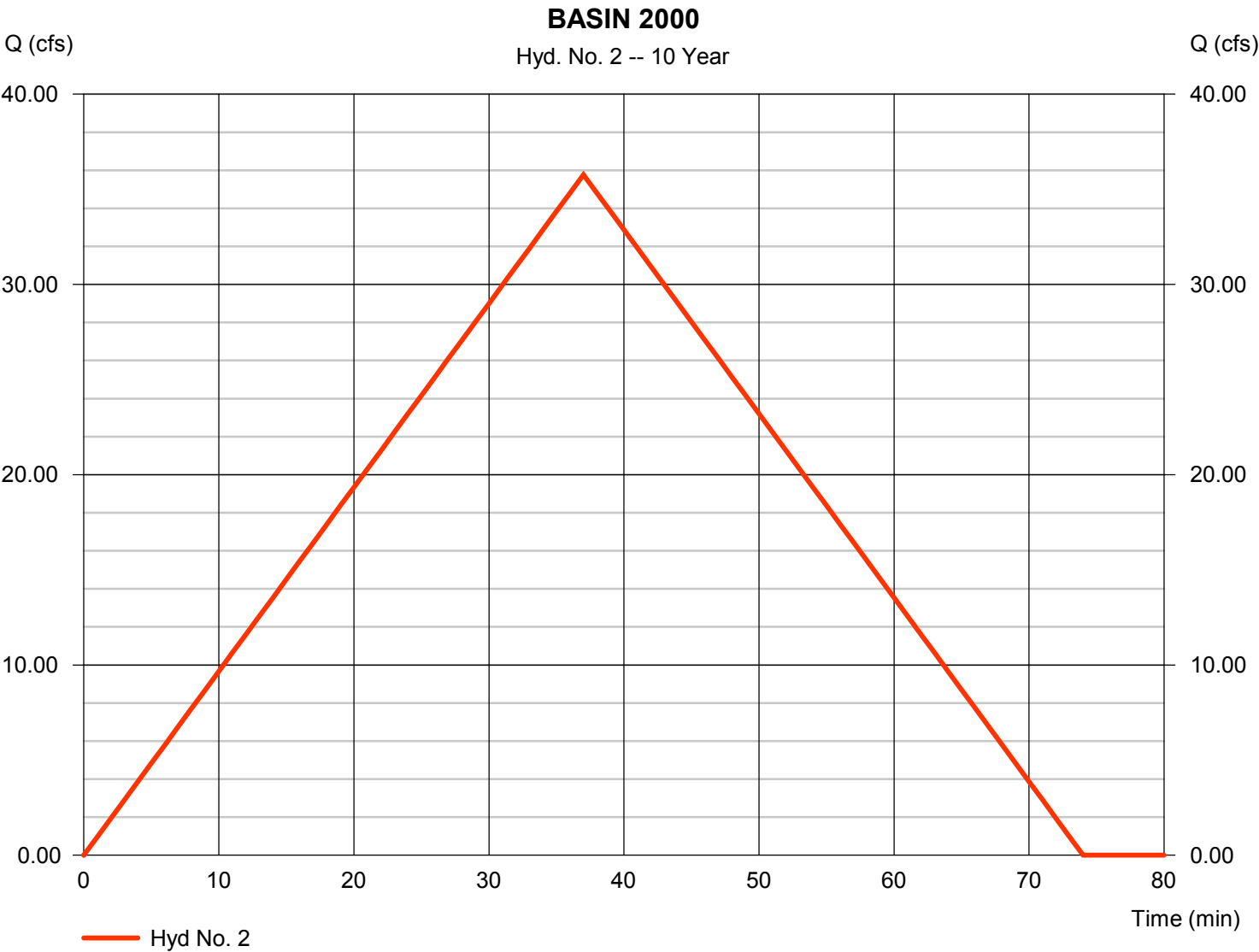
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Monday, 05 / 20 / 2019

Hyd. No. 2

BASIN 2000

Hydrograph type	= Rational	Peak discharge	= 35.77 cfs
Storm frequency	= 10 yrs	Time to peak	= 37 min
Time interval	= 1 min	Hyd. volume	= 79,410 cuft
Drainage area	= 83.800 ac	Runoff coeff.	= 0.4
Intensity	= 1.067 in/hr	Tc by TR55	= 37.00 min
IDF Curve	= 17671-PRECIP-3.IDF	Asc/Rec limb fact	= 1/1



Hydrograph Report

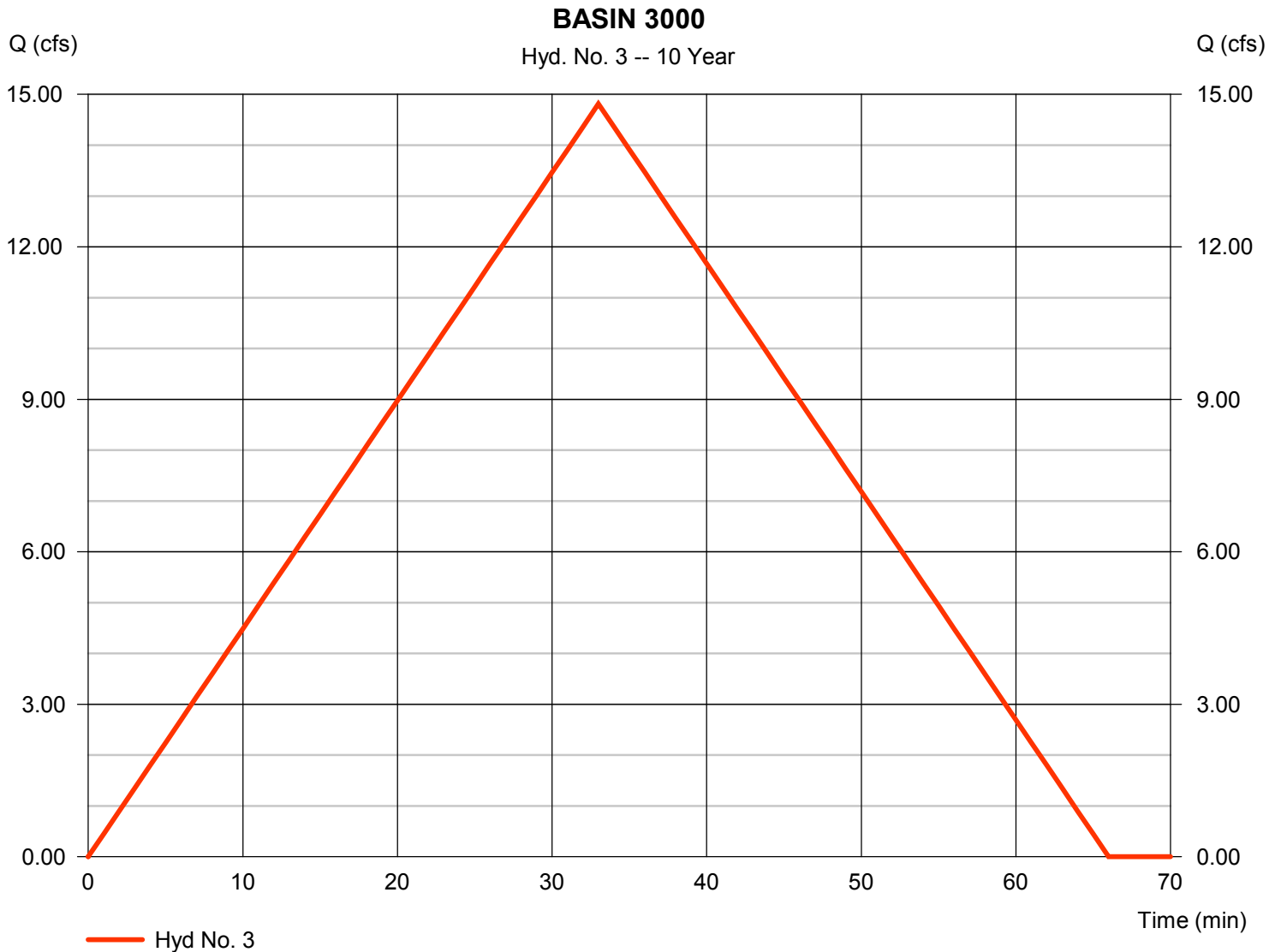
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Monday, 05 / 20 / 2019

Hyd. No. 3

BASIN 3000

Hydrograph type	= Rational	Peak discharge	= 14.81 cfs
Storm frequency	= 10 yrs	Time to peak	= 33 min
Time interval	= 1 min	Hyd. volume	= 29,327 cuft
Drainage area	= 33.000 ac	Runoff coeff.	= 0.4
Intensity	= 1.122 in/hr	Tc by TR55	= 33.00 min
IDF Curve	= 17671-PRECIP-3.IDF	Asc/Rec limb fact	= 1/1



Hydrograph Report

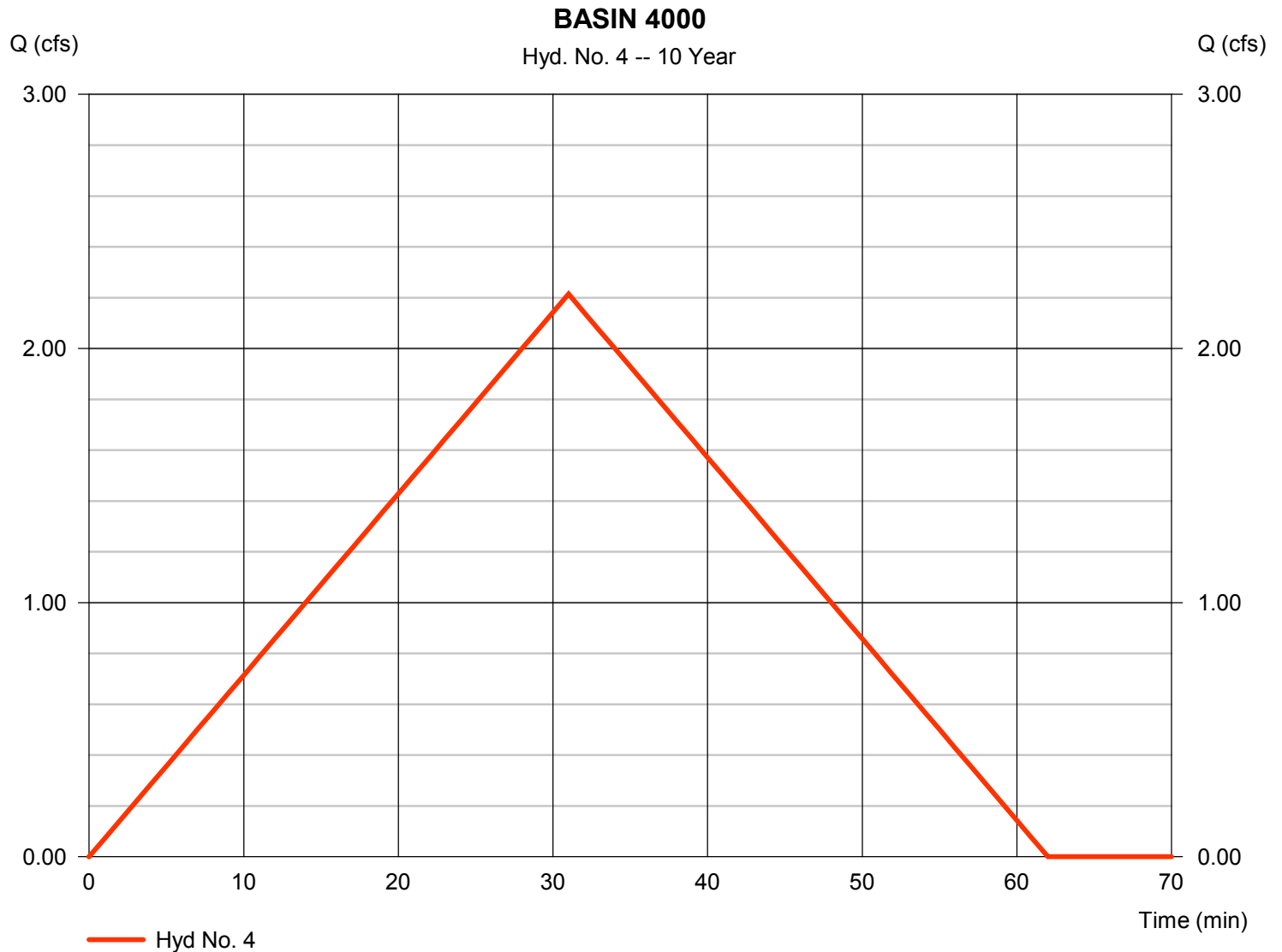
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Monday, 05 / 20 / 2019

Hyd. No. 4

BASIN 4000

Hydrograph type	= Rational	Peak discharge	= 2.214 cfs
Storm frequency	= 10 yrs	Time to peak	= 31 min
Time interval	= 1 min	Hyd. volume	= 4,119 cuft
Drainage area	= 4.800 ac	Runoff coeff.	= 0.4
Intensity	= 1.153 in/hr	Tc by TR55	= 31.00 min
IDF Curve	= 17671-PRECIP-3.IDF	Asc/Rec limb fact	= 1/1



Hydrograph Report

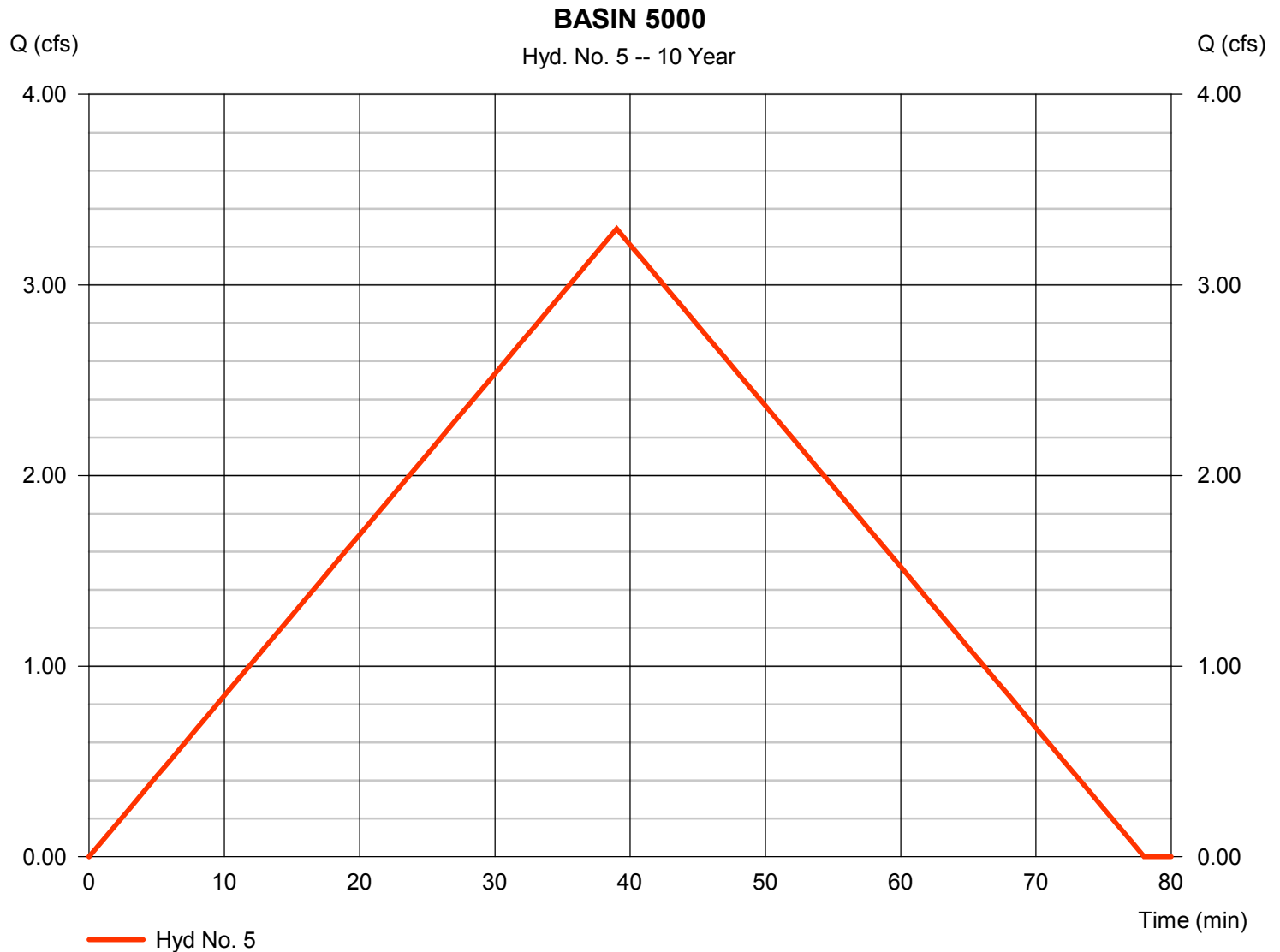
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Monday, 05 / 20 / 2019

Hyd. No. 5

BASIN 5000

Hydrograph type	= Rational	Peak discharge	= 3.295 cfs
Storm frequency	= 10 yrs	Time to peak	= 39 min
Time interval	= 1 min	Hyd. volume	= 7,711 cuft
Drainage area	= 7.900 ac	Runoff coeff.	= 0.4
Intensity	= 1.043 in/hr	Tc by TR55	= 39.00 min
IDF Curve	= 17671-PRECIP-3.IDF	Asc/Rec limb fact	= 1/1



Hydrograph Report

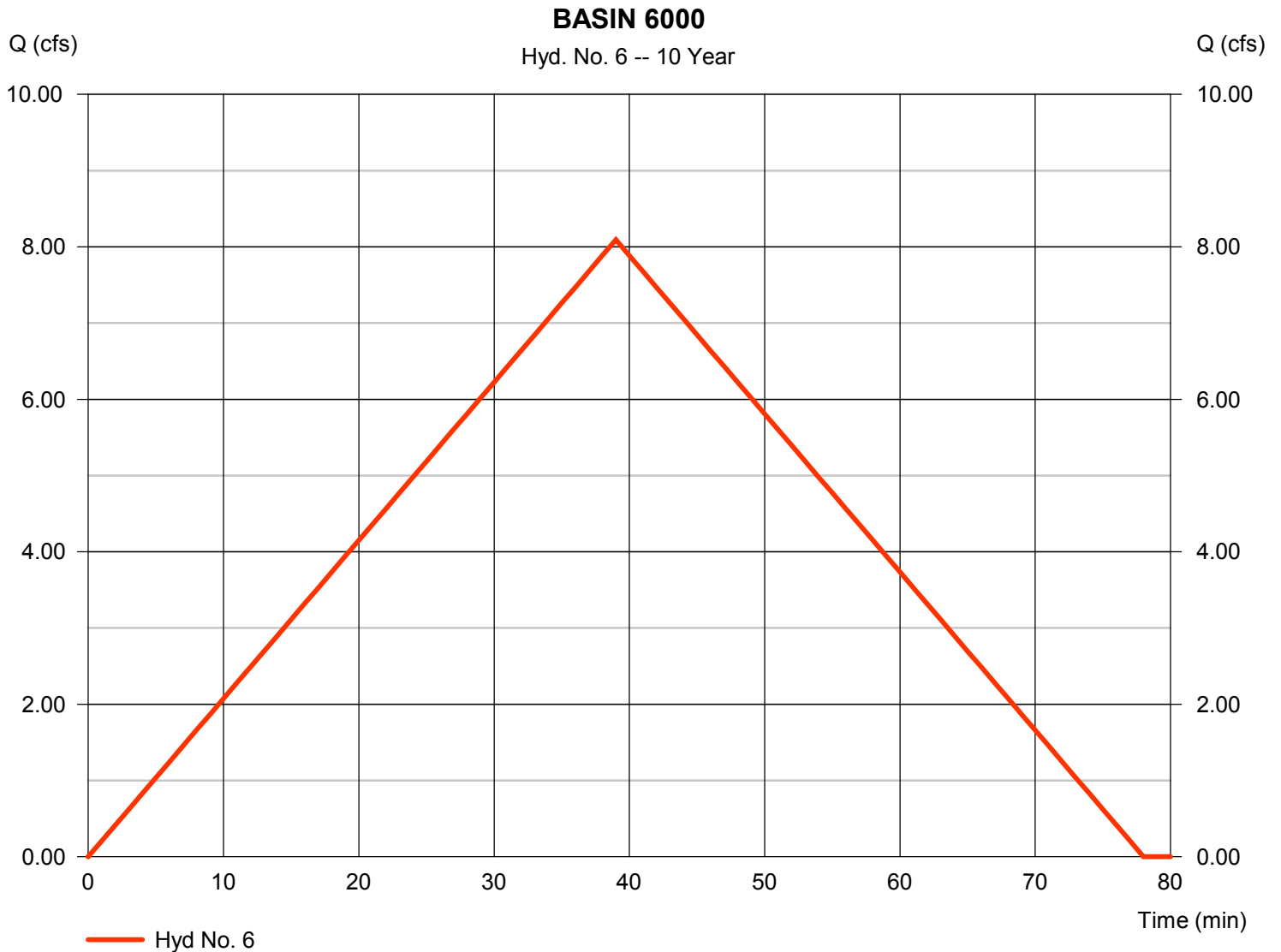
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Monday, 05 / 20 / 2019

Hyd. No. 6

BASIN 6000

Hydrograph type	= Rational	Peak discharge	= 8.092 cfs
Storm frequency	= 10 yrs	Time to peak	= 39 min
Time interval	= 1 min	Hyd. volume	= 18,935 cuft
Drainage area	= 19.400 ac	Runoff coeff.	= 0.4
Intensity	= 1.043 in/hr	Tc by TR55	= 39.00 min
IDF Curve	= 17671-PRECIP-3.IDF	Asc/Rec limb fact	= 1/1



Hydrograph Report

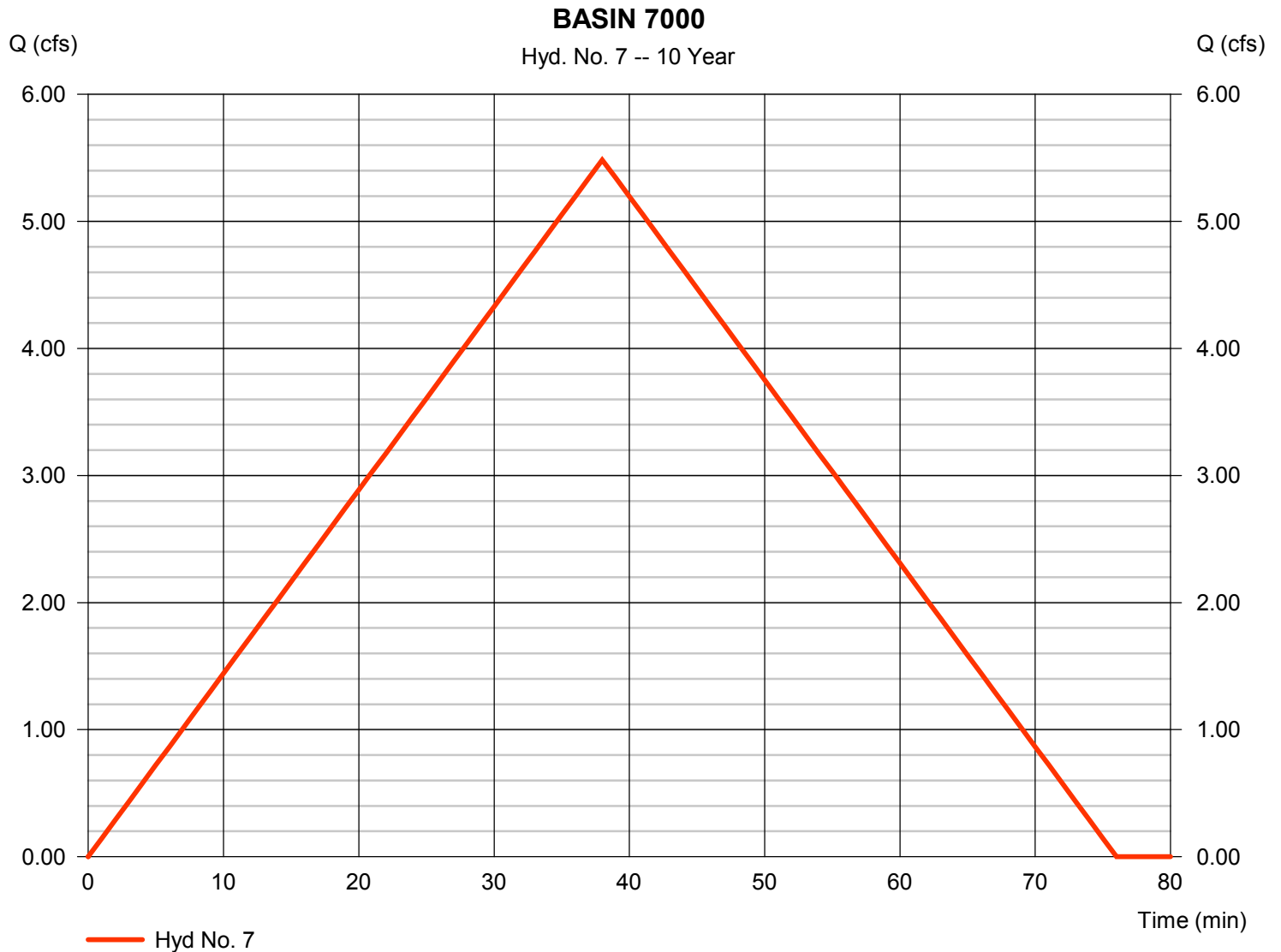
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Monday, 05 / 20 / 2019

Hyd. No. 7

BASIN 7000

Hydrograph type	= Rational	Peak discharge	= 5.485 cfs
Storm frequency	= 10 yrs	Time to peak	= 38 min
Time interval	= 1 min	Hyd. volume	= 12,505 cuft
Drainage area	= 13.000 ac	Runoff coeff.	= 0.4
Intensity	= 1.055 in/hr	Tc by TR55	= 38.00 min
IDF Curve	= 17671-PRECIP-3.IDF	Asc/Rec limb fact	= 1/1



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Monday, 05 / 20 / 2019

Hyd. No. 8

BASIN 8000

Hydrograph type	= Rational	Peak discharge	= 1.877 cfs
Storm frequency	= 10 yrs	Time to peak	= 22 min
Time interval	= 1 min	Hyd. volume	= 2,477 cuft
Drainage area	= 3.500 ac	Runoff coeff.	= 0.4
Intensity	= 1.340 in/hr	Tc by TR55	= 22.00 min
IDF Curve	= 17671-PRECIP-3.IDF	Asc/Rec limb fact	= 1/1



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Monday, 05 / 20 / 2019

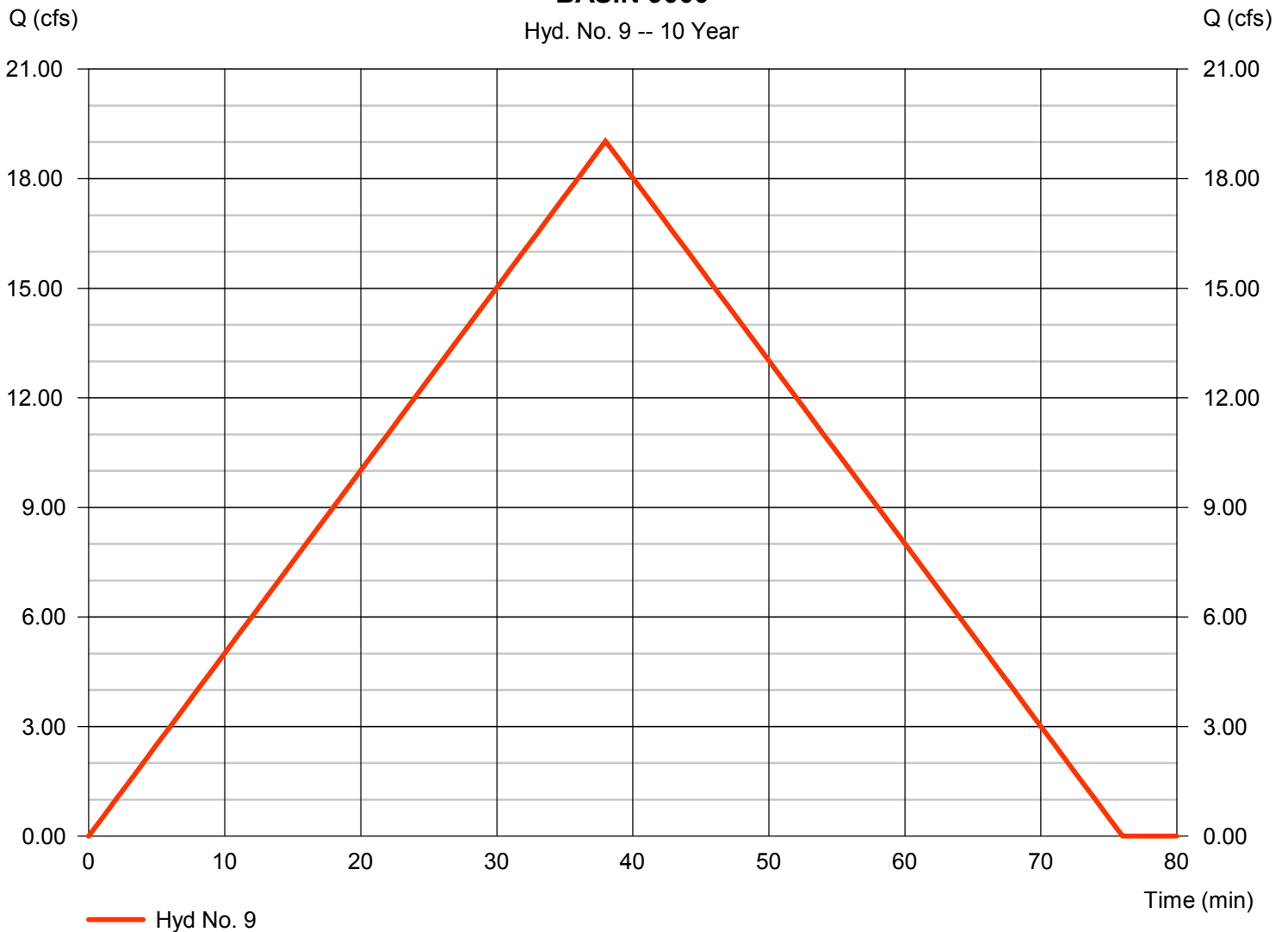
Hyd. No. 9

BASIN 9000

Hydrograph type	= Rational	Peak discharge	= 19.03 cfs
Storm frequency	= 10 yrs	Time to peak	= 38 min
Time interval	= 1 min	Hyd. volume	= 43,382 cuft
Drainage area	= 45.100 ac	Runoff coeff.	= 0.4
Intensity	= 1.055 in/hr	Tc by TR55	= 38.00 min
IDF Curve	= 17671-PRECIP-3.IDF	Asc/Rec limb fact	= 1/1

BASIN 9000

Hyd. No. 9 -- 10 Year



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Monday, 05 / 20 / 2019

Hyd. No. 10

BASIN 2100

Hydrograph type	= Rational	Peak discharge	= 5.097 cfs
Storm frequency	= 10 yrs	Time to peak	= 27 min
Time interval	= 1 min	Hyd. volume	= 8,258 cuft
Drainage area	= 10.400 ac	Runoff coeff.	= 0.4
Intensity	= 1.225 in/hr	Tc by TR55	= 27.00 min
IDF Curve	= 17671-PRECIP-3.IDF	Asc/Rec limb fact	= 1/1



Hydrograph Report

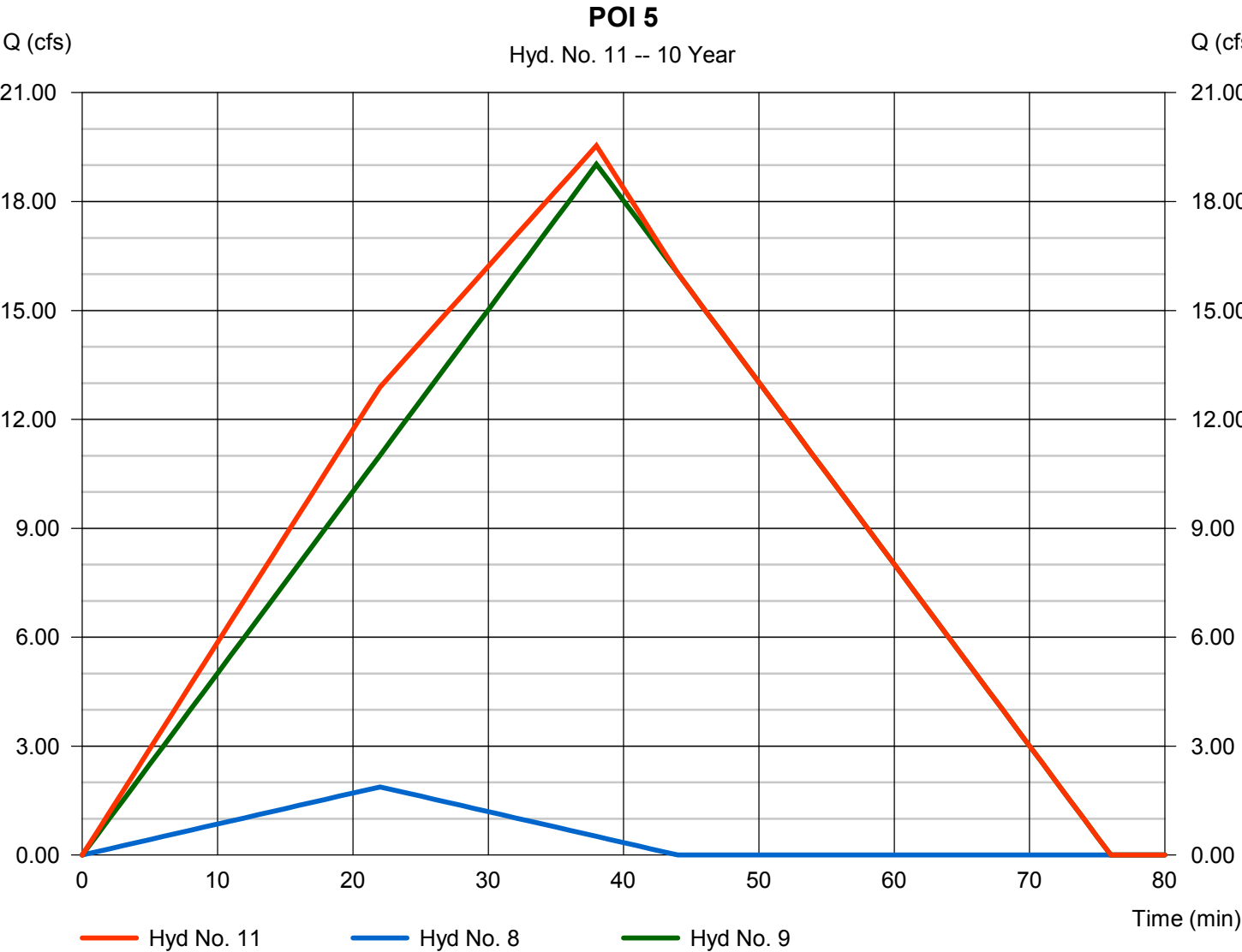
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Monday, 05 / 20 / 2019

Hyd. No. 11

POI 5

Hydrograph type	= Combine	Peak discharge	= 19.54 cfs
Storm frequency	= 10 yrs	Time to peak	= 38 min
Time interval	= 1 min	Hyd. volume	= 45,859 cuft
Inflow hyds.	= 8, 9	Contrib. drain. area	= 48.600 ac



Hydrograph Report

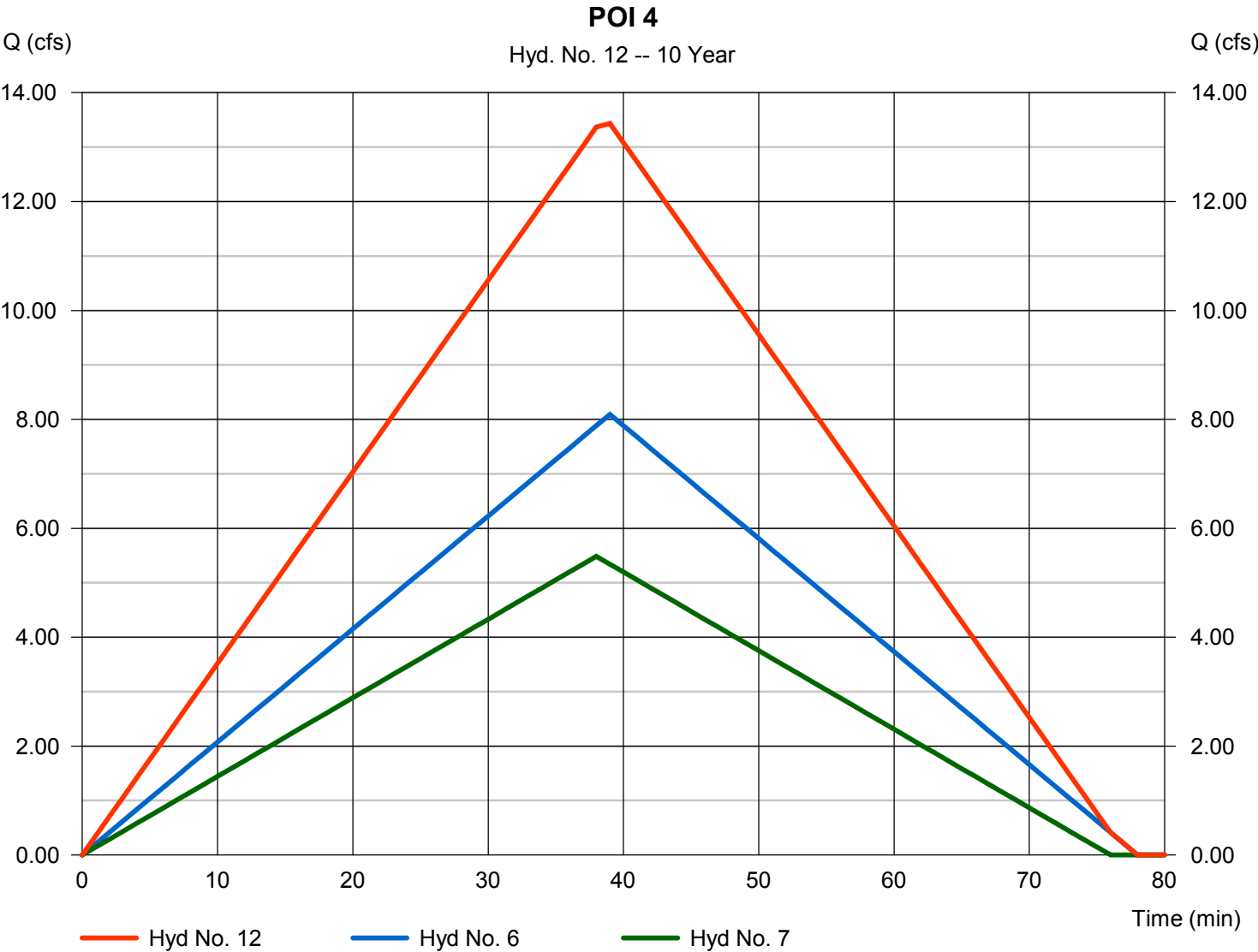
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Monday, 05 / 20 / 2019

Hyd. No. 12

POI 4

Hydrograph type	= Combine	Peak discharge	= 13.43 cfs
Storm frequency	= 10 yrs	Time to peak	= 39 min
Time interval	= 1 min	Hyd. volume	= 31,439 cuft
Inflow hyds.	= 6, 7	Contrib. drain. area	= 32.400 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

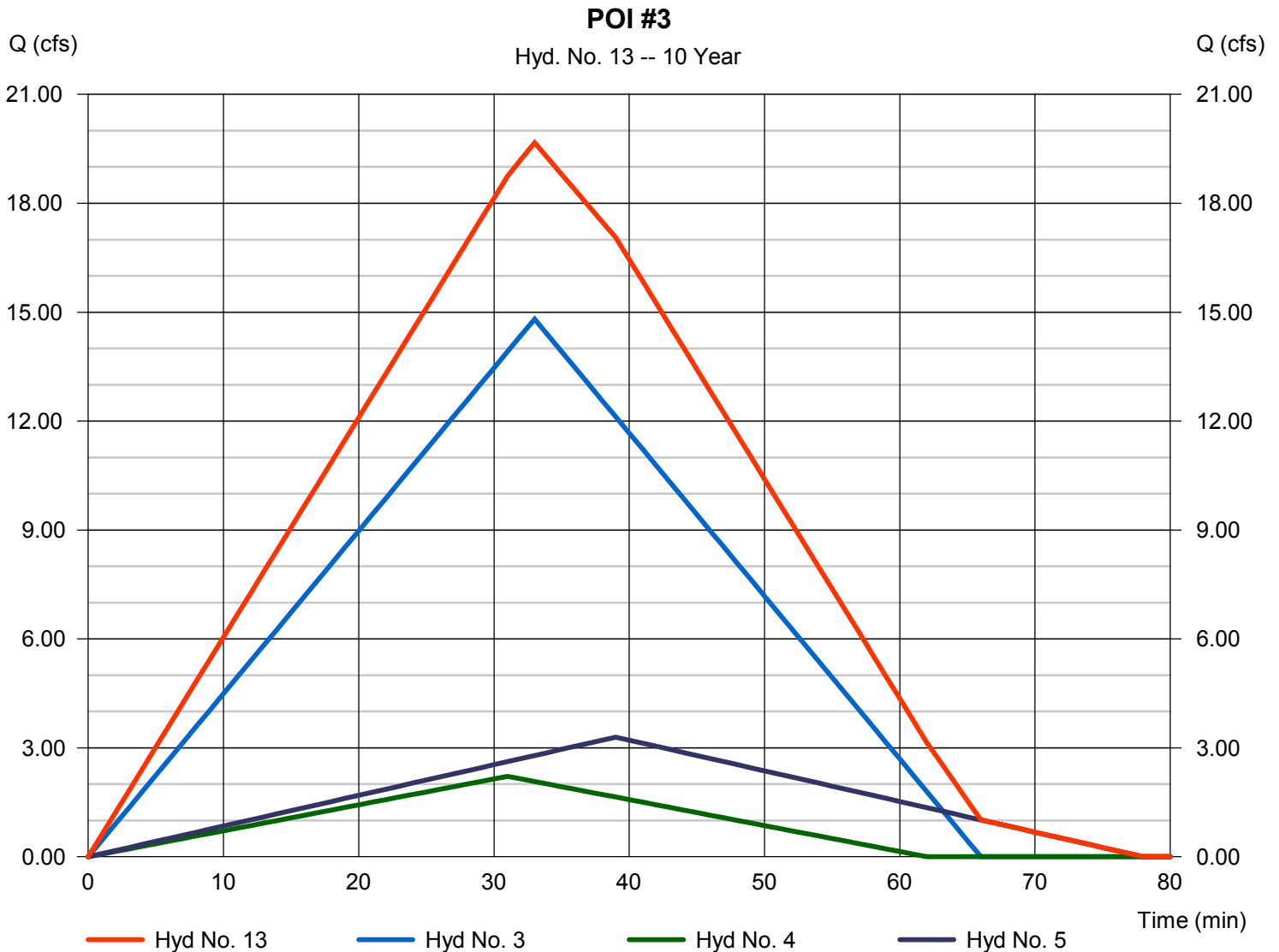
Monday, 05 / 20 / 2019

Hyd. No. 13

POI #3

Hydrograph type = Combine
 Storm frequency = 10 yrs
 Time interval = 1 min
 Inflow hyds. = 3, 4, 5

Peak discharge = 19.67 cfs
 Time to peak = 33 min
 Hyd. volume = 41,156 cuft
 Contrib. drain. area = 45.700 ac



Hydrograph Report

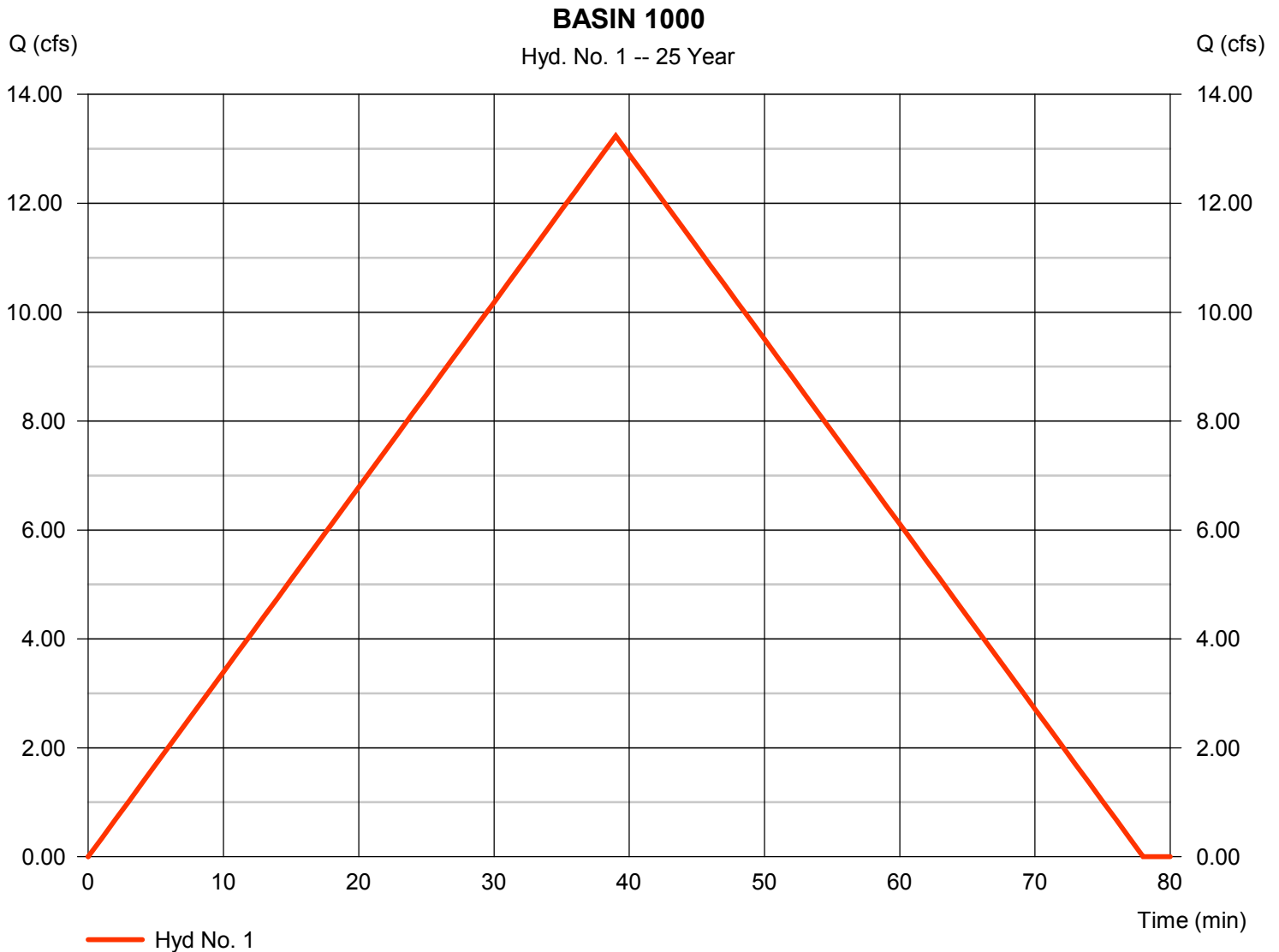
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Monday, 05 / 20 / 2019

Hyd. No. 1

BASIN 1000

Hydrograph type	= Rational	Peak discharge	= 13.24 cfs
Storm frequency	= 25 yrs	Time to peak	= 39 min
Time interval	= 1 min	Hyd. volume	= 30,971 cuft
Drainage area	= 25.600 ac	Runoff coeff.	= 0.4
Intensity	= 1.293 in/hr	Tc by TR55	= 39.00 min
IDF Curve	= 17671-PRECIP-3.IDF	Asc/Rec limb fact	= 1/1



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Monday, 05 / 20 / 2019

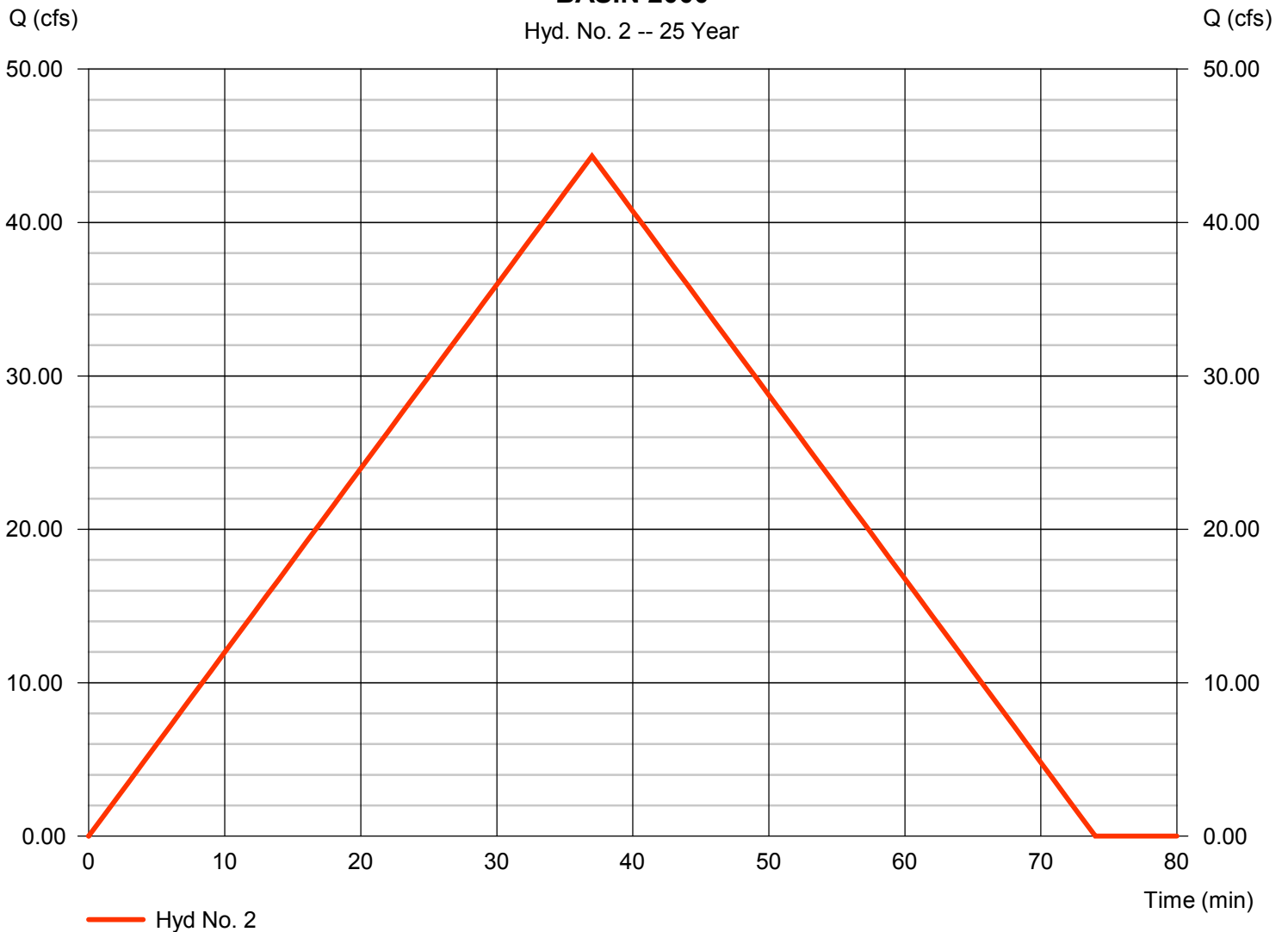
Hyd. No. 2

BASIN 2000

Hydrograph type	= Rational	Peak discharge	= 44.34 cfs
Storm frequency	= 25 yrs	Time to peak	= 37 min
Time interval	= 1 min	Hyd. volume	= 98,427 cuft
Drainage area	= 83.800 ac	Runoff coeff.	= 0.4
Intensity	= 1.323 in/hr	Tc by TR55	= 37.00 min
IDF Curve	= 17671-PRECIP-3.IDF	Asc/Rec limb fact	= 1/1

BASIN 2000

Hyd. No. 2 -- 25 Year



Hydrograph Report

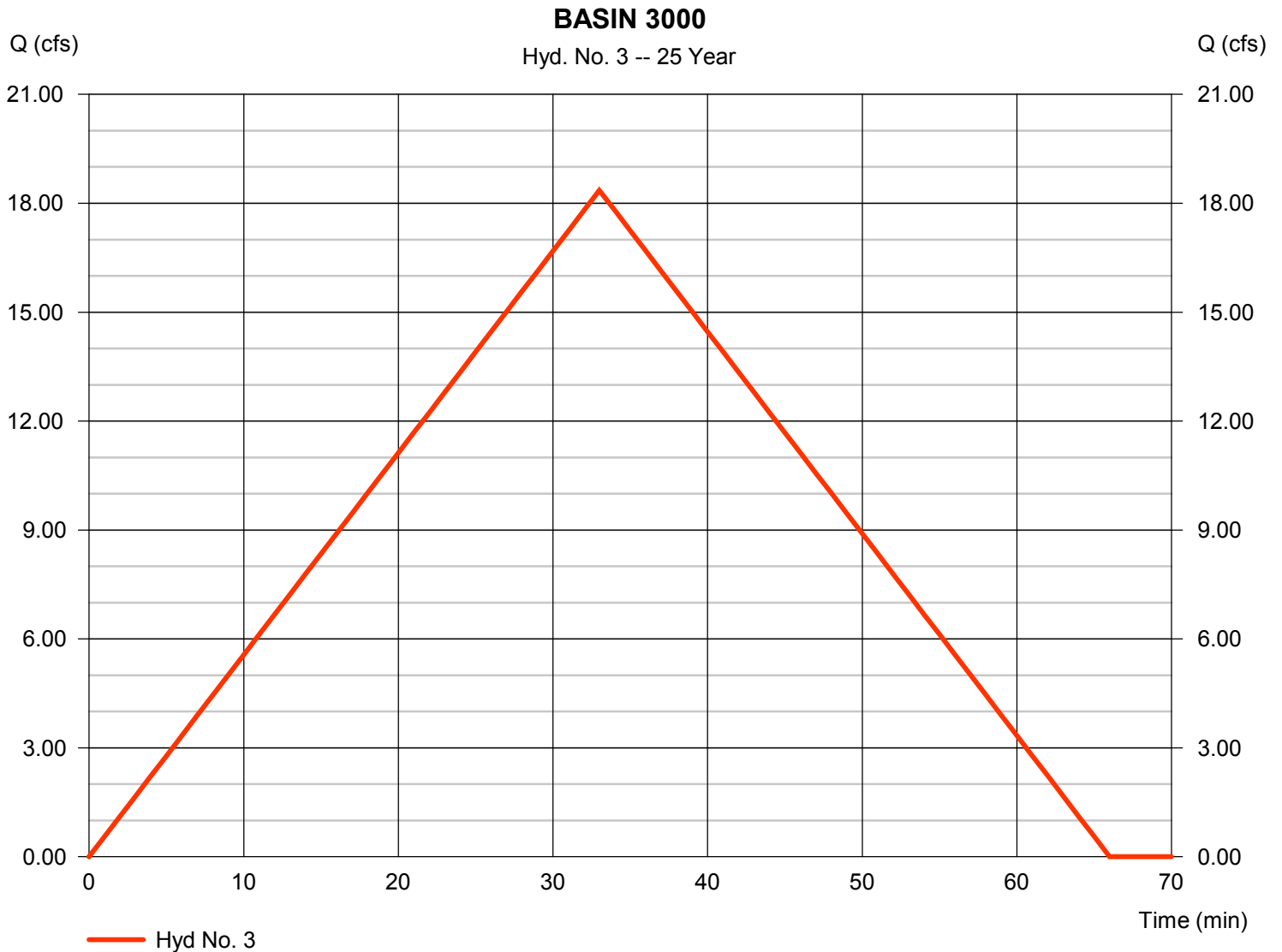
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Monday, 05 / 20 / 2019

Hyd. No. 3

BASIN 3000

Hydrograph type	= Rational	Peak discharge	= 18.36 cfs
Storm frequency	= 25 yrs	Time to peak	= 33 min
Time interval	= 1 min	Hyd. volume	= 36,347 cuft
Drainage area	= 33.000 ac	Runoff coeff.	= 0.4
Intensity	= 1.391 in/hr	Tc by TR55	= 33.00 min
IDF Curve	= 17671-PRECIP-3.IDF	Asc/Rec limb fact	= 1/1



Hydrograph Report

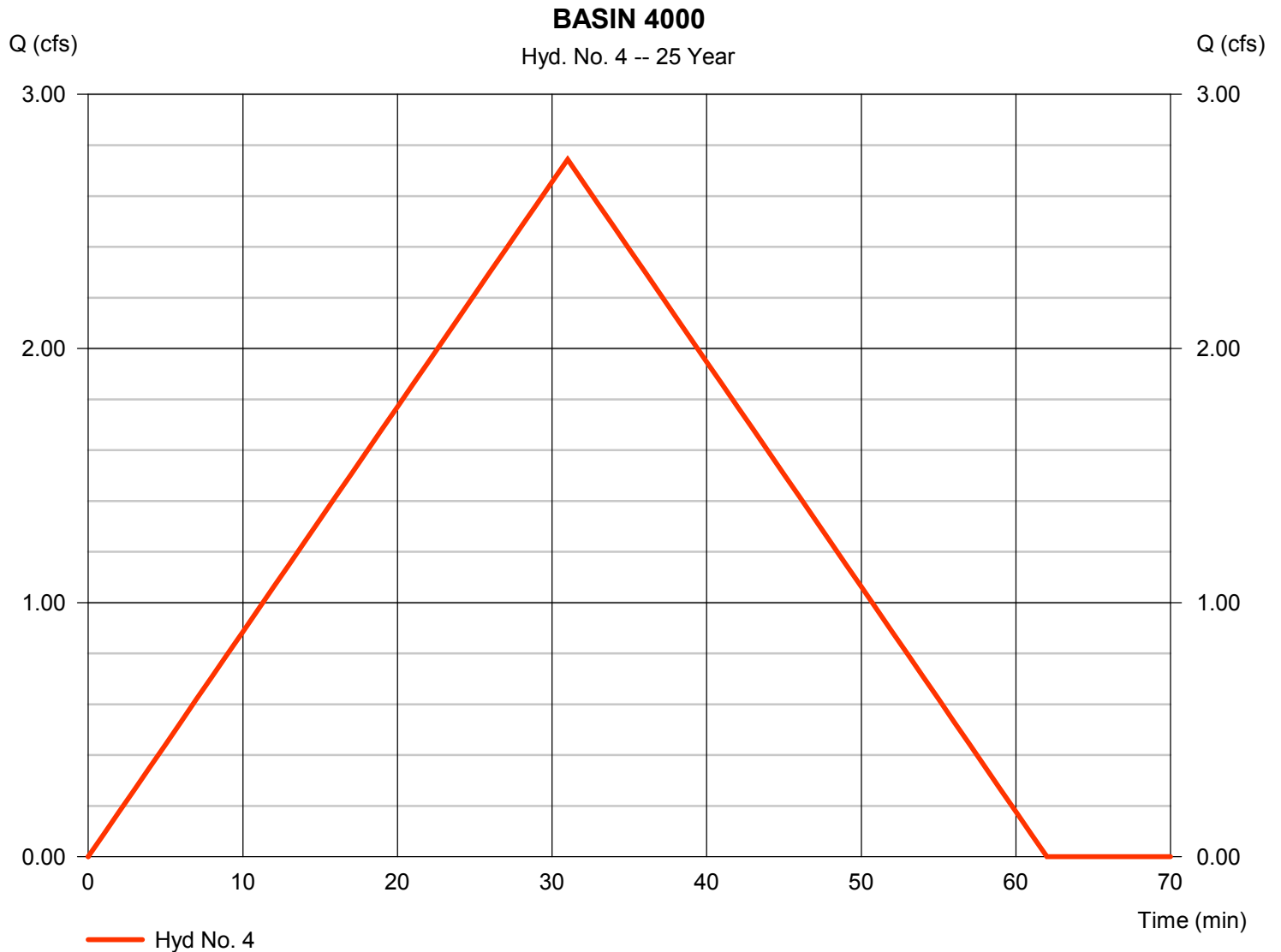
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Monday, 05 / 20 / 2019

Hyd. No. 4

BASIN 4000

Hydrograph type	= Rational	Peak discharge	= 2.744 cfs
Storm frequency	= 25 yrs	Time to peak	= 31 min
Time interval	= 1 min	Hyd. volume	= 5,104 cuft
Drainage area	= 4.800 ac	Runoff coeff.	= 0.4
Intensity	= 1.429 in/hr	Tc by TR55	= 31.00 min
IDF Curve	= 17671-PRECIP-3.IDF	Asc/Rec limb fact	= 1/1



Hydrograph Report

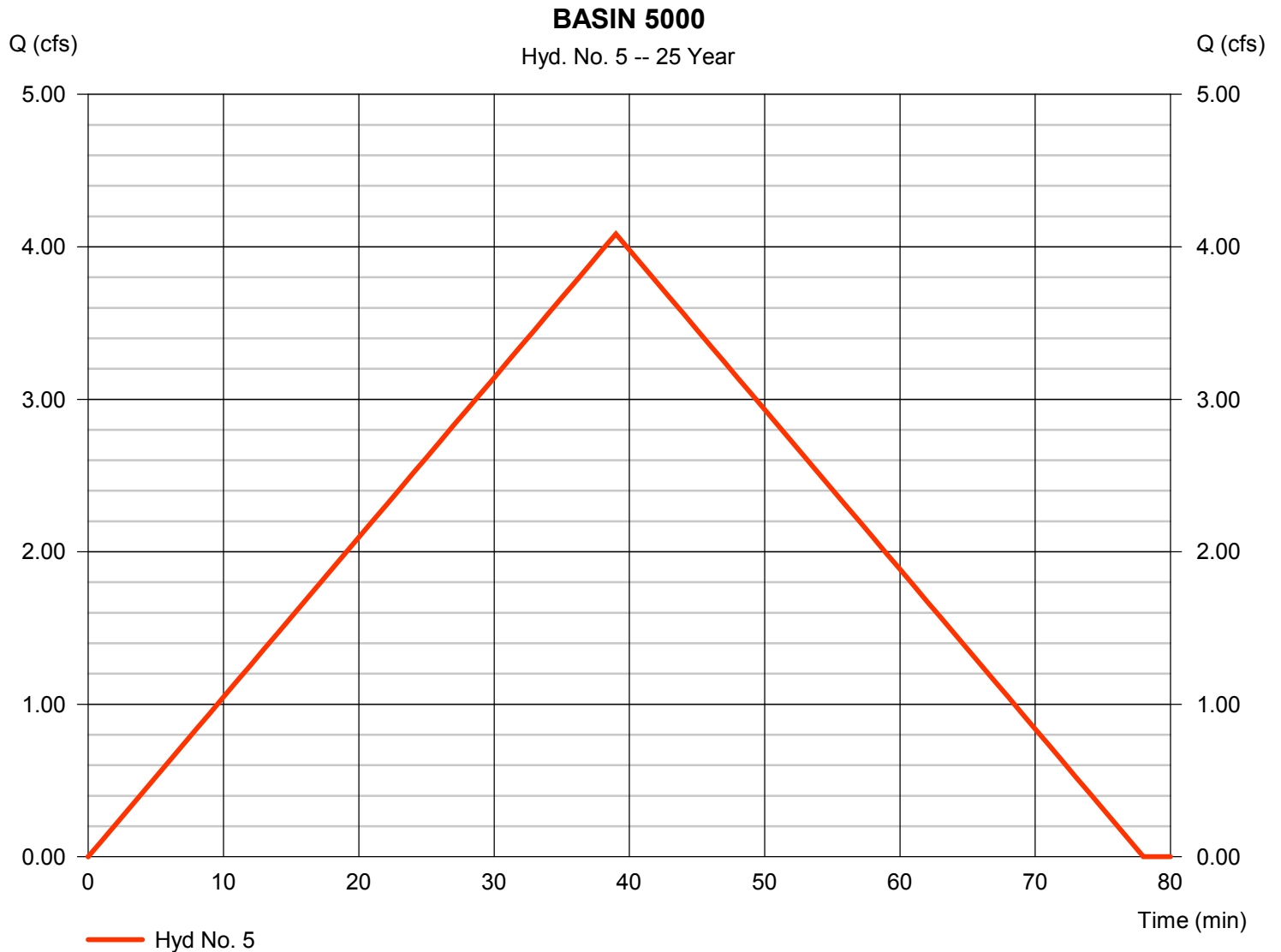
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Monday, 05 / 20 / 2019

Hyd. No. 5

BASIN 5000

Hydrograph type	= Rational	Peak discharge	= 4.084 cfs
Storm frequency	= 25 yrs	Time to peak	= 39 min
Time interval	= 1 min	Hyd. volume	= 9,557 cuft
Drainage area	= 7.900 ac	Runoff coeff.	= 0.4
Intensity	= 1.293 in/hr	Tc by TR55	= 39.00 min
IDF Curve	= 17671-PRECIP-3.IDF	Asc/Rec limb fact	= 1/1



Hydrograph Report

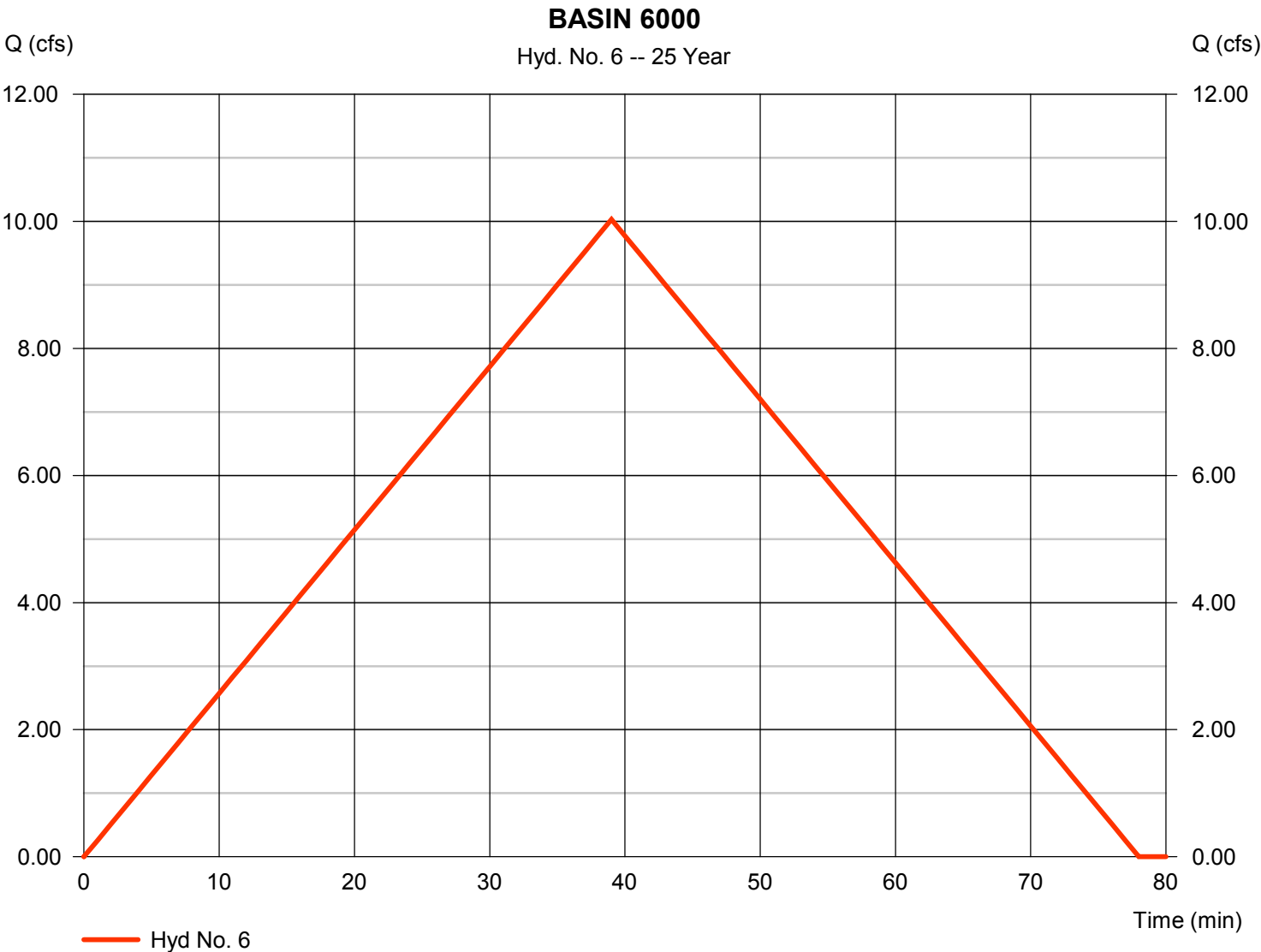
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Monday, 05 / 20 / 2019

Hyd. No. 6

BASIN 6000

Hydrograph type	= Rational	Peak discharge	= 10.03 cfs
Storm frequency	= 25 yrs	Time to peak	= 39 min
Time interval	= 1 min	Hyd. volume	= 23,470 cuft
Drainage area	= 19.400 ac	Runoff coeff.	= 0.4
Intensity	= 1.293 in/hr	Tc by TR55	= 39.00 min
IDF Curve	= 17671-PRECIP-3.IDF	Asc/Rec limb fact	= 1/1



Hydrograph Report

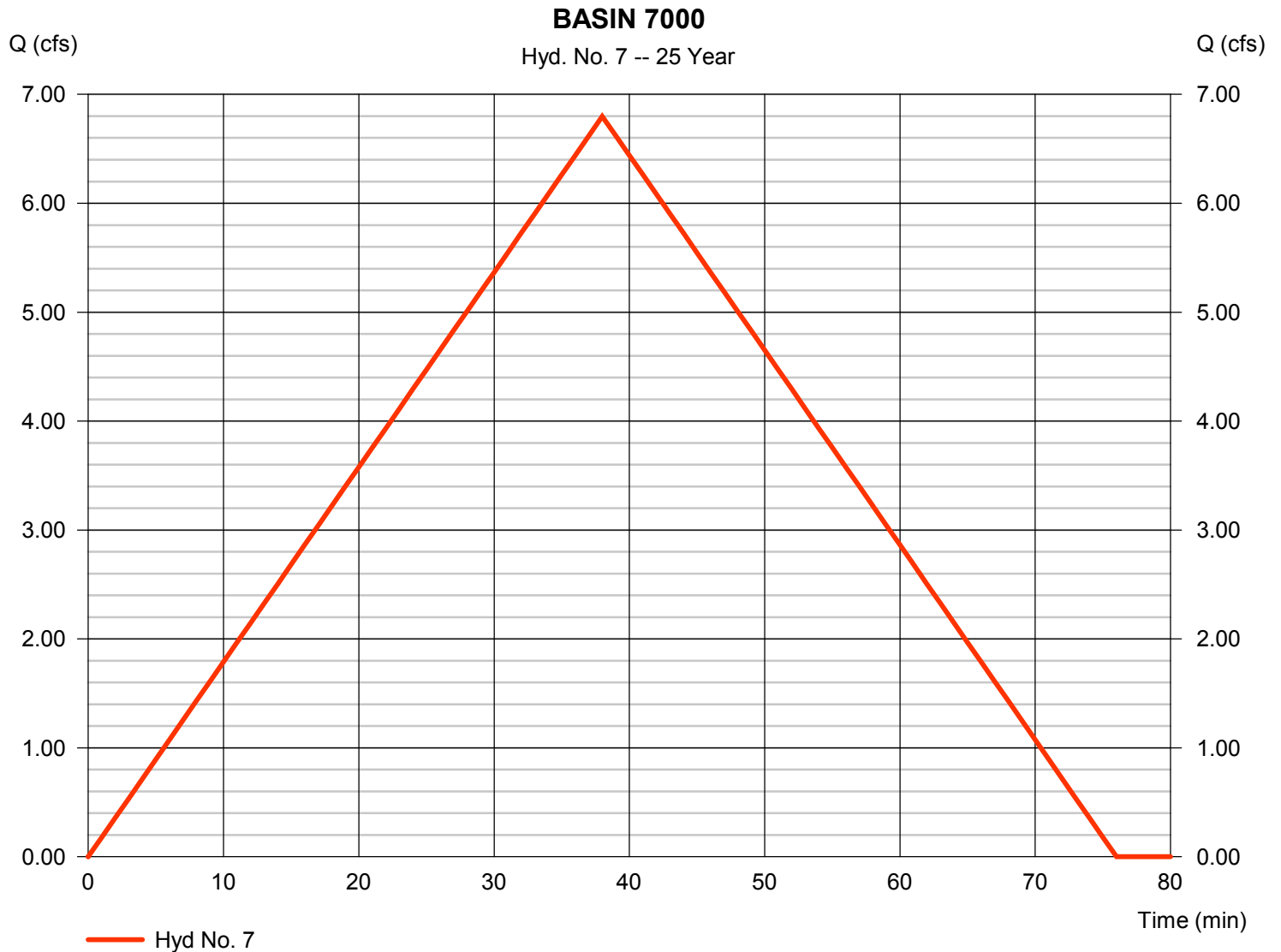
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Monday, 05 / 20 / 2019

Hyd. No. 7

BASIN 7000

Hydrograph type	= Rational	Peak discharge	= 6.798 cfs
Storm frequency	= 25 yrs	Time to peak	= 38 min
Time interval	= 1 min	Hyd. volume	= 15,500 cuft
Drainage area	= 13.000 ac	Runoff coeff.	= 0.4
Intensity	= 1.307 in/hr	Tc by TR55	= 38.00 min
IDF Curve	= 17671-PRECIP-3.IDF	Asc/Rec limb fact	= 1/1



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Monday, 05 / 20 / 2019

Hyd. No. 8

BASIN 8000

Hydrograph type	= Rational	Peak discharge	= 2.325 cfs
Storm frequency	= 25 yrs	Time to peak	= 22 min
Time interval	= 1 min	Hyd. volume	= 3,069 cuft
Drainage area	= 3.500 ac	Runoff coeff.	= 0.4
Intensity	= 1.661 in/hr	Tc by TR55	= 22.00 min
IDF Curve	= 17671-PRECIP-3.IDF	Asc/Rec limb fact	= 1/1



Hydrograph Report

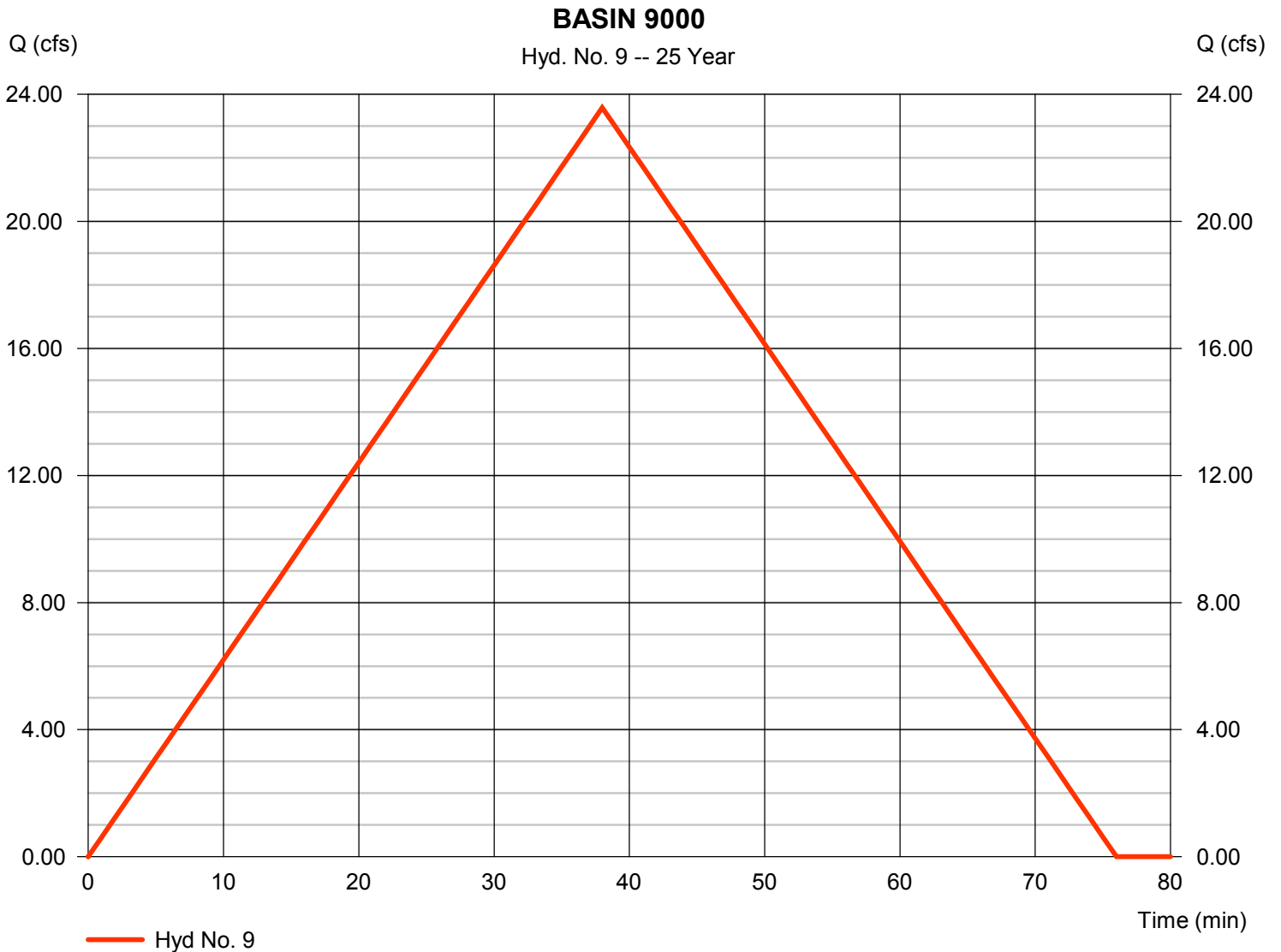
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Monday, 05 / 20 / 2019

Hyd. No. 9

BASIN 9000

Hydrograph type	= Rational	Peak discharge	= 23.58 cfs
Storm frequency	= 25 yrs	Time to peak	= 38 min
Time interval	= 1 min	Hyd. volume	= 53,772 cuft
Drainage area	= 45.100 ac	Runoff coeff.	= 0.4
Intensity	= 1.307 in/hr	Tc by TR55	= 38.00 min
IDF Curve	= 17671-PRECIP-3.IDF	Asc/Rec limb fact	= 1/1



Hydrograph Report

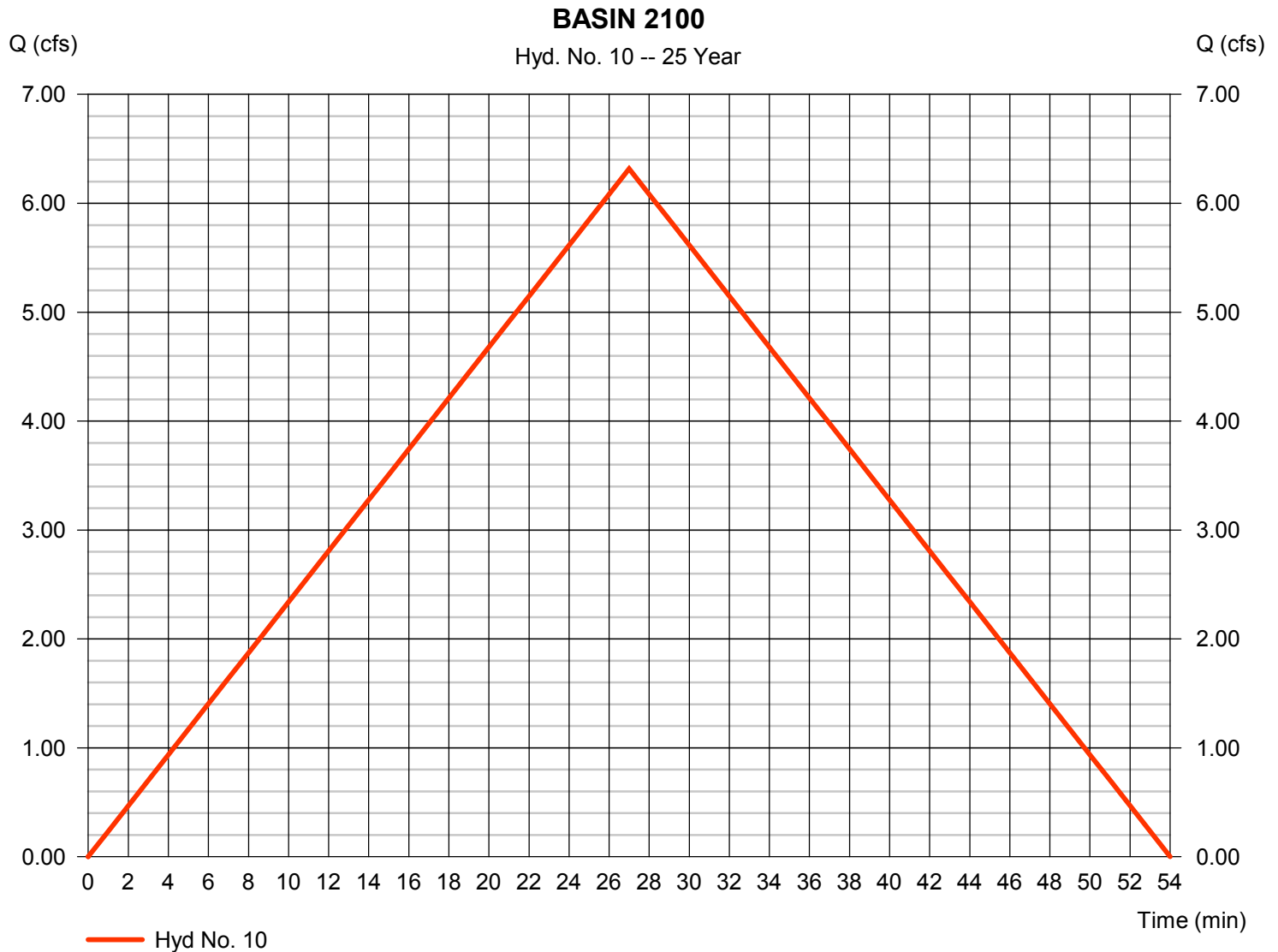
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Monday, 05 / 20 / 2019

Hyd. No. 10

BASIN 2100

Hydrograph type	= Rational	Peak discharge	= 6.317 cfs
Storm frequency	= 25 yrs	Time to peak	= 27 min
Time interval	= 1 min	Hyd. volume	= 10,233 cuft
Drainage area	= 10.400 ac	Runoff coeff.	= 0.4
Intensity	= 1.518 in/hr	Tc by TR55	= 27.00 min
IDF Curve	= 17671-PRECIP-3.IDF	Asc/Rec limb fact	= 1/1



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Monday, 05 / 20 / 2019

Hyd. No. 11

POI 5

Hydrograph type = Combine
 Storm frequency = 25 yrs
 Time interval = 1 min
 Inflow hyds. = 8, 9

Peak discharge = 24.22 cfs
 Time to peak = 38 min
 Hyd. volume = 56,841 cuft
 Contrib. drain. area = 48.600 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

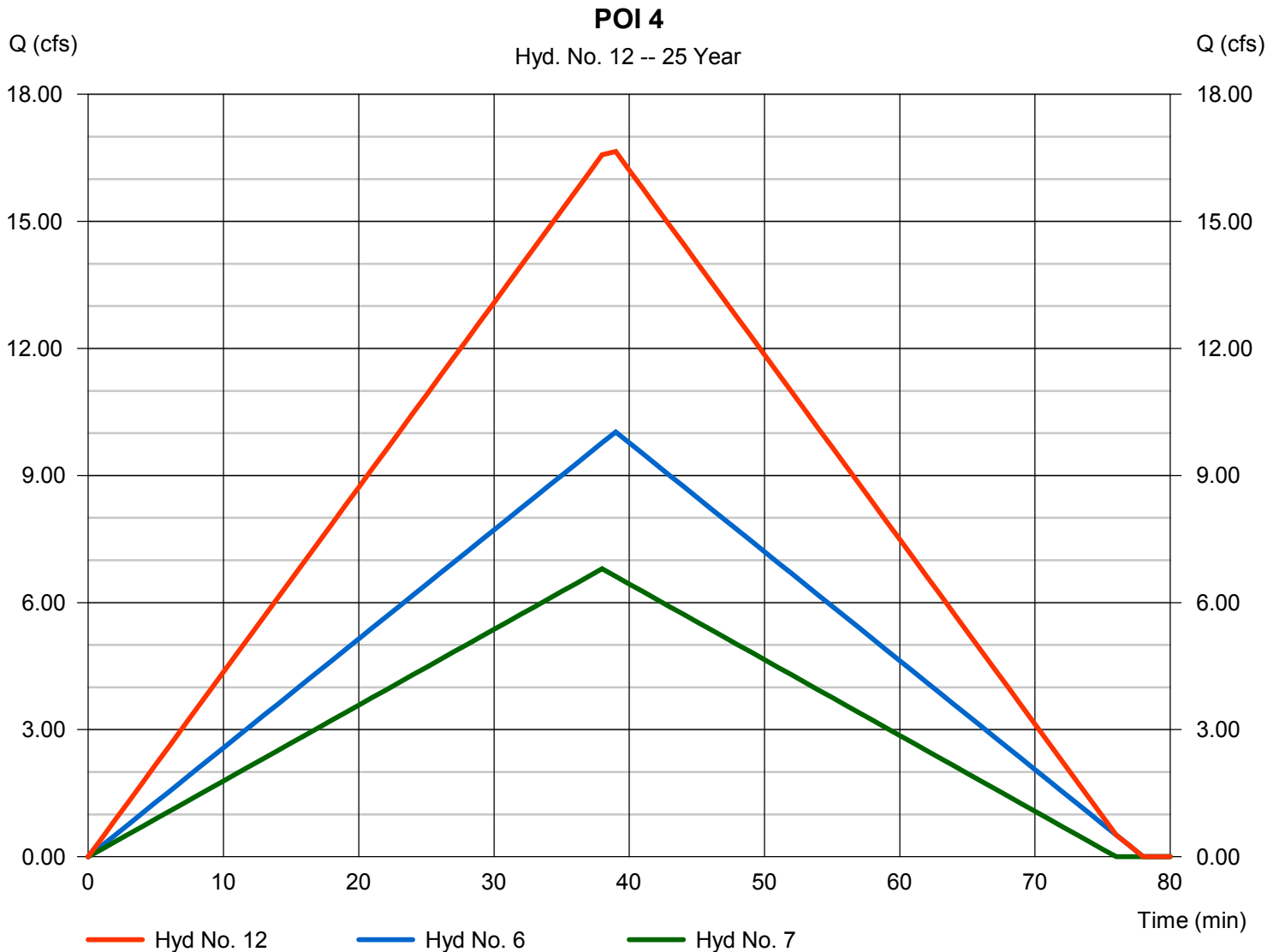
Monday, 05 / 20 / 2019

Hyd. No. 12

POI 4

Hydrograph type = Combine
 Storm frequency = 25 yrs
 Time interval = 1 min
 Inflow hyds. = 6, 7

Peak discharge = 16.65 cfs
 Time to peak = 39 min
 Hyd. volume = 38,970 cuft
 Contrib. drain. area = 32.400 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

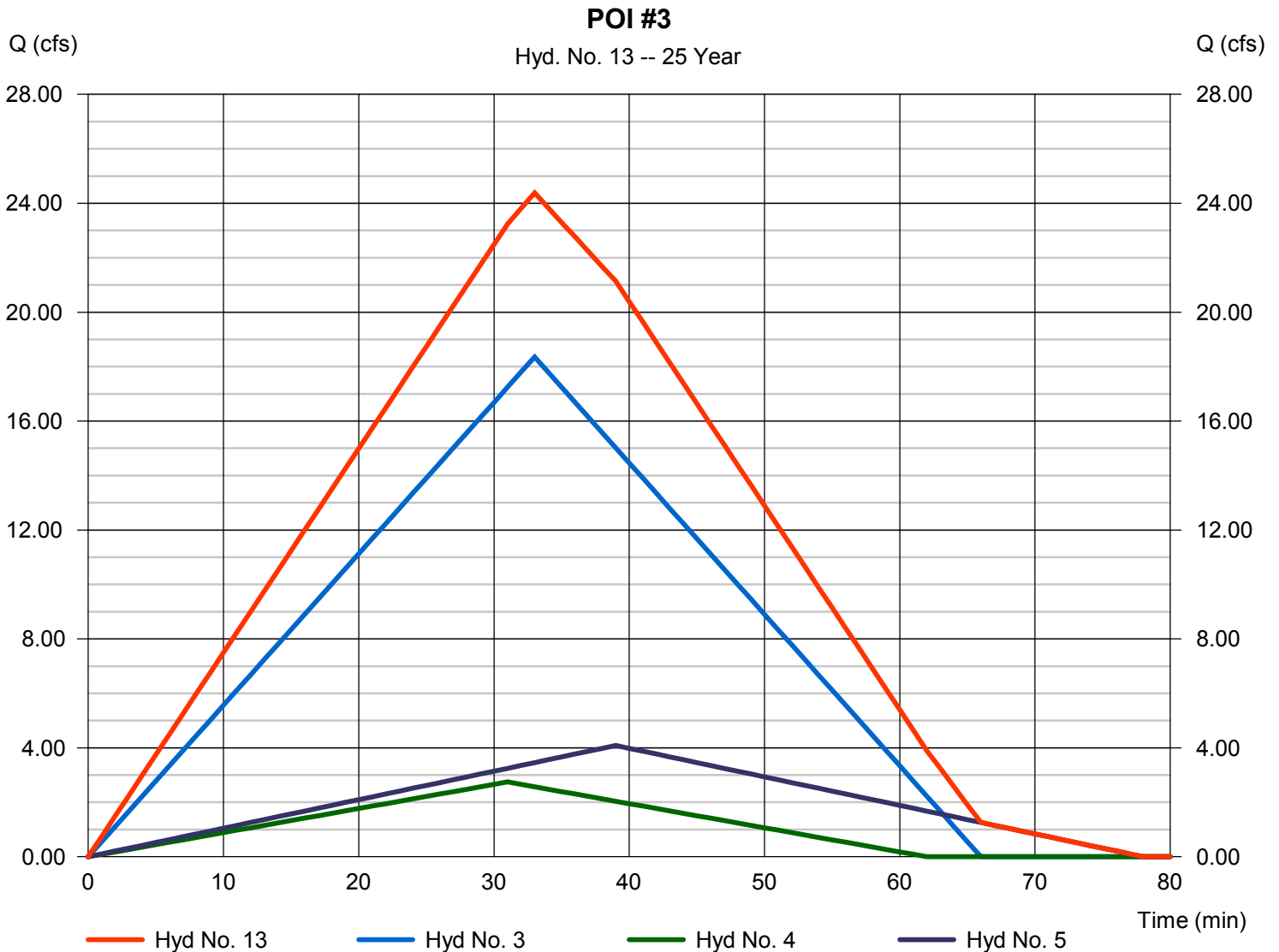
Monday, 05 / 20 / 2019

Hyd. No. 13

POI #3

Hydrograph type = Combine
 Storm frequency = 25 yrs
 Time interval = 1 min
 Inflow hyds. = 3, 4, 5

Peak discharge = 24.38 cfs
 Time to peak = 33 min
 Hyd. volume = 51,009 cuft
 Contrib. drain. area = 45.700 ac



Hydrograph Report

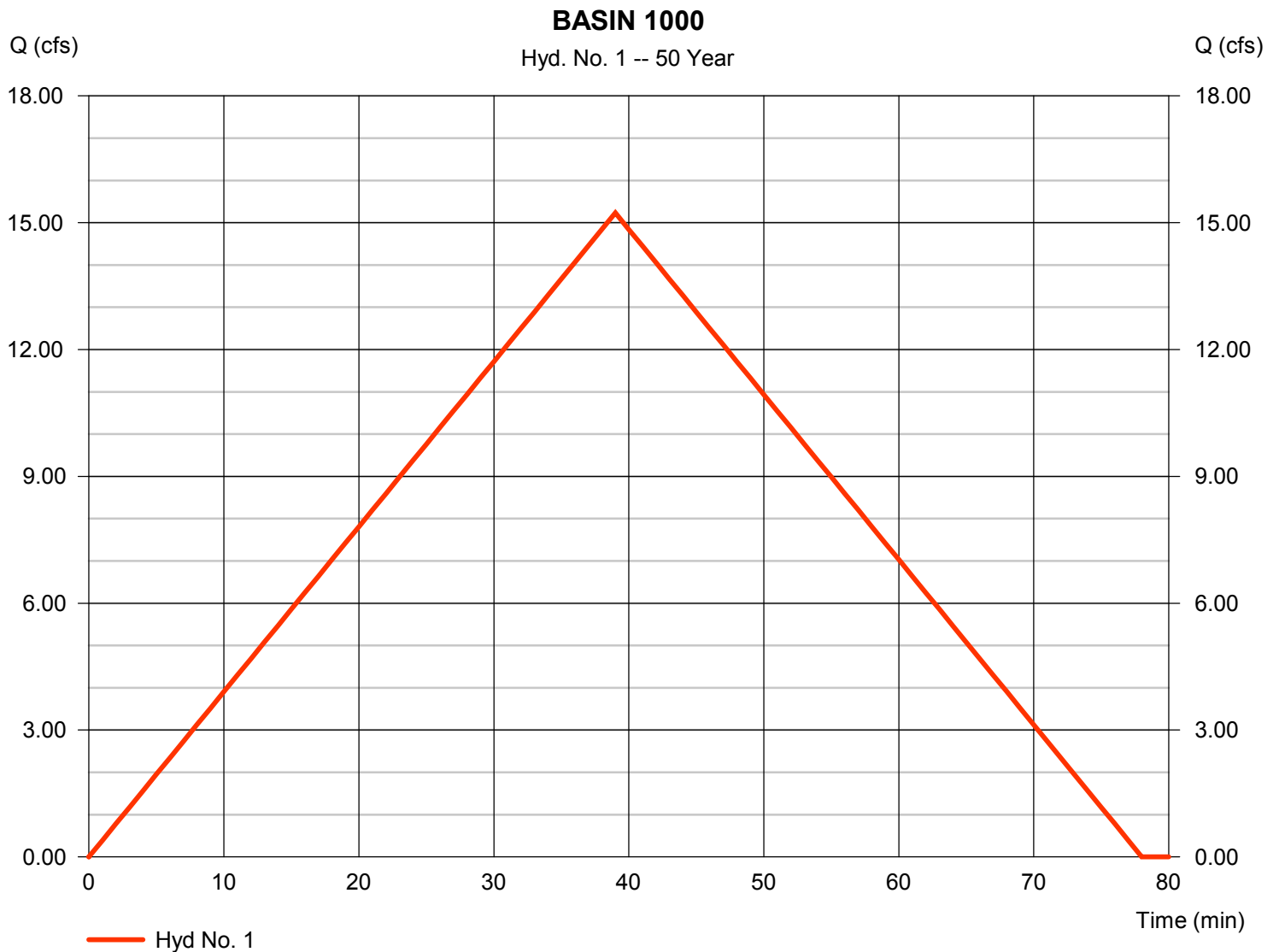
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Monday, 05 / 20 / 2019

Hyd. No. 1

BASIN 1000

Hydrograph type	= Rational	Peak discharge	= 15.23 cfs
Storm frequency	= 50 yrs	Time to peak	= 39 min
Time interval	= 1 min	Hyd. volume	= 35,644 cuft
Drainage area	= 25.600 ac	Runoff coeff.	= 0.4
Intensity	= 1.488 in/hr	Tc by TR55	= 39.00 min
IDF Curve	= 17671-PRECIP-3.IDF	Asc/Rec limb fact	= 1/1



Hydrograph Report

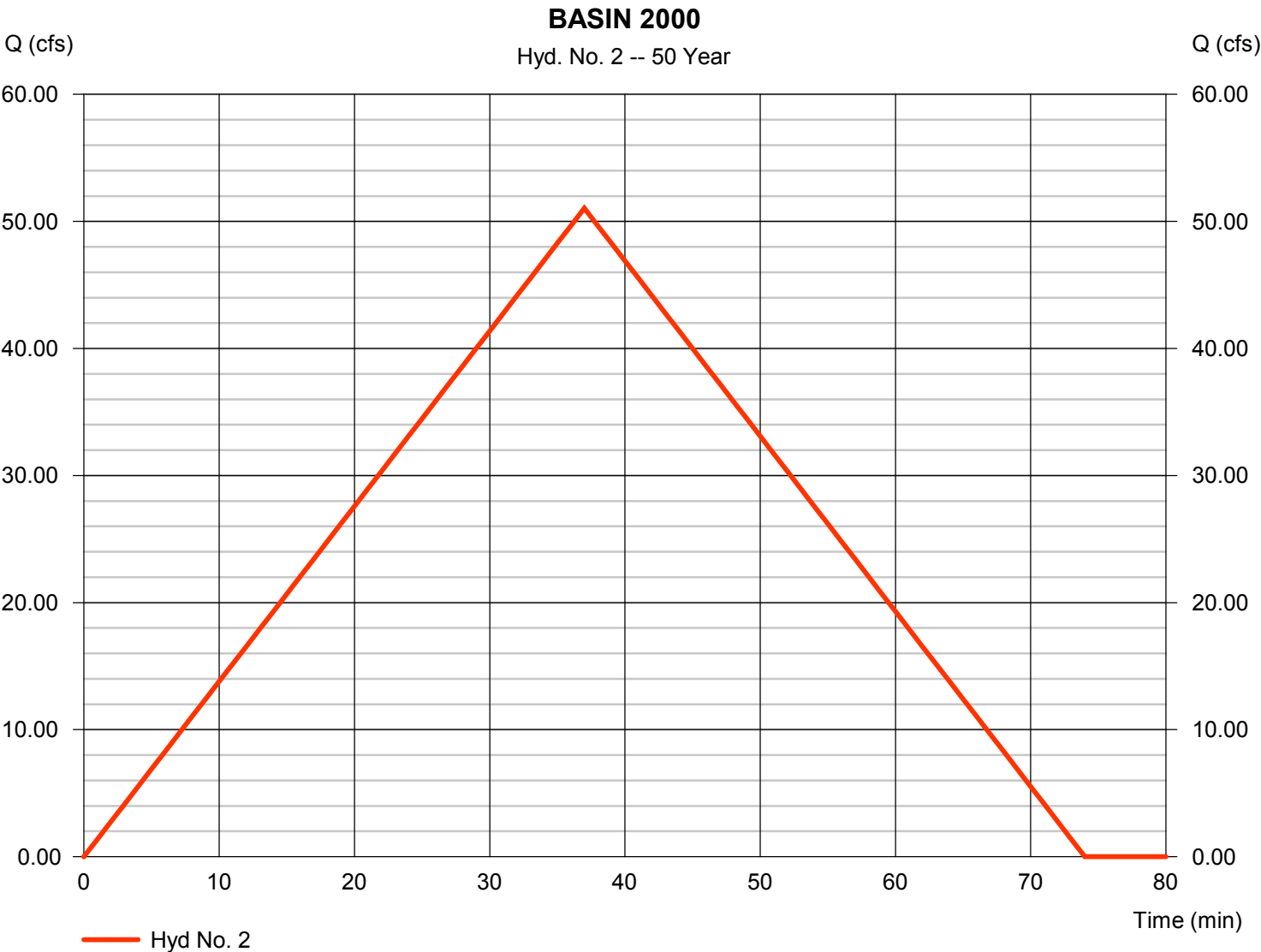
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Monday, 05 / 20 / 2019

Hyd. No. 2

BASIN 2000

Hydrograph type	= Rational	Peak discharge	= 51.03 cfs
Storm frequency	= 50 yrs	Time to peak	= 37 min
Time interval	= 1 min	Hyd. volume	= 113,296 cuft
Drainage area	= 83.800 ac	Runoff coeff.	= 0.4
Intensity	= 1.522 in/hr	Tc by TR55	= 37.00 min
IDF Curve	= 17671-PRECIP-3.IDF	Asc/Rec limb fact	= 1/1



Hydrograph Report

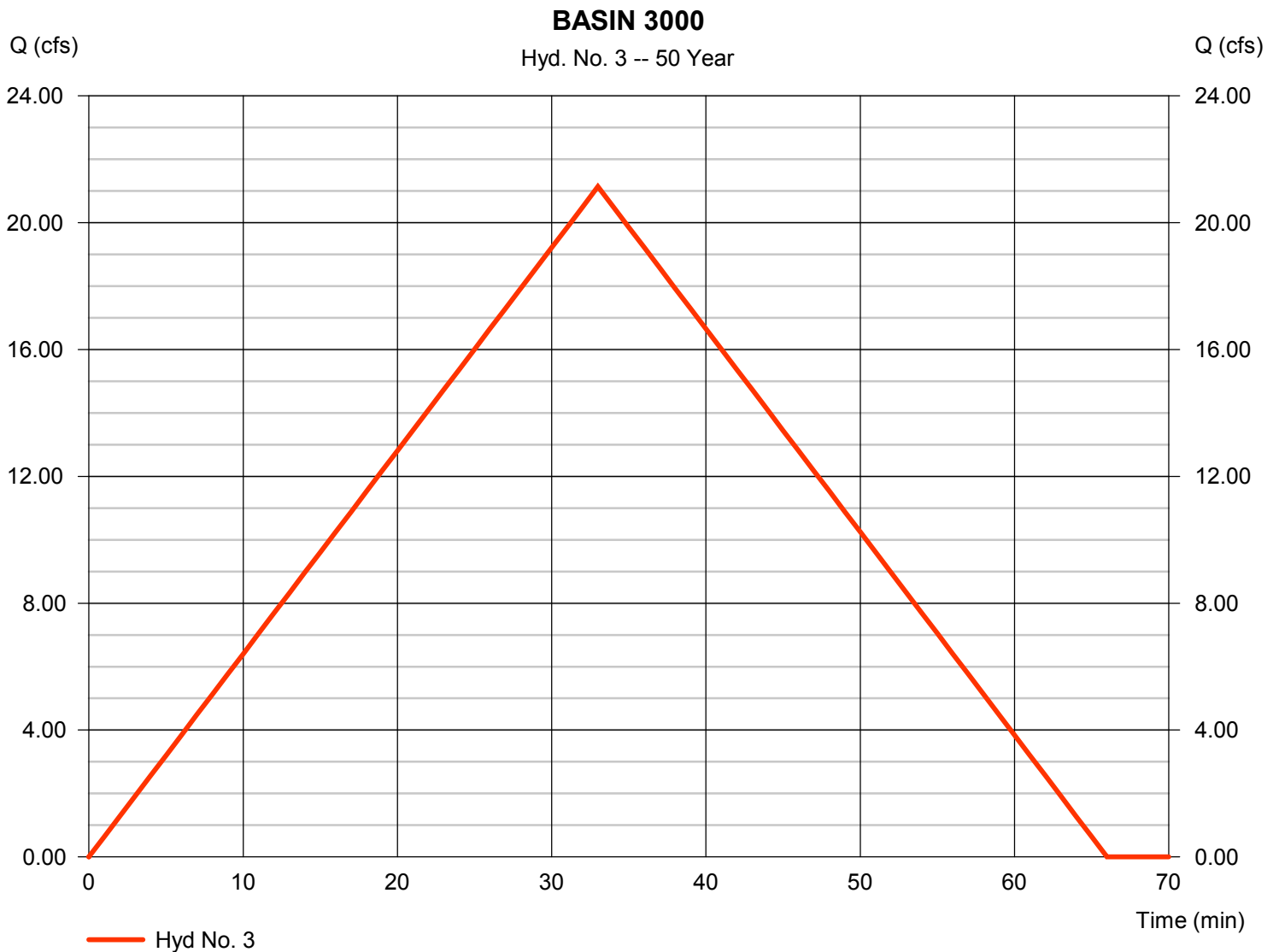
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Monday, 05 / 20 / 2019

Hyd. No. 3

BASIN 3000

Hydrograph type	= Rational	Peak discharge	= 21.14 cfs
Storm frequency	= 50 yrs	Time to peak	= 33 min
Time interval	= 1 min	Hyd. volume	= 41,851 cuft
Drainage area	= 33.000 ac	Runoff coeff.	= 0.4
Intensity	= 1.601 in/hr	Tc by TR55	= 33.00 min
IDF Curve	= 17671-PRECIP-3.IDF	Asc/Rec limb fact	= 1/1



Hydrograph Report

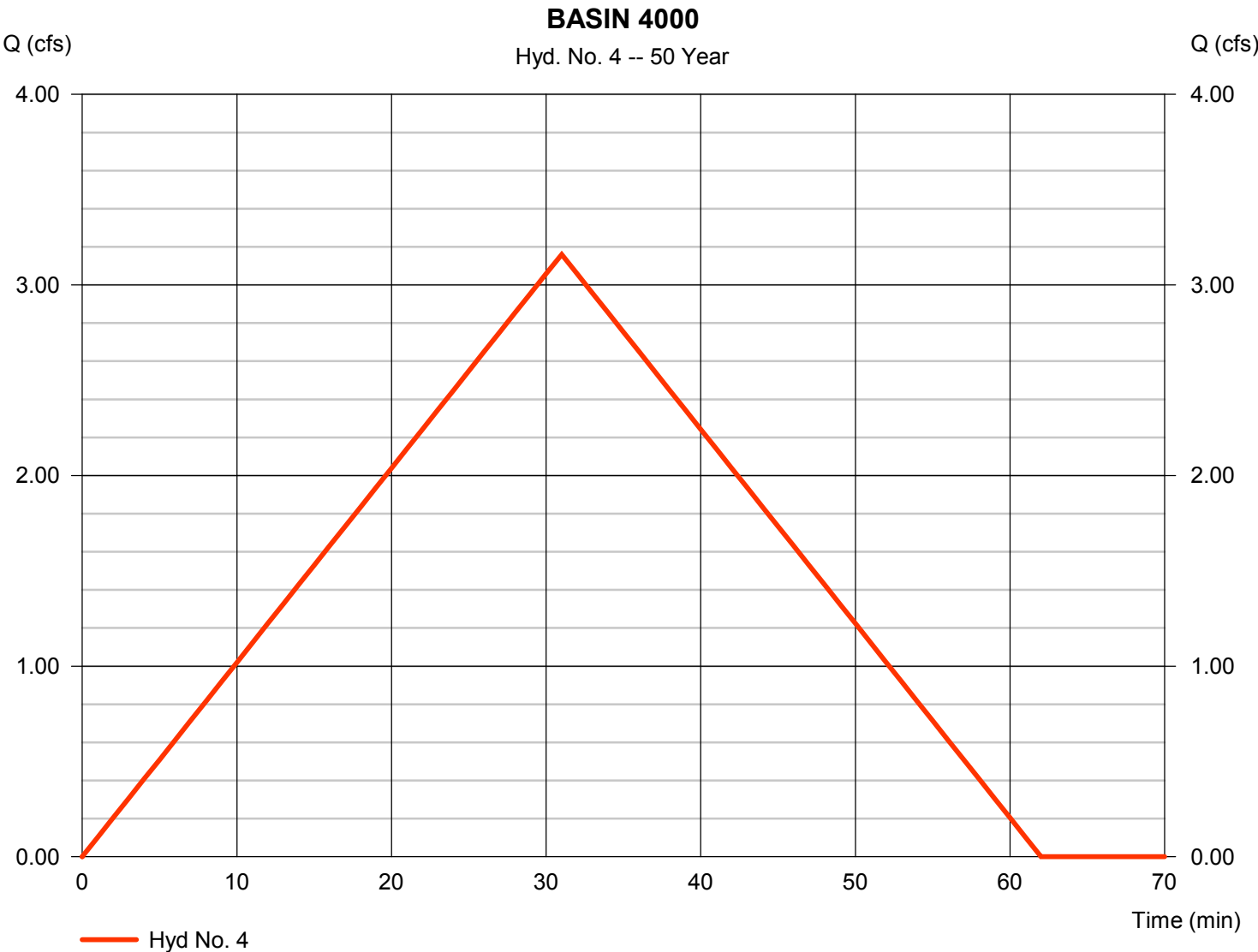
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Monday, 05 / 20 / 2019

Hyd. No. 4

BASIN 4000

Hydrograph type	= Rational	Peak discharge	= 3.160 cfs
Storm frequency	= 50 yrs	Time to peak	= 31 min
Time interval	= 1 min	Hyd. volume	= 5,878 cuft
Drainage area	= 4.800 ac	Runoff coeff.	= 0.4
Intensity	= 1.646 in/hr	Tc by TR55	= 31.00 min
IDF Curve	= 17671-PRECIP-3.IDF	Asc/Rec limb fact	= 1/1



Hydrograph Report

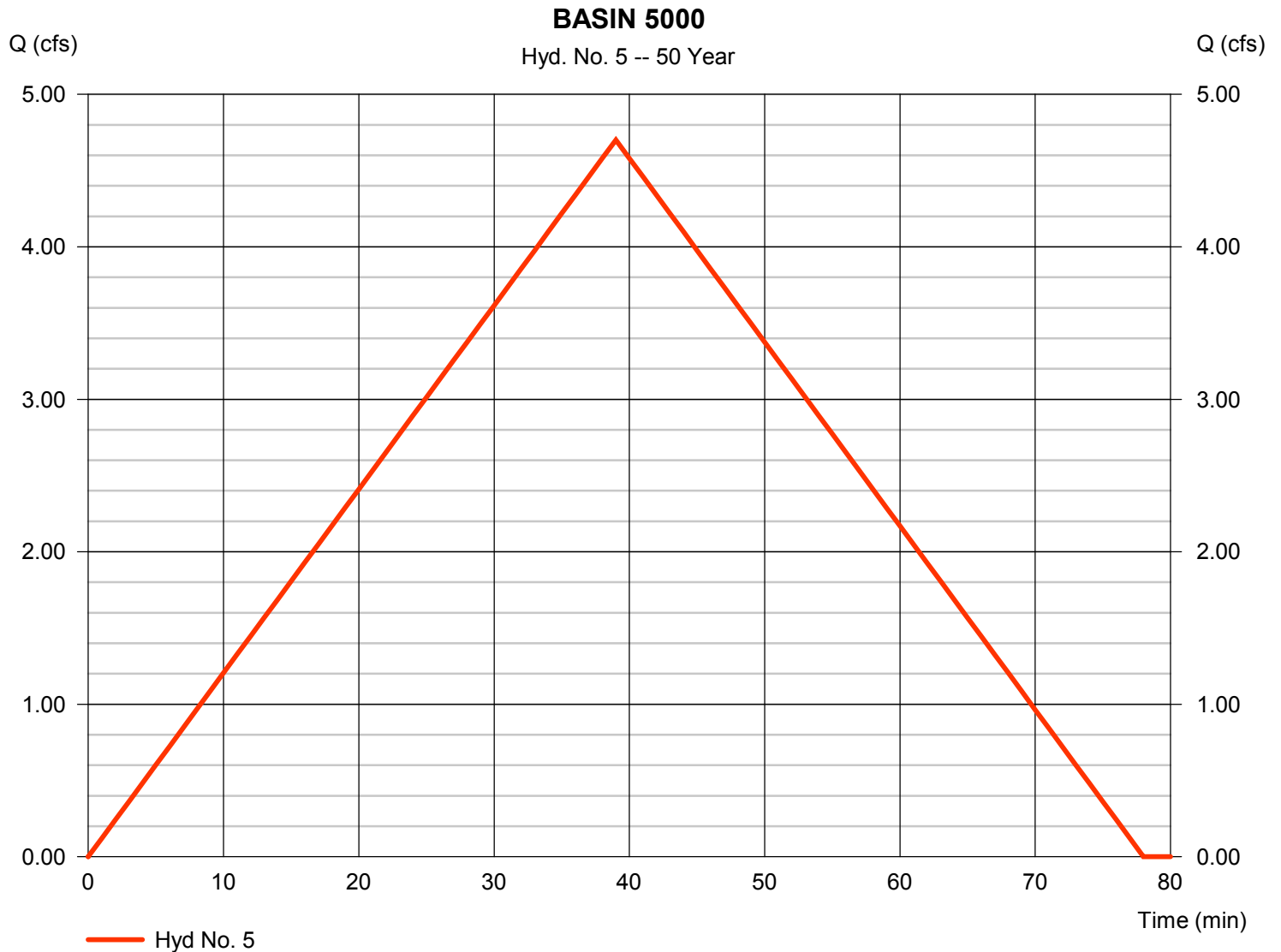
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Monday, 05 / 20 / 2019

Hyd. No. 5

BASIN 5000

Hydrograph type	= Rational	Peak discharge	= 4.701 cfs
Storm frequency	= 50 yrs	Time to peak	= 39 min
Time interval	= 1 min	Hyd. volume	= 11,000 cuft
Drainage area	= 7.900 ac	Runoff coeff.	= 0.4
Intensity	= 1.488 in/hr	Tc by TR55	= 39.00 min
IDF Curve	= 17671-PRECIP-3.IDF	Asc/Rec limb fact	= 1/1



Hydrograph Report

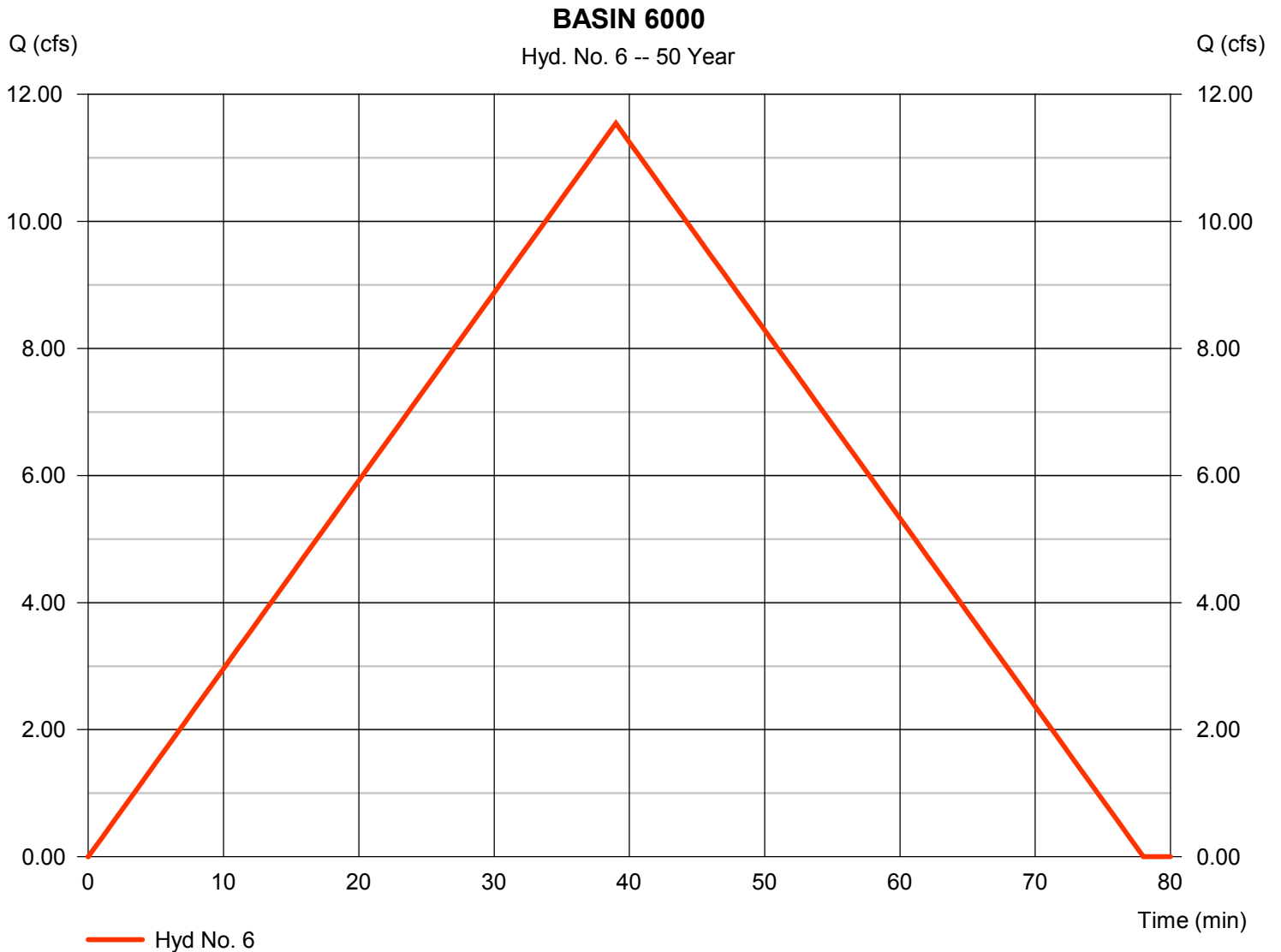
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Monday, 05 / 20 / 2019

Hyd. No. 6

BASIN 6000

Hydrograph type	= Rational	Peak discharge	= 11.54 cfs
Storm frequency	= 50 yrs	Time to peak	= 39 min
Time interval	= 1 min	Hyd. volume	= 27,012 cuft
Drainage area	= 19.400 ac	Runoff coeff.	= 0.4
Intensity	= 1.488 in/hr	Tc by TR55	= 39.00 min
IDF Curve	= 17671-PRECIP-3.IDF	Asc/Rec limb fact	= 1/1



Hydrograph Report

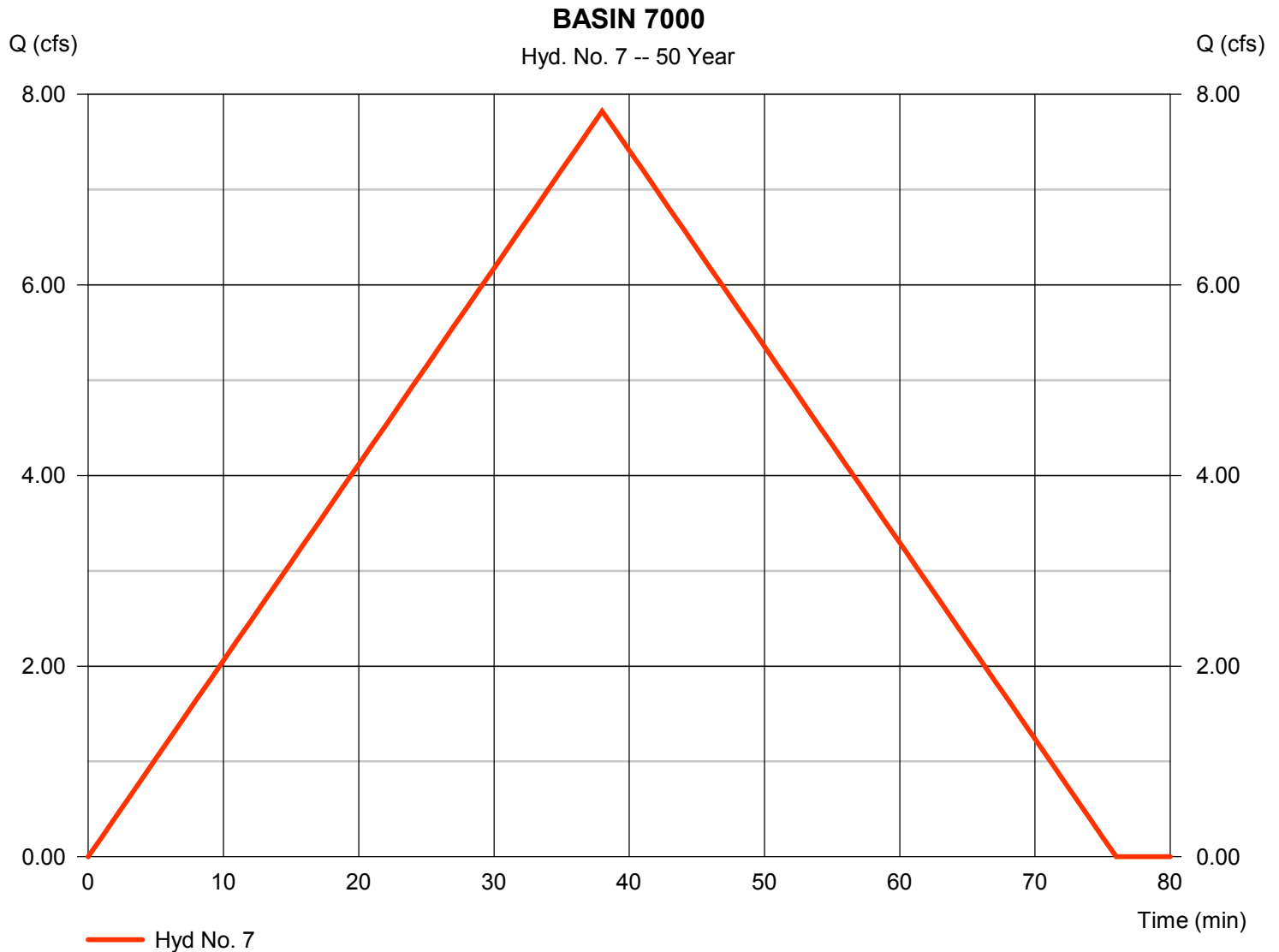
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Monday, 05 / 20 / 2019

Hyd. No. 7

BASIN 7000

Hydrograph type	= Rational	Peak discharge	= 7.824 cfs
Storm frequency	= 50 yrs	Time to peak	= 38 min
Time interval	= 1 min	Hyd. volume	= 17,840 cuft
Drainage area	= 13.000 ac	Runoff coeff.	= 0.4
Intensity	= 1.505 in/hr	Tc by TR55	= 38.00 min
IDF Curve	= 17671-PRECIP-3.IDF	Asc/Rec limb fact	= 1/1



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Monday, 05 / 20 / 2019

Hyd. No. 8

BASIN 8000

Hydrograph type	= Rational	Peak discharge	= 2.680 cfs
Storm frequency	= 50 yrs	Time to peak	= 22 min
Time interval	= 1 min	Hyd. volume	= 3,538 cuft
Drainage area	= 3.500 ac	Runoff coeff.	= 0.4
Intensity	= 1.914 in/hr	Tc by TR55	= 22.00 min
IDF Curve	= 17671-PRECIP-3.IDF	Asc/Rec limb fact	= 1/1



Hydrograph Report

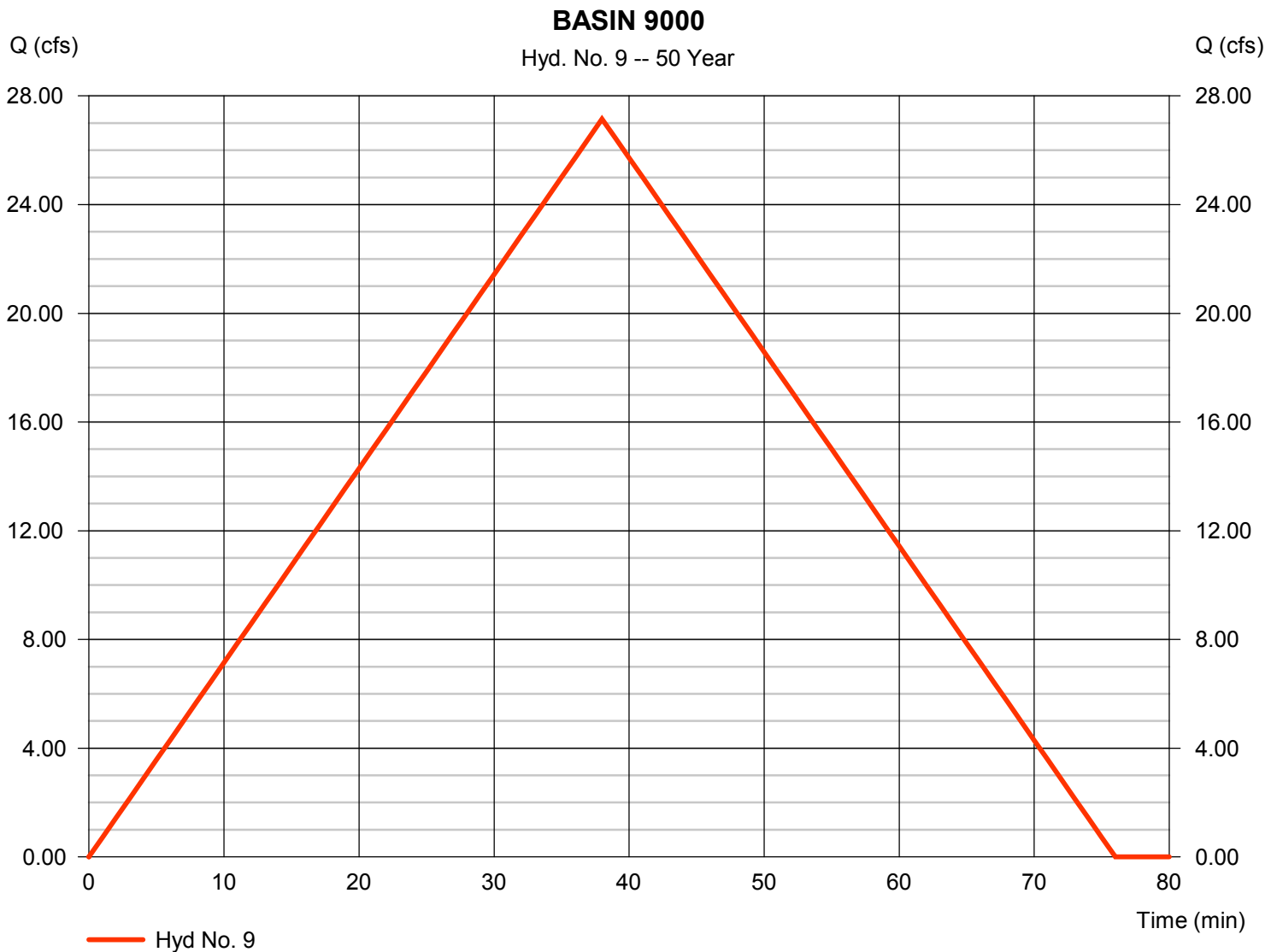
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Monday, 05 / 20 / 2019

Hyd. No. 9

BASIN 9000

Hydrograph type	= Rational	Peak discharge	= 27.14 cfs
Storm frequency	= 50 yrs	Time to peak	= 38 min
Time interval	= 1 min	Hyd. volume	= 61,890 cuft
Drainage area	= 45.100 ac	Runoff coeff.	= 0.4
Intensity	= 1.505 in/hr	Tc by TR55	= 38.00 min
IDF Curve	= 17671-PRECIP-3.IDF	Asc/Rec limb fact	= 1/1



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Monday, 05 / 20 / 2019

Hyd. No. 10

BASIN 2100

Hydrograph type	= Rational	Peak discharge	= 7.277 cfs
Storm frequency	= 50 yrs	Time to peak	= 27 min
Time interval	= 1 min	Hyd. volume	= 11,789 cuft
Drainage area	= 10.400 ac	Runoff coeff.	= 0.4
Intensity	= 1.749 in/hr	Tc by TR55	= 27.00 min
IDF Curve	= 17671-PRECIP-3.IDF	Asc/Rec limb fact	= 1/1



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

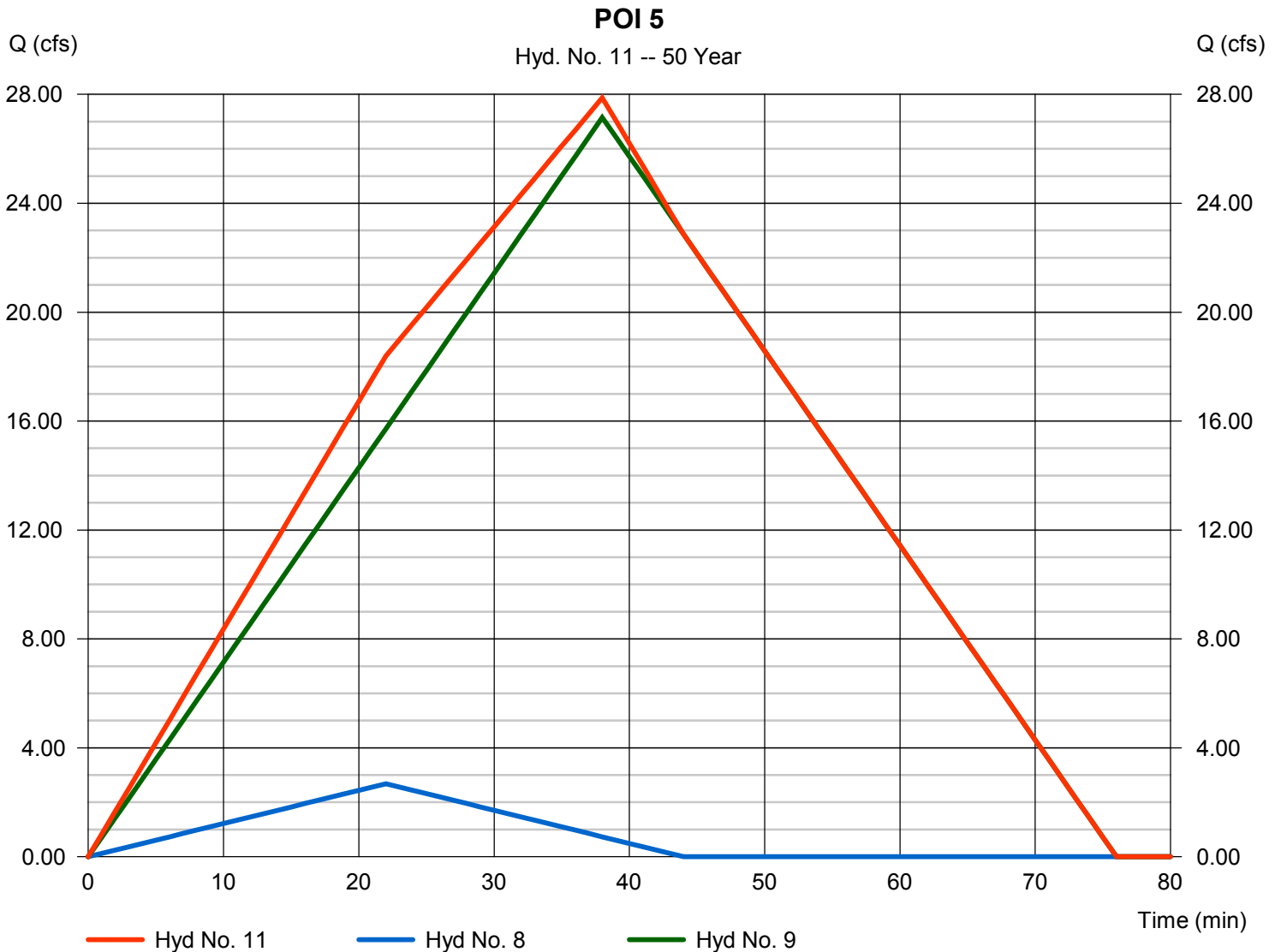
Monday, 05 / 20 / 2019

Hyd. No. 11

POI 5

Hydrograph type = Combine
 Storm frequency = 50 yrs
 Time interval = 1 min
 Inflow hyds. = 8, 9

Peak discharge = 27.88 cfs
 Time to peak = 38 min
 Hyd. volume = 65,428 cuft
 Contrib. drain. area = 48.600 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

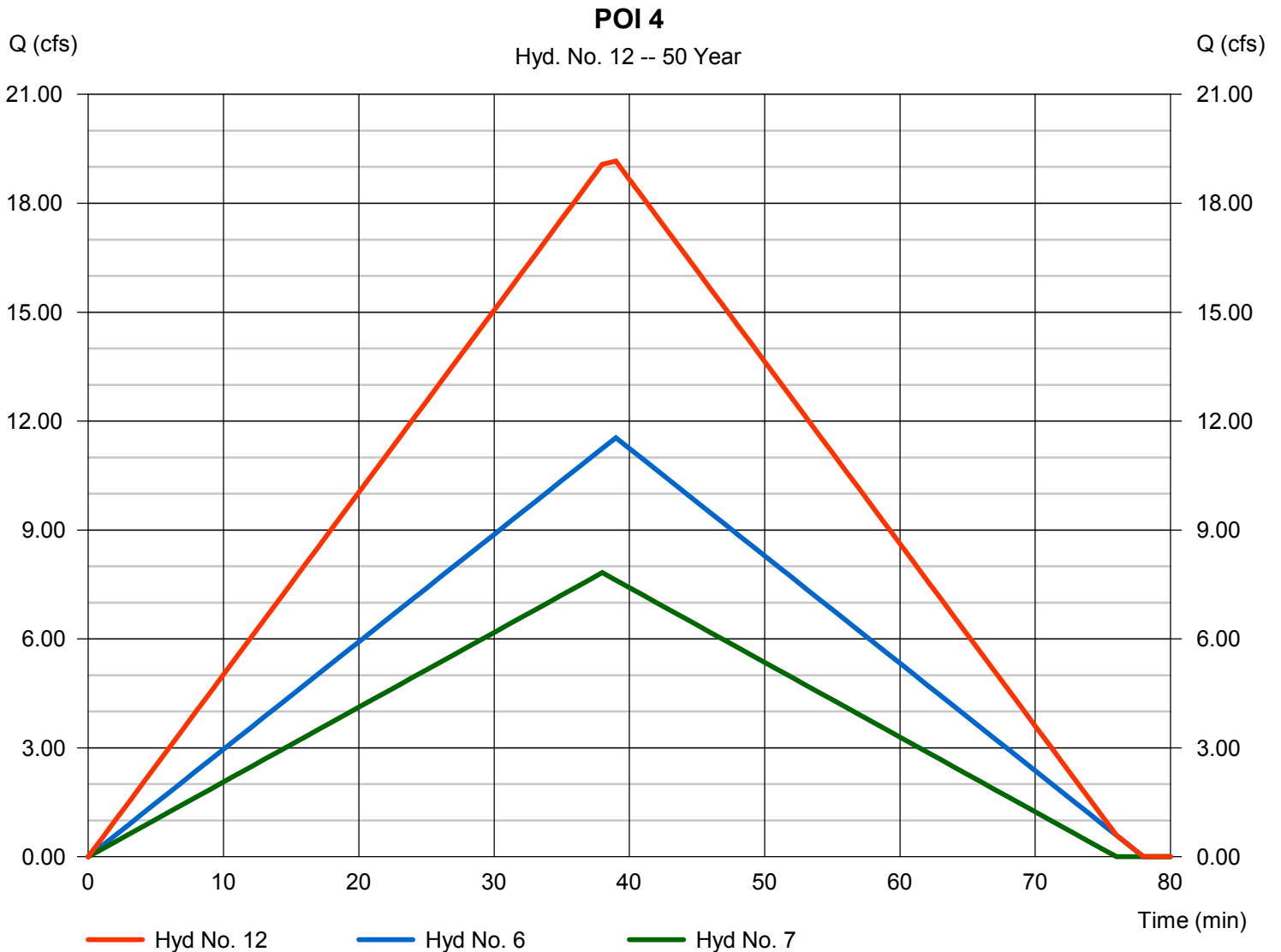
Monday, 05 / 20 / 2019

Hyd. No. 12

POI 4

Hydrograph type = Combine
 Storm frequency = 50 yrs
 Time interval = 1 min
 Inflow hyds. = 6, 7

Peak discharge = 19.16 cfs
 Time to peak = 39 min
 Hyd. volume = 44,851 cuft
 Contrib. drain. area = 32.400 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

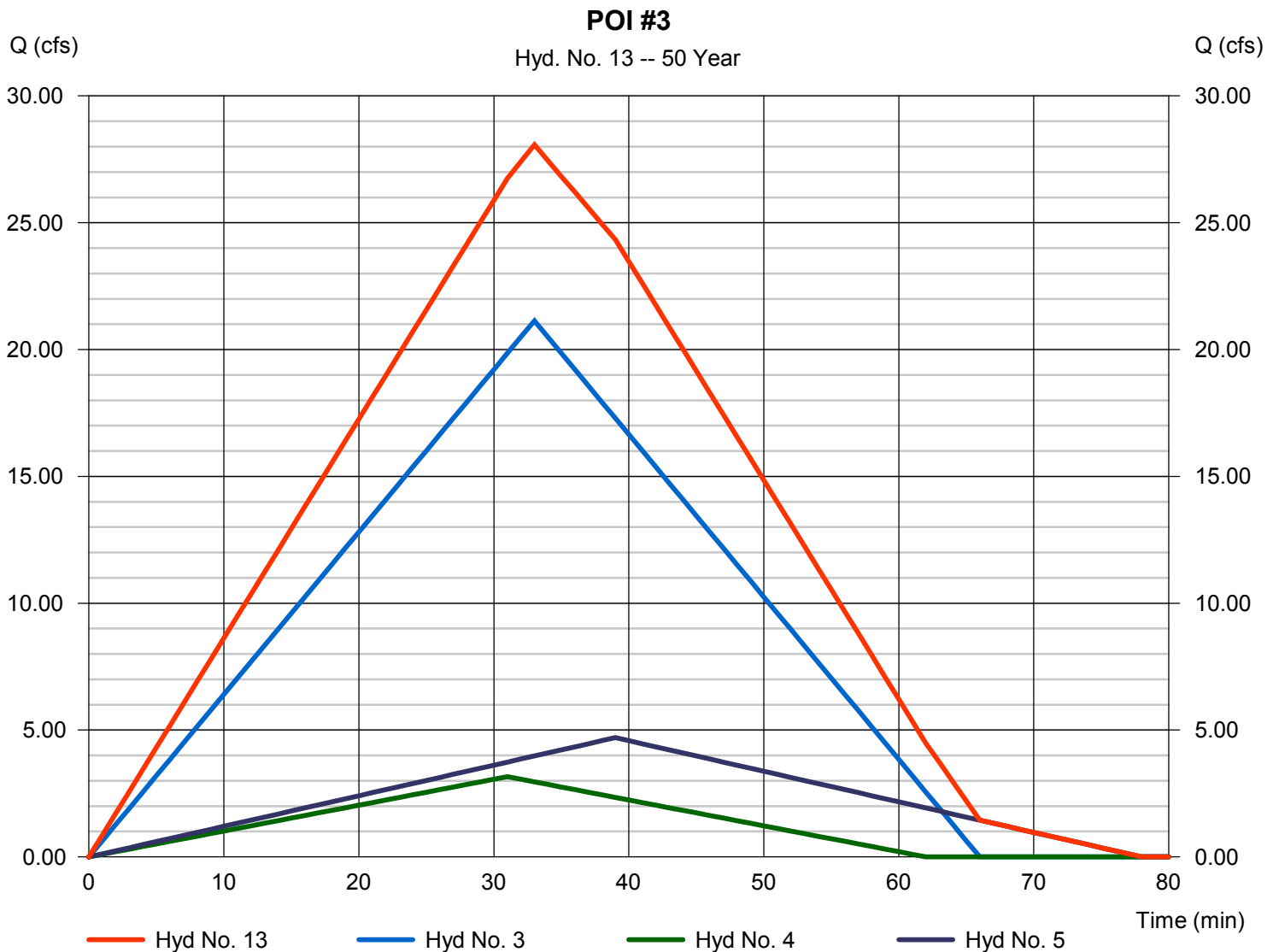
Monday, 05 / 20 / 2019

Hyd. No. 13

POI #3

Hydrograph type = Combine
 Storm frequency = 50 yrs
 Time interval = 1 min
 Inflow hyds. = 3, 4, 5

Peak discharge = 28.07 cfs
 Time to peak = 33 min
 Hyd. volume = 58,729 cuft
 Contrib. drain. area = 45.700 ac



Hydrograph Report

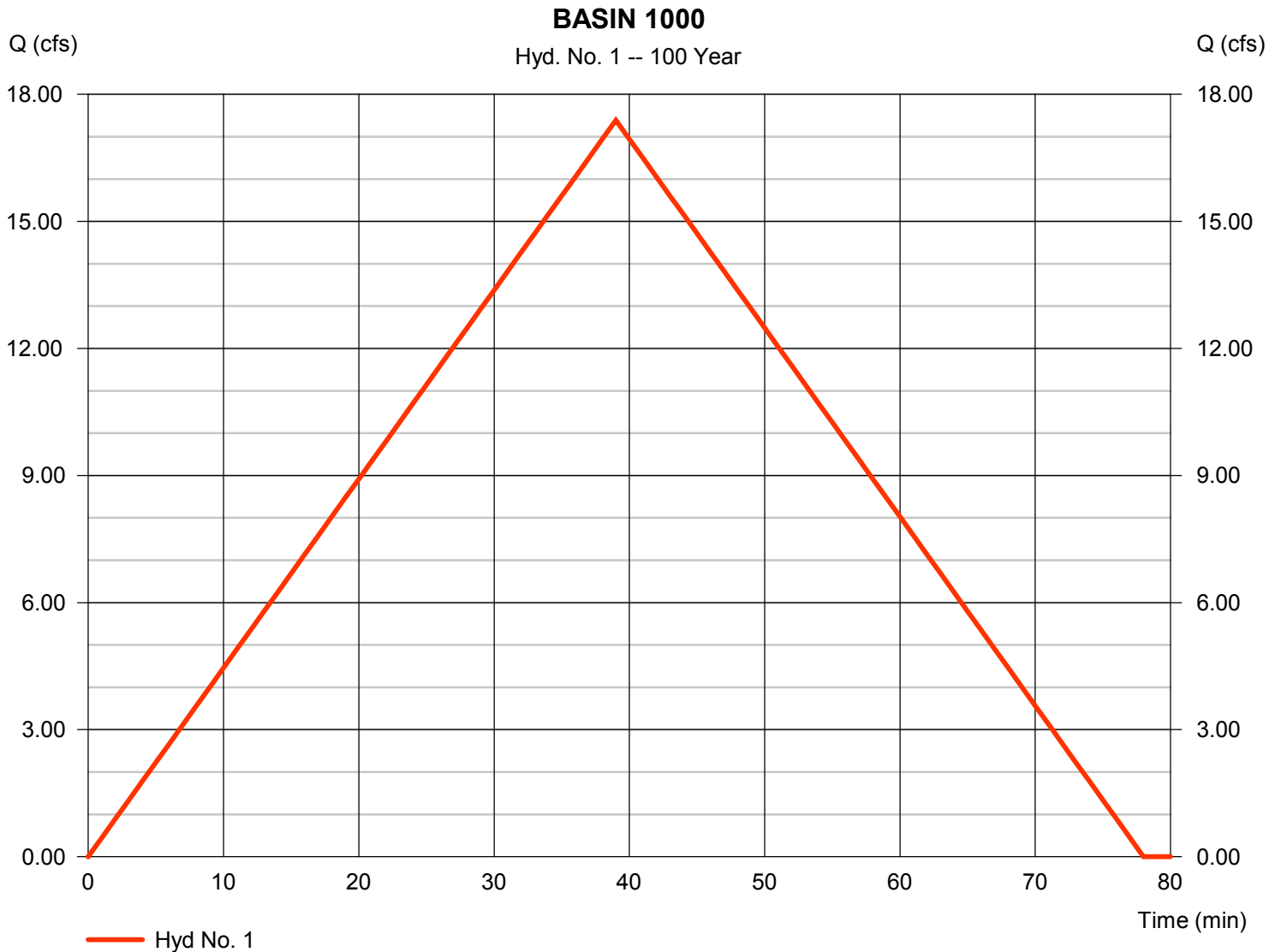
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Monday, 05 / 20 / 2019

Hyd. No. 1

BASIN 1000

Hydrograph type	= Rational	Peak discharge	= 17.39 cfs
Storm frequency	= 100 yrs	Time to peak	= 39 min
Time interval	= 1 min	Hyd. volume	= 40,692 cuft
Drainage area	= 25.600 ac	Runoff coeff.	= 0.4
Intensity	= 1.698 in/hr	Tc by TR55	= 39.00 min
IDF Curve	= 17671-PRECIP-3.IDF	Asc/Rec limb fact	= 1/1



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Monday, 05 / 20 / 2019

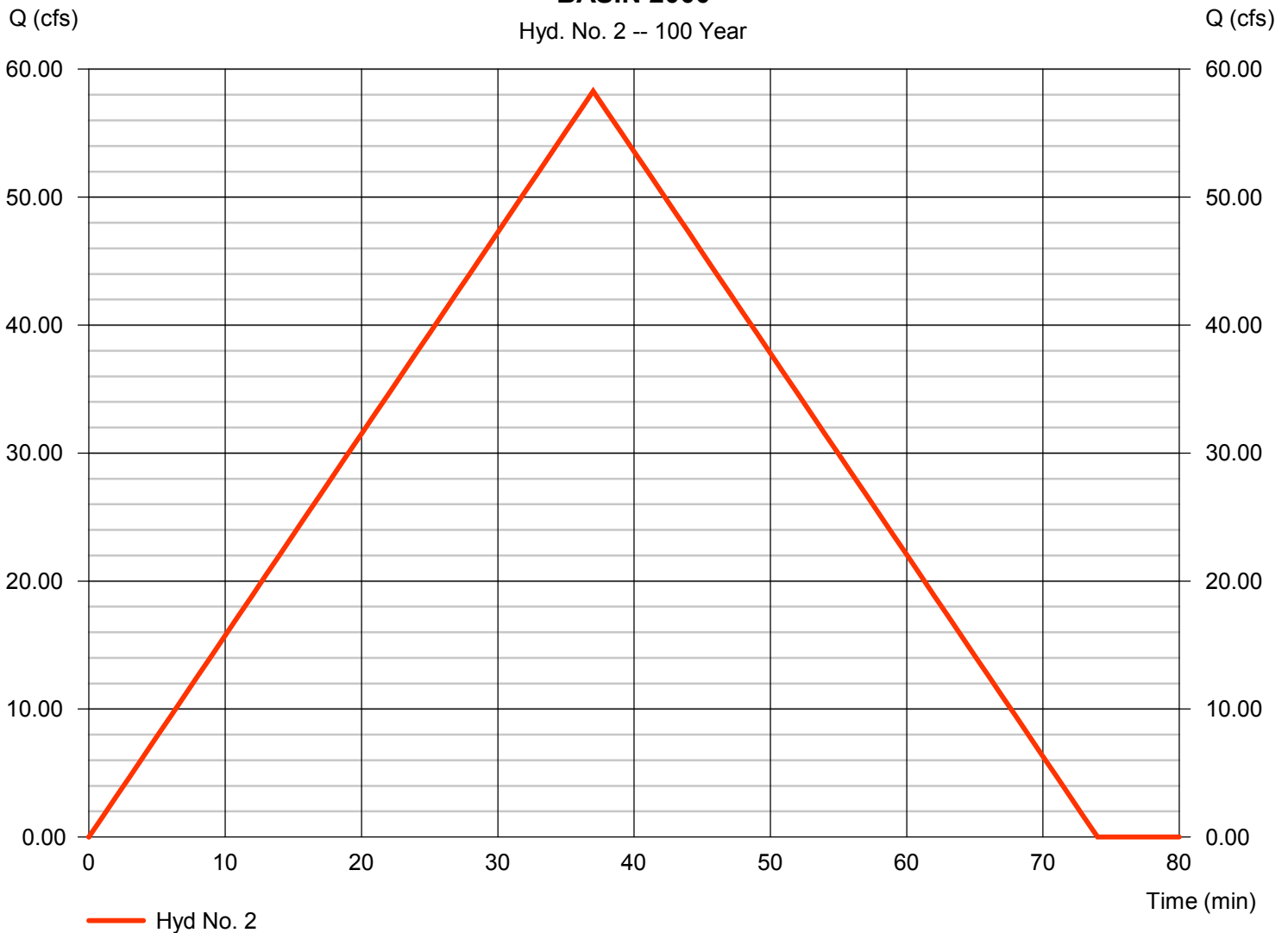
Hyd. No. 2

BASIN 2000

Hydrograph type	= Rational	Peak discharge	= 58.28 cfs
Storm frequency	= 100 yrs	Time to peak	= 37 min
Time interval	= 1 min	Hyd. volume	= 129,389 cuft
Drainage area	= 83.800 ac	Runoff coeff.	= 0.4
Intensity	= 1.739 in/hr	Tc by TR55	= 37.00 min
IDF Curve	= 17671-PRECIP-3.IDF	Asc/Rec limb fact	= 1/1

BASIN 2000

Hyd. No. 2 -- 100 Year



Hydrograph Report

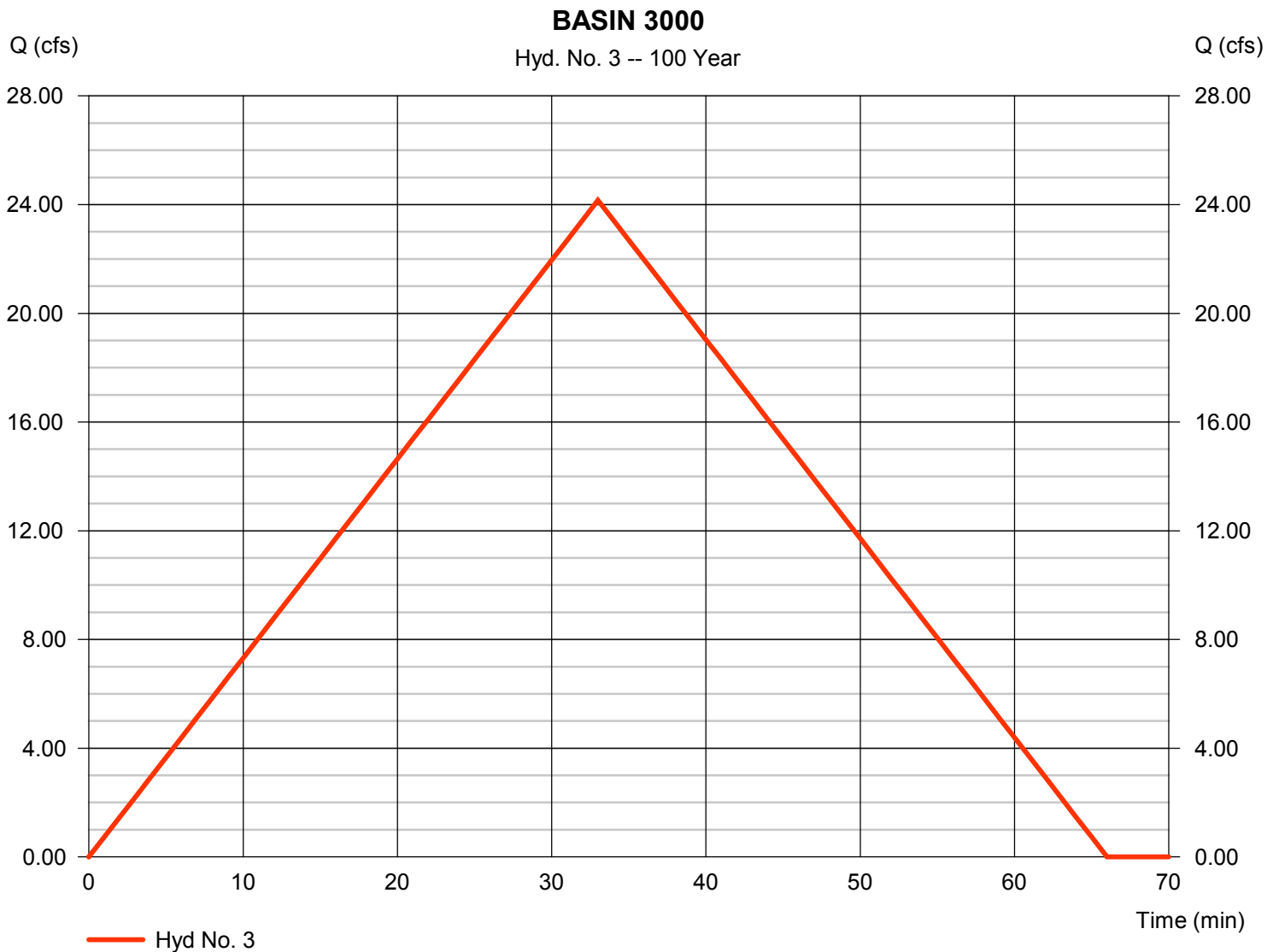
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Monday, 05 / 20 / 2019

Hyd. No. 3

BASIN 3000

Hydrograph type	= Rational	Peak discharge	= 24.16 cfs
Storm frequency	= 100 yrs	Time to peak	= 33 min
Time interval	= 1 min	Hyd. volume	= 47,834 cuft
Drainage area	= 33.000 ac	Runoff coeff.	= 0.4
Intensity	= 1.830 in/hr	Tc by TR55	= 33.00 min
IDF Curve	= 17671-PRECIP-3.IDF	Asc/Rec limb fact	= 1/1



Hydrograph Report

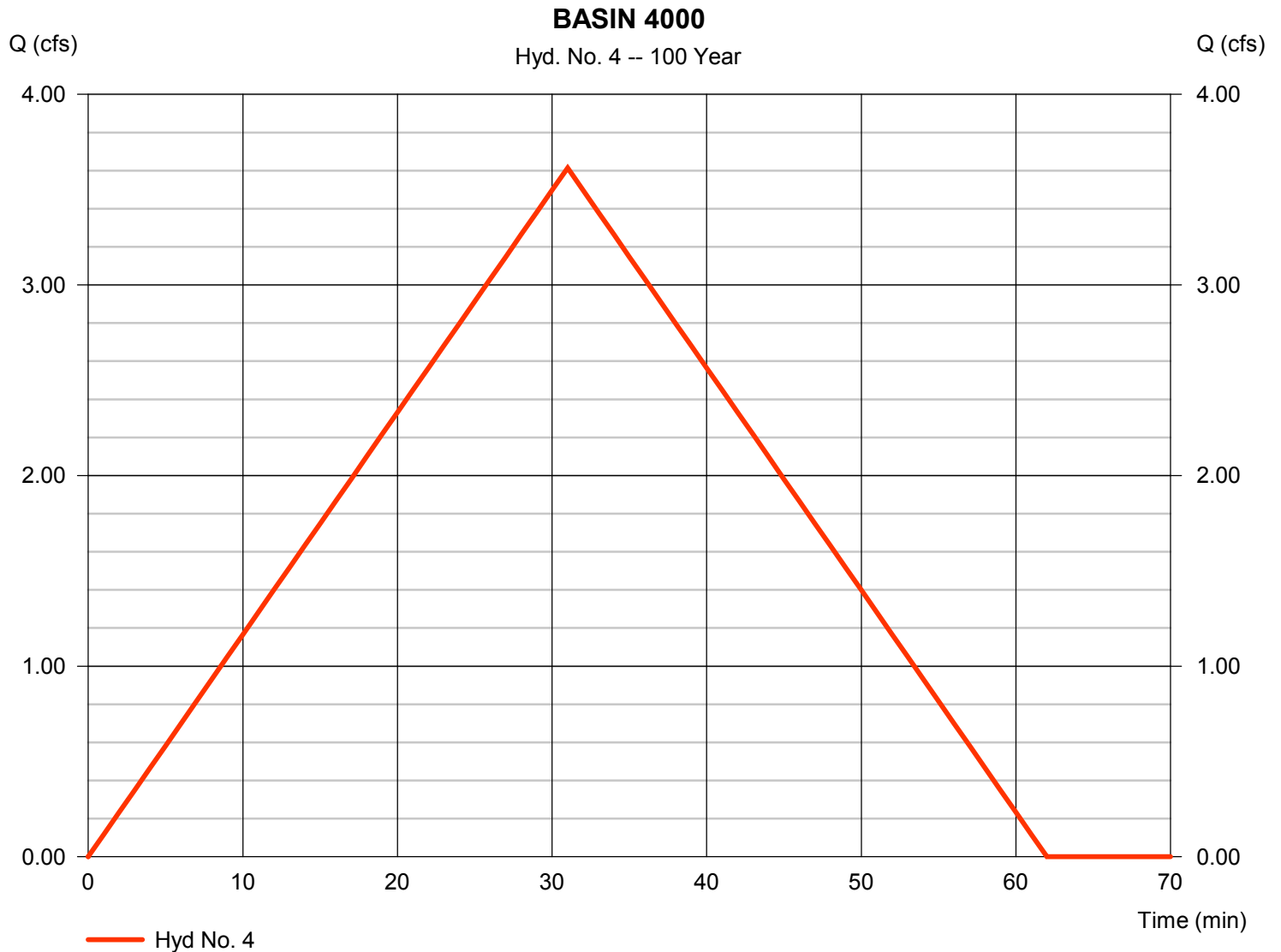
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Monday, 05 / 20 / 2019

Hyd. No. 4

BASIN 4000

Hydrograph type	= Rational	Peak discharge	= 3.614 cfs
Storm frequency	= 100 yrs	Time to peak	= 31 min
Time interval	= 1 min	Hyd. volume	= 6,722 cuft
Drainage area	= 4.800 ac	Runoff coeff.	= 0.4
Intensity	= 1.882 in/hr	Tc by TR55	= 31.00 min
IDF Curve	= 17671-PRECIP-3.IDF	Asc/Rec limb fact	= 1/1



Hydrograph Report

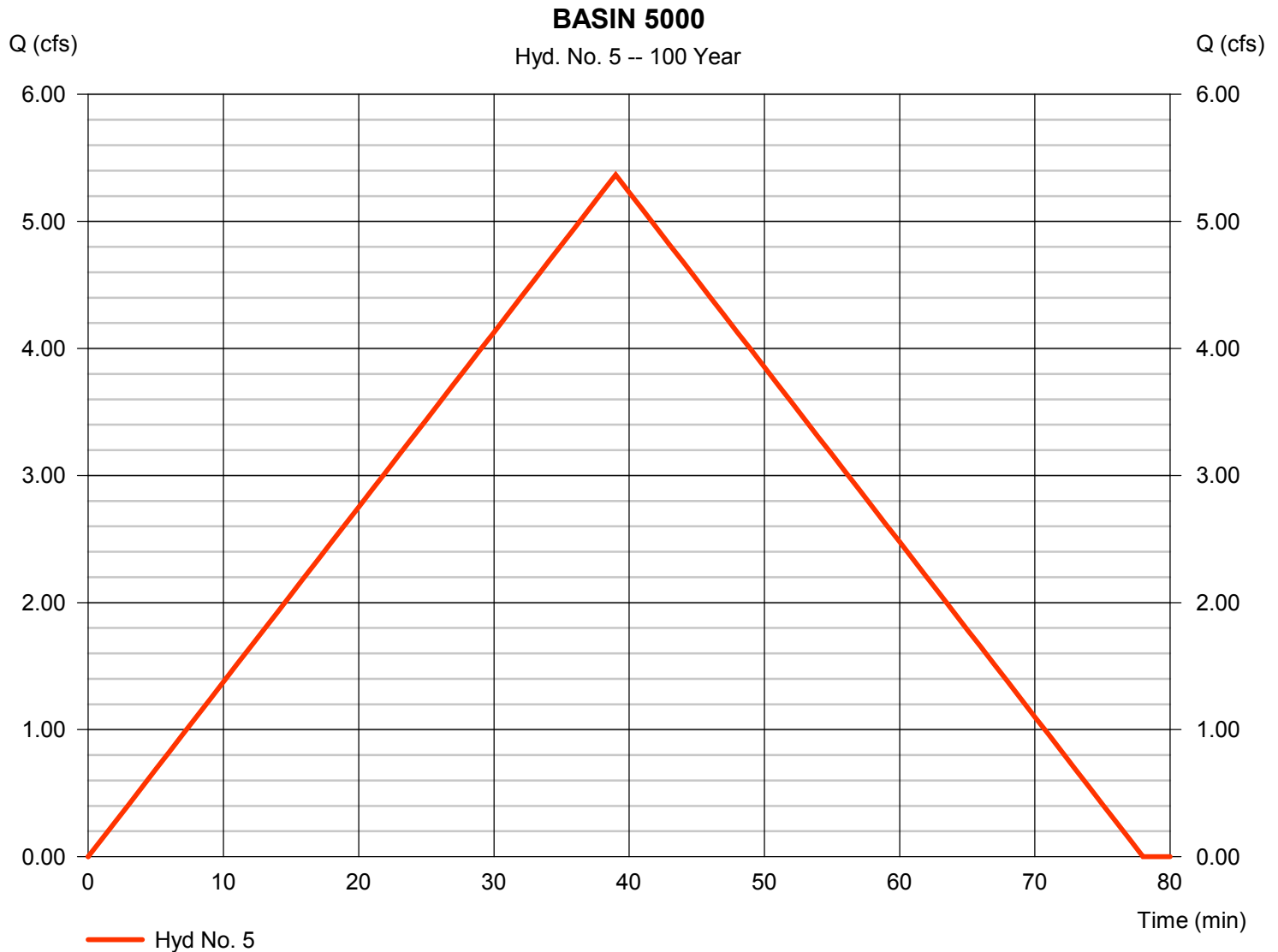
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Monday, 05 / 20 / 2019

Hyd. No. 5

BASIN 5000

Hydrograph type	= Rational	Peak discharge	= 5.366 cfs
Storm frequency	= 100 yrs	Time to peak	= 39 min
Time interval	= 1 min	Hyd. volume	= 12,557 cuft
Drainage area	= 7.900 ac	Runoff coeff.	= 0.4
Intensity	= 1.698 in/hr	Tc by TR55	= 39.00 min
IDF Curve	= 17671-PRECIP-3.IDF	Asc/Rec limb fact	= 1/1



Hydrograph Report

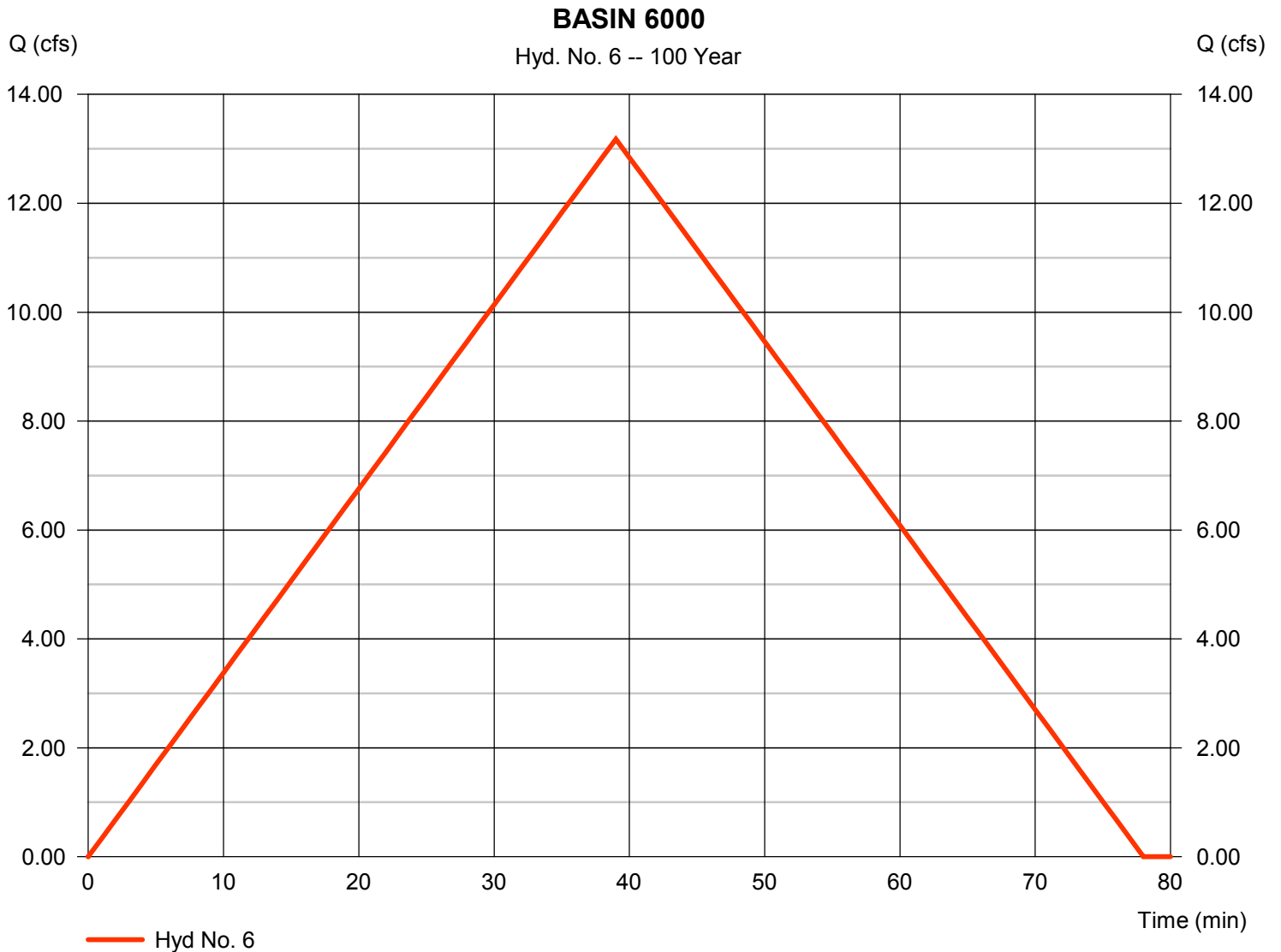
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Monday, 05 / 20 / 2019

Hyd. No. 6

BASIN 6000

Hydrograph type	= Rational	Peak discharge	= 13.18 cfs
Storm frequency	= 100 yrs	Time to peak	= 39 min
Time interval	= 1 min	Hyd. volume	= 30,837 cuft
Drainage area	= 19.400 ac	Runoff coeff.	= 0.4
Intensity	= 1.698 in/hr	Tc by TR55	= 39.00 min
IDF Curve	= 17671-PRECIP-3.IDF	Asc/Rec limb fact	= 1/1



Hydrograph Report

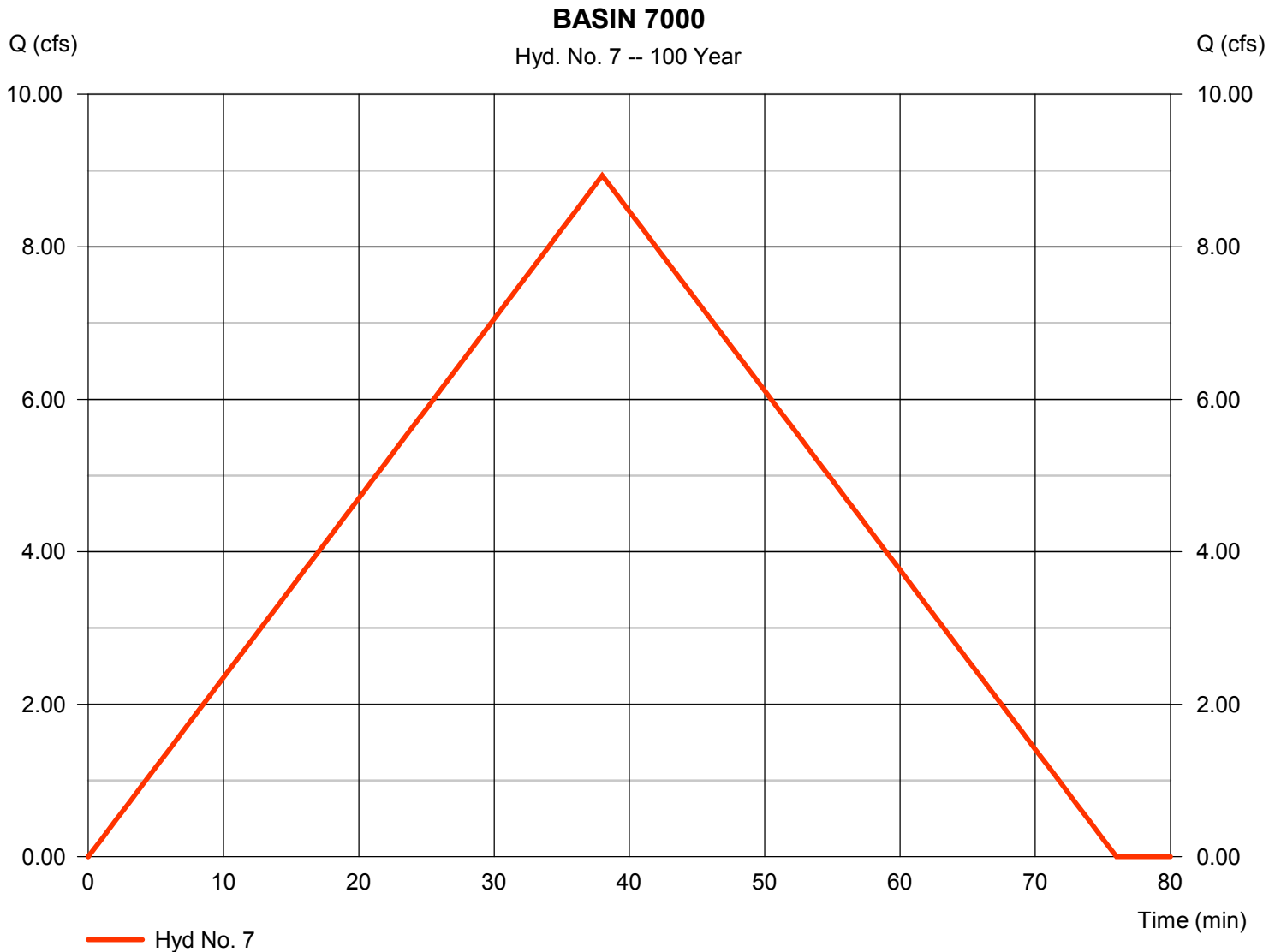
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Monday, 05 / 20 / 2019

Hyd. No. 7

BASIN 7000

Hydrograph type	= Rational	Peak discharge	= 8.934 cfs
Storm frequency	= 100 yrs	Time to peak	= 38 min
Time interval	= 1 min	Hyd. volume	= 20,370 cuft
Drainage area	= 13.000 ac	Runoff coeff.	= 0.4
Intensity	= 1.718 in/hr	Tc by TR55	= 38.00 min
IDF Curve	= 17671-PRECIP-3.IDF	Asc/Rec limb fact	= 1/1



Hydrograph Report

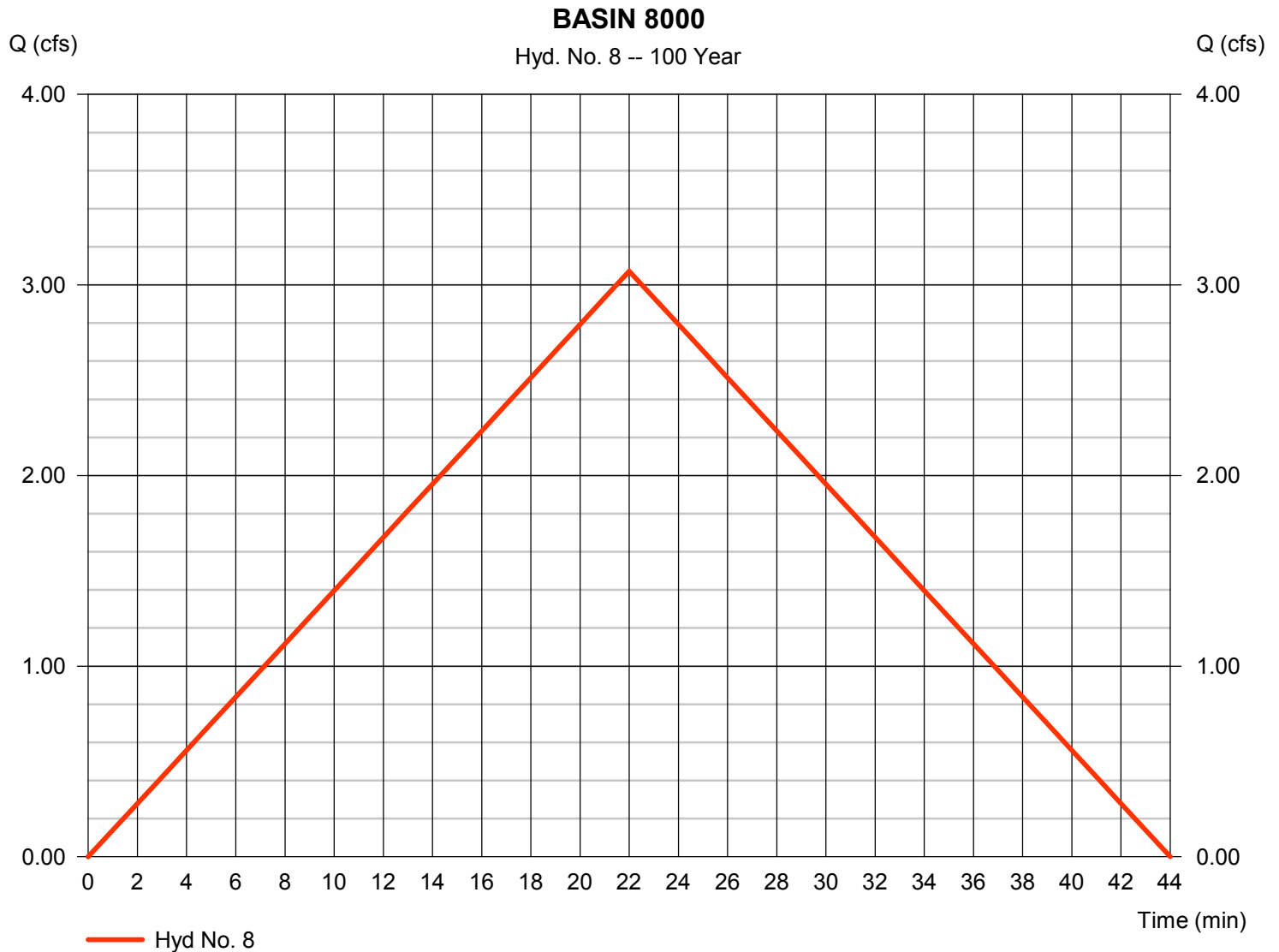
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Monday, 05 / 20 / 2019

Hyd. No. 8

BASIN 8000

Hydrograph type	= Rational	Peak discharge	= 3.072 cfs
Storm frequency	= 100 yrs	Time to peak	= 22 min
Time interval	= 1 min	Hyd. volume	= 4,055 cuft
Drainage area	= 3.500 ac	Runoff coeff.	= 0.4
Intensity	= 2.194 in/hr	Tc by TR55	= 22.00 min
IDF Curve	= 17671-PRECIP-3.IDF	Asc/Rec limb fact	= 1/1



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Monday, 05 / 20 / 2019

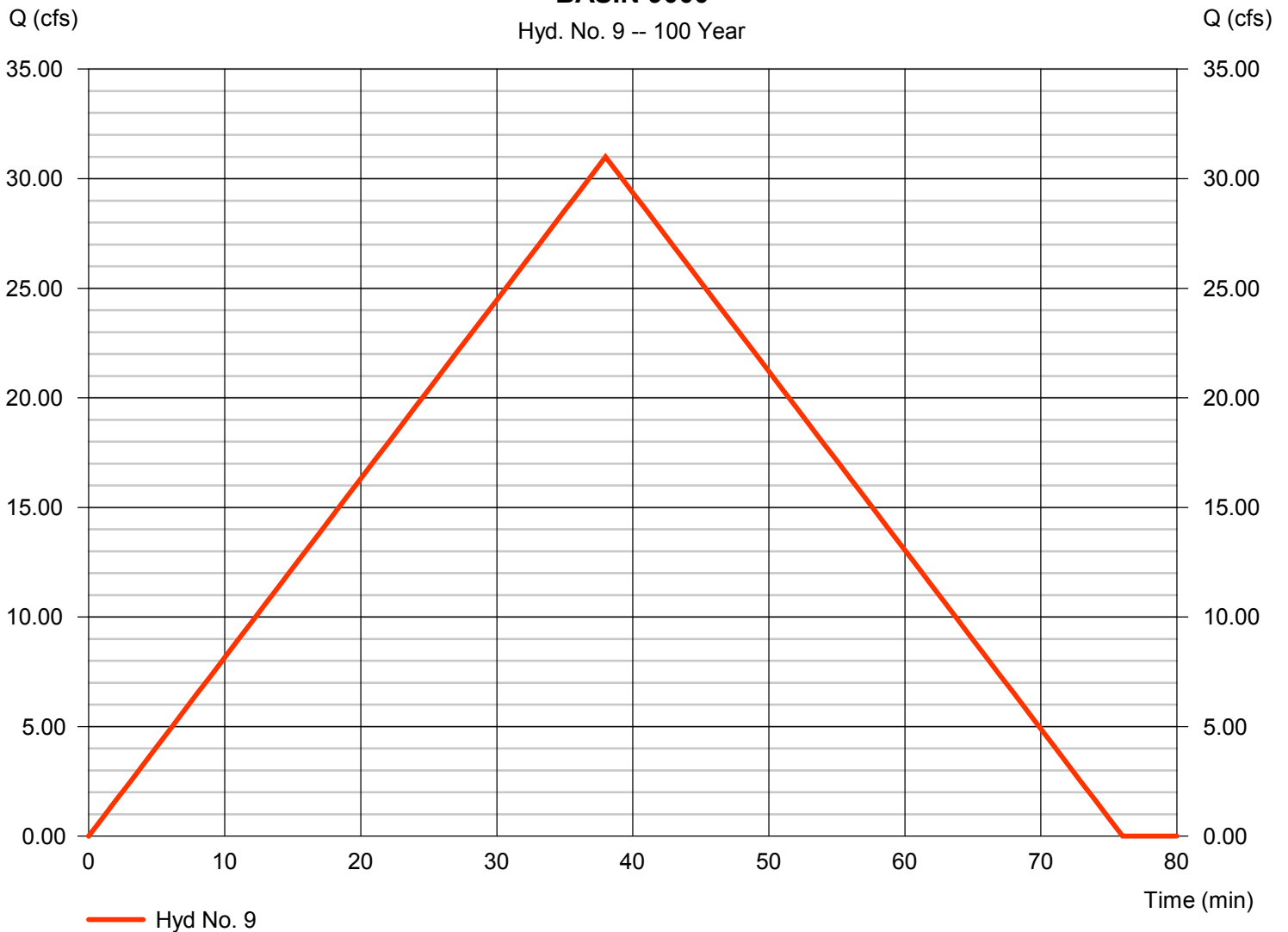
Hyd. No. 9

BASIN 9000

Hydrograph type	= Rational	Peak discharge	= 30.99 cfs
Storm frequency	= 100 yrs	Time to peak	= 38 min
Time interval	= 1 min	Hyd. volume	= 70,668 cuft
Drainage area	= 45.100 ac	Runoff coeff.	= 0.4
Intensity	= 1.718 in/hr	Tc by TR55	= 38.00 min
IDF Curve	= 17671-PRECIP-3.IDF	Asc/Rec limb fact	= 1/1

BASIN 9000

Hyd. No. 9 -- 100 Year



Hydrograph Report

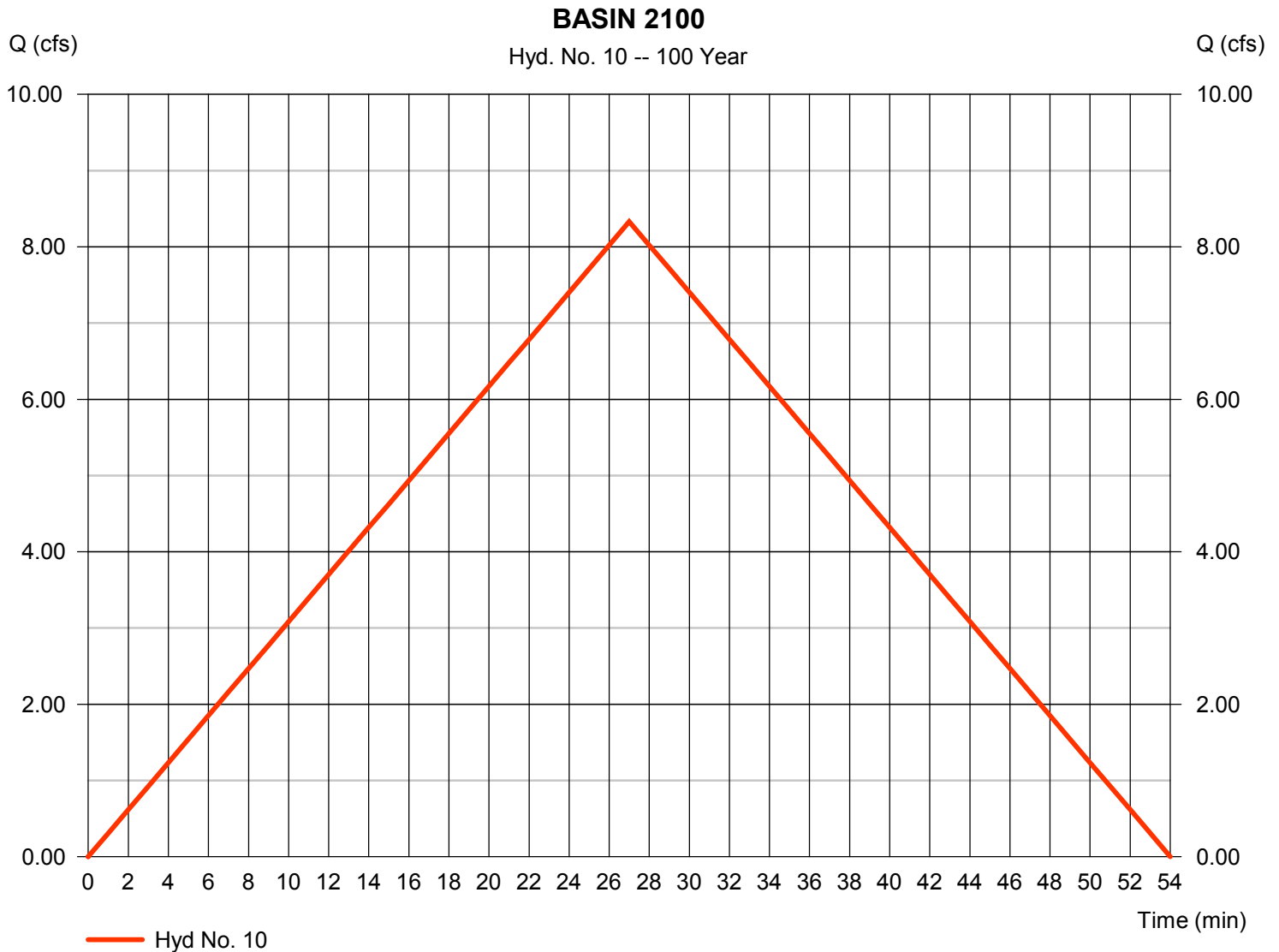
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Monday, 05 / 20 / 2019

Hyd. No. 10

BASIN 2100

Hydrograph type	= Rational	Peak discharge	= 8.329 cfs
Storm frequency	= 100 yrs	Time to peak	= 27 min
Time interval	= 1 min	Hyd. volume	= 13,494 cuft
Drainage area	= 10.400 ac	Runoff coeff.	= 0.4
Intensity	= 2.002 in/hr	Tc by TR55	= 27.00 min
IDF Curve	= 17671-PRECIP-3.IDF	Asc/Rec limb fact	= 1/1



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

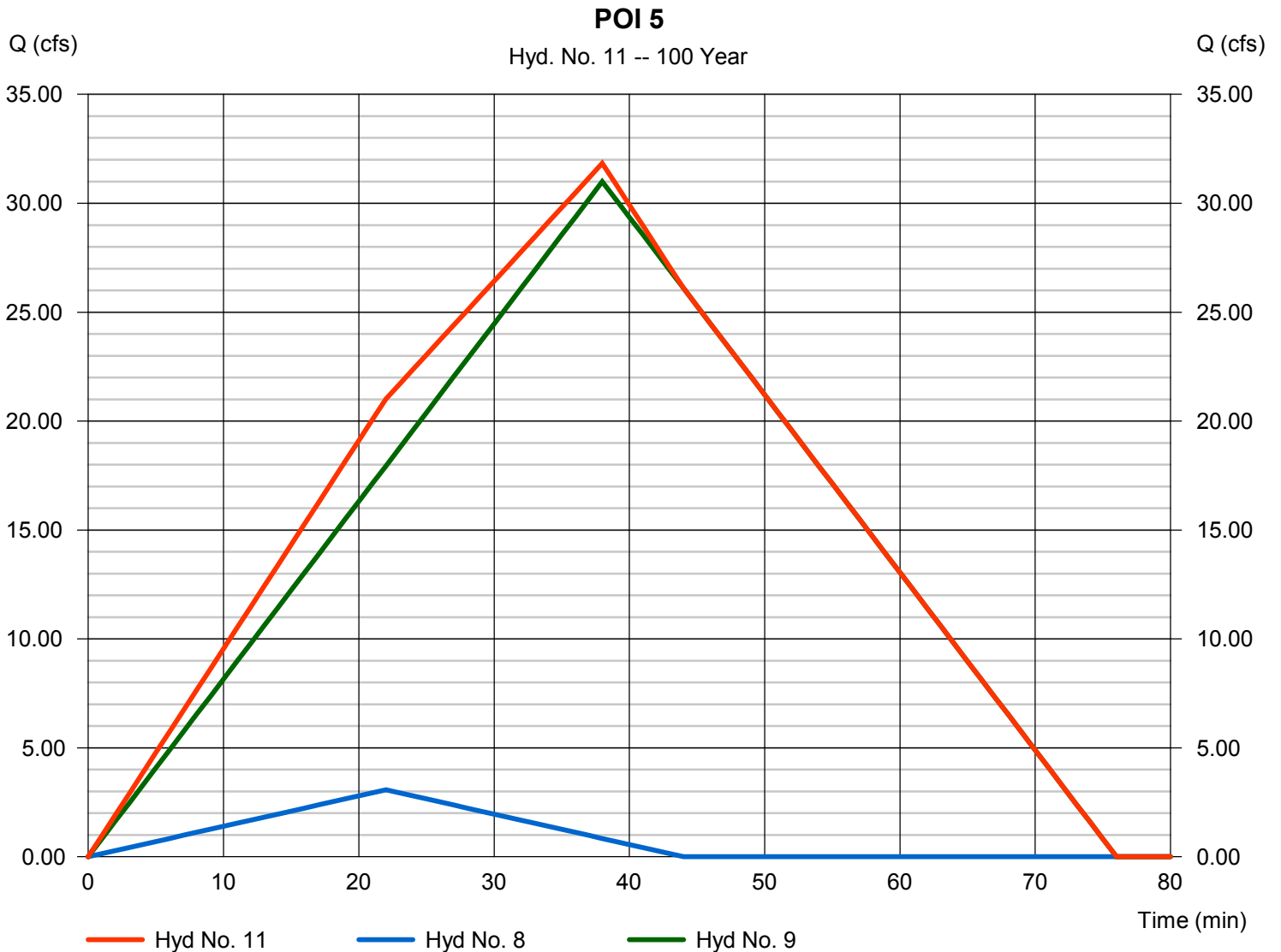
Monday, 05 / 20 / 2019

Hyd. No. 11

POI 5

Hydrograph type = Combine
 Storm frequency = 100 yrs
 Time interval = 1 min
 Inflow hyds. = 8, 9

Peak discharge = 31.83 cfs
 Time to peak = 38 min
 Hyd. volume = 74,723 cuft
 Contrib. drain. area = 48.600 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

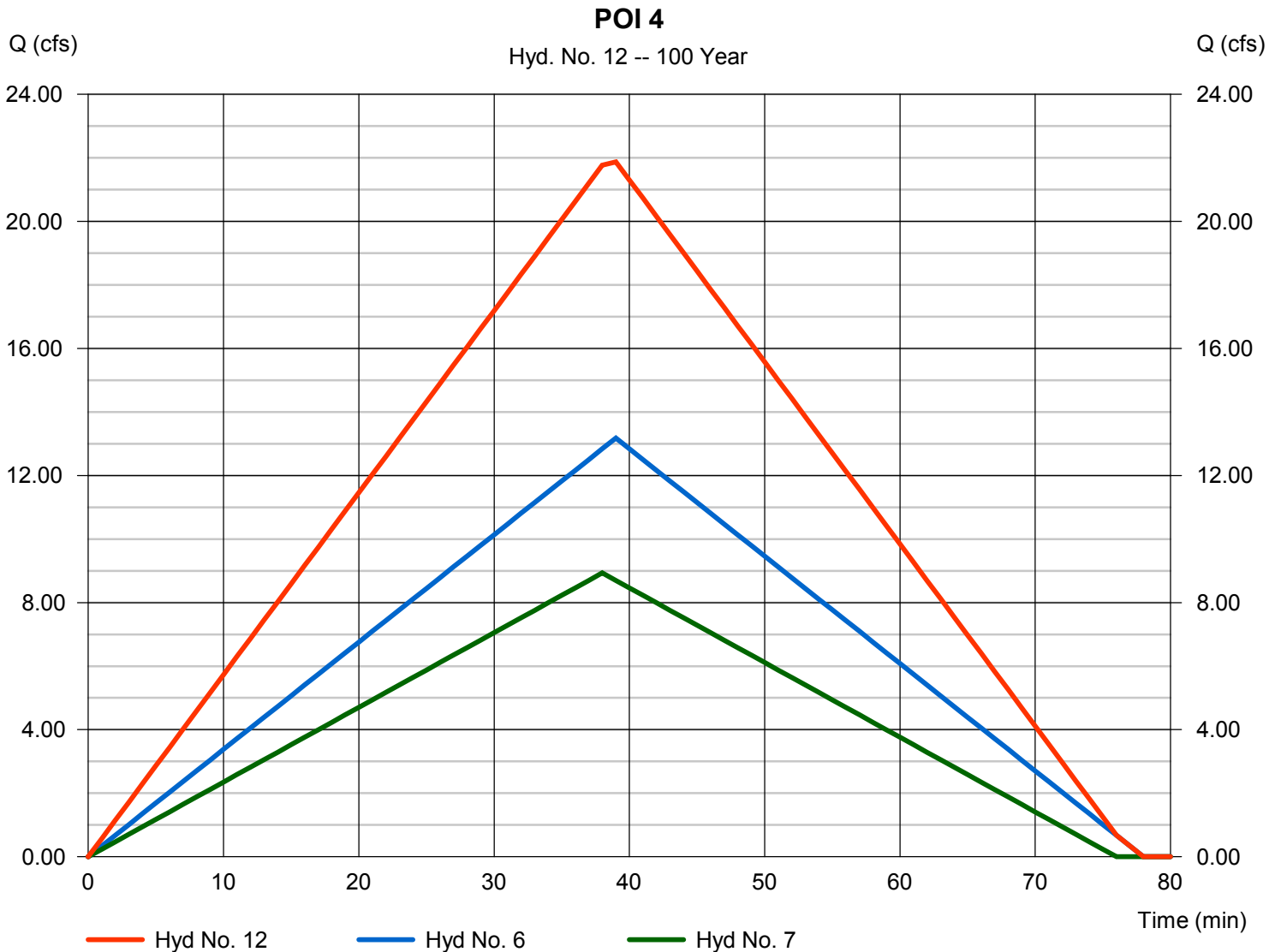
Monday, 05 / 20 / 2019

Hyd. No. 12

POI 4

Hydrograph type = Combine
 Storm frequency = 100 yrs
 Time interval = 1 min
 Inflow hyds. = 6, 7

Peak discharge = 21.88 cfs
 Time to peak = 39 min
 Hyd. volume = 51,207 cuft
 Contrib. drain. area = 32.400 ac



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

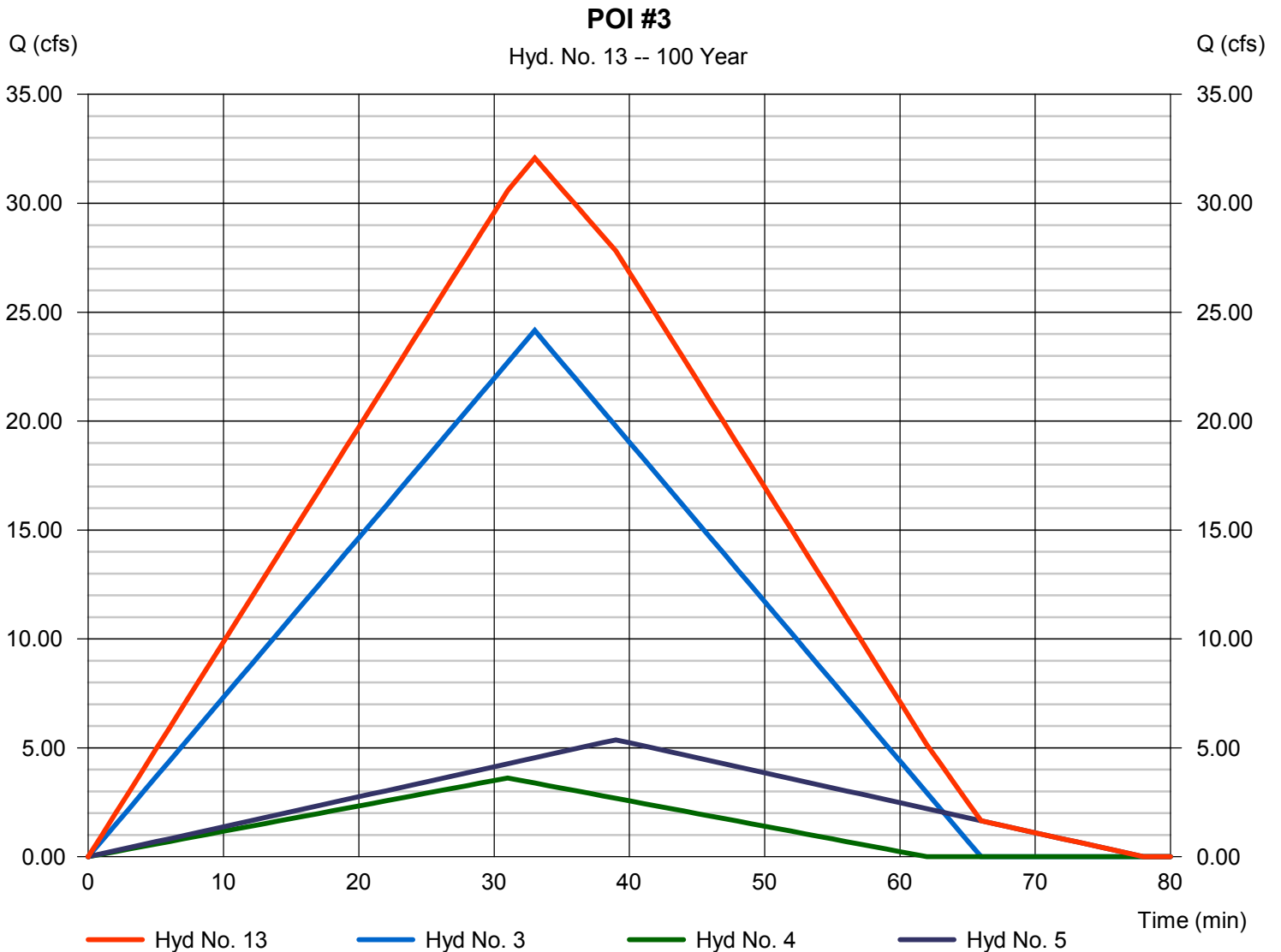
Monday, 05 / 20 / 2019

Hyd. No. 13

POI #3

Hydrograph type = Combine
 Storm frequency = 100 yrs
 Time interval = 1 min
 Inflow hyds. = 3, 4, 5

Peak discharge = 32.08 cfs
 Time to peak = 33 min
 Hyd. volume = 67,113 cuft
 Contrib. drain. area = 45.700 ac



APPENDIX B
Hydrologic Results
[Post-project]

Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	Rational	11.86	1	36	25,620	-----	-----	-----	BASIN 1000
2	Rational	27.34	1	27	44,298	-----	-----	-----	BASIN 2000
3	Rational	16.77	1	10	10,065	-----	-----	-----	BASIN 3000
4	Rational	37.84	1	10	22,704	-----	-----	-----	BASIN 4000
5	Rational	26.23	1	10	15,741	-----	-----	-----	BASIN 5000
6	Rational	18.34	1	10	11,001	-----	-----	-----	BASIN 2100
PreliminaryTc_POST.gpw					Return Period: 2 Year			Monday, 05 / 20 / 2019	

Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	Rational	15.51	1	36	33,512	-----	-----	-----	BASIN 1000
2	Rational	35.74	1	27	57,905	-----	-----	-----	BASIN 2000
3	Rational	21.88	1	10	13,125	-----	-----	-----	BASIN 3000
4	Rational	49.35	1	10	29,608	-----	-----	-----	BASIN 4000
5	Rational	34.21	1	10	20,527	-----	-----	-----	BASIN 5000
6	Rational	23.91	1	10	14,346	-----	-----	-----	BASIN 2100
PreliminaryTc_POST.gpw					Return Period: 5 Year			Monday, 05 / 20 / 2019	

Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	Rational	18.58	1	36	40,126	-----	-----	-----	BASIN 1000
2	Rational	42.74	1	27	69,238	-----	-----	-----	BASIN 2000
3	Rational	26.03	1	10	15,620	-----	-----	-----	BASIN 3000
4	Rational	58.73	1	10	35,236	-----	-----	-----	BASIN 4000
5	Rational	40.72	1	10	24,429	-----	-----	-----	BASIN 5000
6	Rational	28.46	1	10	17,073	-----	-----	-----	BASIN 2100
PreliminaryTc_POST.gpw					Return Period: 10 Year			Monday, 05 / 20 / 2019	

Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	Rational	23.03	1	36	49,734	-----	-----	-----	BASIN 1000
2	Rational	52.96	1	27	85,802	-----	-----	-----	BASIN 2000
3	Rational	32.24	1	10	19,345	-----	-----	-----	BASIN 3000
4	Rational	72.73	1	10	43,639	-----	-----	-----	BASIN 4000
5	Rational	50.42	1	10	30,255	-----	-----	-----	BASIN 5000
6	Rational	35.24	1	10	21,144	-----	-----	-----	BASIN 2100
PreliminaryTc_POST.gpw					Return Period: 25 Year			Monday, 05 / 20 / 2019	

Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	Rational	26.51	1	36	57,252	-----	-----	-----	BASIN 1000
2	Rational	61.02	1	27	98,849	-----	-----	-----	BASIN 2000
3	Rational	37.25	1	10	22,347	-----	-----	-----	BASIN 3000
4	Rational	84.02	1	10	50,411	-----	-----	-----	BASIN 4000
5	Rational	58.25	1	10	34,950	-----	-----	-----	BASIN 5000
6	Rational	40.71	1	10	24,426	-----	-----	-----	BASIN 2100
PreliminaryTc_POST.gpw					Return Period: 50 Year			Monday, 05 / 20 / 2019	

Hydrograph Summary Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	Rational	30.28	1	36	65,396	-----	-----	-----	BASIN 1000
2	Rational	69.84	1	27	113,138	-----	-----	-----	BASIN 2000
3	Rational	42.92	1	10	25,754	-----	-----	-----	BASIN 3000
4	Rational	96.83	1	10	58,096	-----	-----	-----	BASIN 4000
5	Rational	67.13	1	10	40,278	-----	-----	-----	BASIN 5000
6	Rational	46.92	1	10	28,150	-----	-----	-----	BASIN 2100
PreliminaryTc_POST.gpw					Return Period: 100 Year			Monday, 05 / 20 / 2019	

Watershed Model Schematic

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12



Legend

<u>Hyd.</u>	<u>Origin</u>	<u>Description</u>
1	Rational	BASIN 1000
2	Rational	BASIN 2000
3	Rational	BASIN 3000
4	Rational	BASIN 4000
5	Rational	BASIN 5000
6	Rational	BASIN 2100

Hydrograph Report

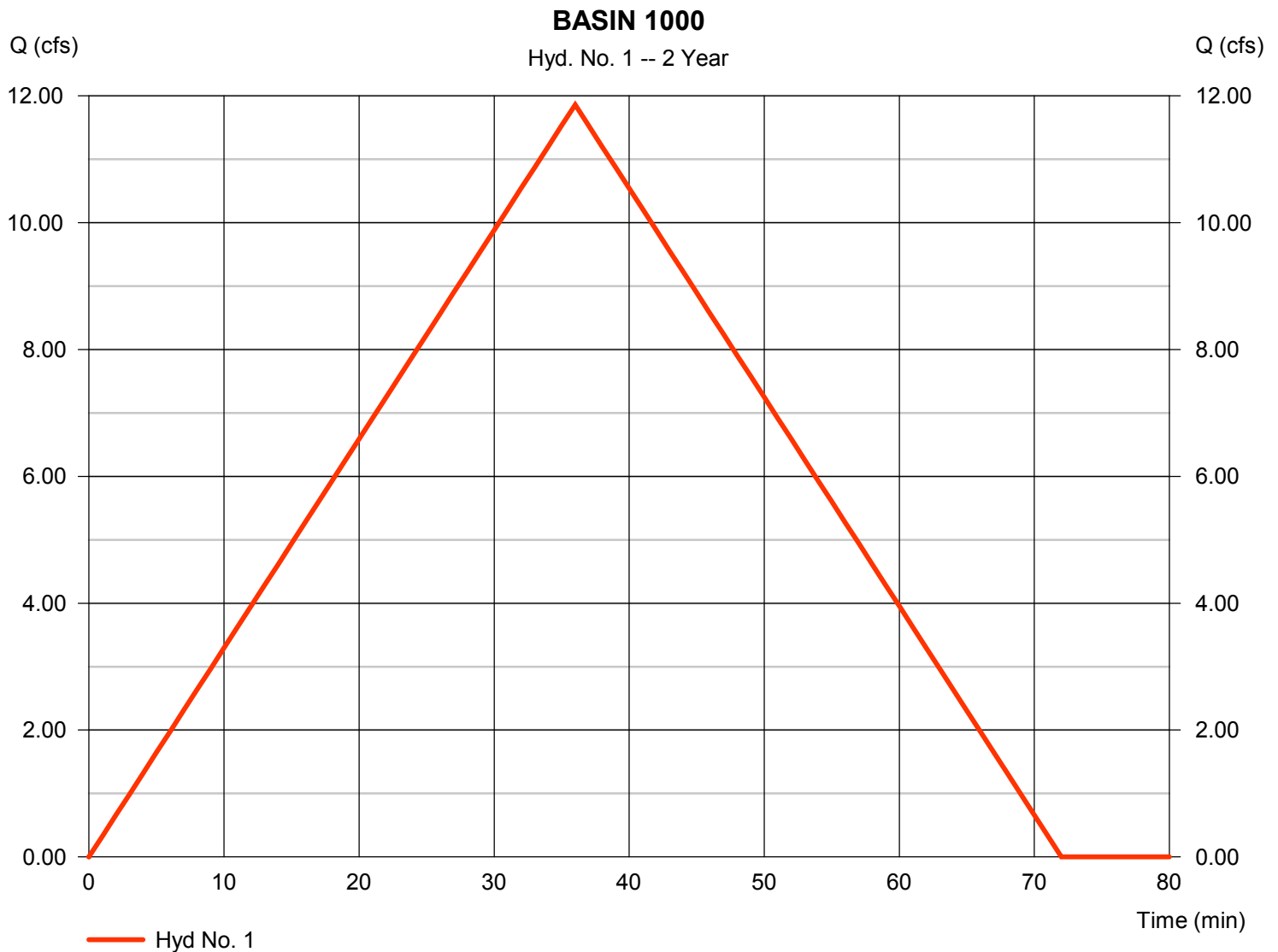
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Monday, 05 / 20 / 2019

Hyd. No. 1

BASIN 1000

Hydrograph type	= Rational	Peak discharge	= 11.86 cfs
Storm frequency	= 2 yrs	Time to peak	= 36 min
Time interval	= 1 min	Hyd. volume	= 25,620 cuft
Drainage area	= 21.500 ac	Runoff coeff.	= 0.8
Intensity	= 0.690 in/hr	Tc by TR55	= 36.00 min
IDF Curve	= 17671-PRECIP-3.IDF	Asc/Rec limb fact	= 1/1



TR55 Tc Worksheet

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Hyd. No. 1

BASIN 1000

<u>Description</u>	<u>A</u>	<u>B</u>	<u>C</u>	<u>Totals</u>			
Sheet Flow							
Manning's n-value	= 0.150	0.011	0.011				
Flow length (ft)	= 300.0	0.0	0.0				
Two-year 24-hr precip. (in)	= 2.37	0.00	0.00				
Land slope (%)	= 1.70	0.00	0.00				
Travel Time (min)	= 29.26	+	0.00	+	0.00	=	29.26
Shallow Concentrated Flow							
Flow length (ft)	= 430.00	535.00	0.00				
Watercourse slope (%)	= 2.31	1.32	0.00				
Surface description	= Unpaved	Paved	Paved				
Average velocity (ft/s)	=2.45	2.34	0.00				
Travel Time (min)	= 2.92	+	3.82	+	0.00	=	6.74
Channel Flow							
X sectional flow area (sqft)	= 0.00	0.00	0.00				
Wetted perimeter (ft)	= 0.00	0.00	0.00				
Channel slope (%)	= 0.00	0.00	0.00				
Manning's n-value	= 0.015	0.015	0.015				
Velocity (ft/s)	=0.00	0.00	0.00				
Flow length (ft)	((0})0.0	0.0	0.0				
Travel Time (min)	= 0.00	+	0.00	+	0.00	=	0.00
Total Travel Time, Tc				36.00 min			

Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Monday, 05 / 20 / 2019

Hyd. No. 2

BASIN 2000

Hydrograph type	= Rational	Peak discharge	= 27.34 cfs
Storm frequency	= 2 yrs	Time to peak	= 27 min
Time interval	= 1 min	Hyd. volume	= 44,298 cuft
Drainage area	= 87.200 ac	Runoff coeff.	= 0.4
Intensity	= 0.784 in/hr	Tc by TR55	= 27.00 min
IDF Curve	= 17671-PRECIP-3.IDF	Asc/Rec limb fact	= 1/1



TR55 Tc Worksheet

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Hyd. No. 2

BASIN 2000

<u>Description</u>	<u>A</u>	<u>B</u>	<u>C</u>	<u>Totals</u>			
Sheet Flow							
Manning's n-value	= 0.150	0.011	0.011				
Flow length (ft)	= 300.0	0.0	0.0				
Two-year 24-hr precip. (in)	= 2.37	0.00	0.00				
Land slope (%)	= 0.96	0.00	0.00				
Travel Time (min)	= 36.77	+	0.00	+	0.00	=	36.77
Shallow Concentrated Flow							
Flow length (ft)	= 685.00	557.00	665.00				
Watercourse slope (%)	= 2.15	2.80	0.92				
Surface description	= Paved	Unpaved	Unpaved				
Average velocity (ft/s)	=2.98	2.70	1.55				
Travel Time (min)	= 3.83	+	3.44	+	7.16	=	14.43
Channel Flow							
X sectional flow area (sqft)	= 220.00	0.00	0.00				
Wetted perimeter (ft)	= 50.00	0.00	0.00				
Channel slope (%)	= 2.50	0.00	0.00				
Manning's n-value	= 0.030	0.030	0.015				
Velocity (ft/s)	=21.19	0.00	0.00				
Flow length (ft)	({})710.0	0.0	0.0				
Travel Time (min)	= 0.56	+	0.00	+	0.00	=	0.56
Total Travel Time, Tc					27.00 min		

Hydrograph Report

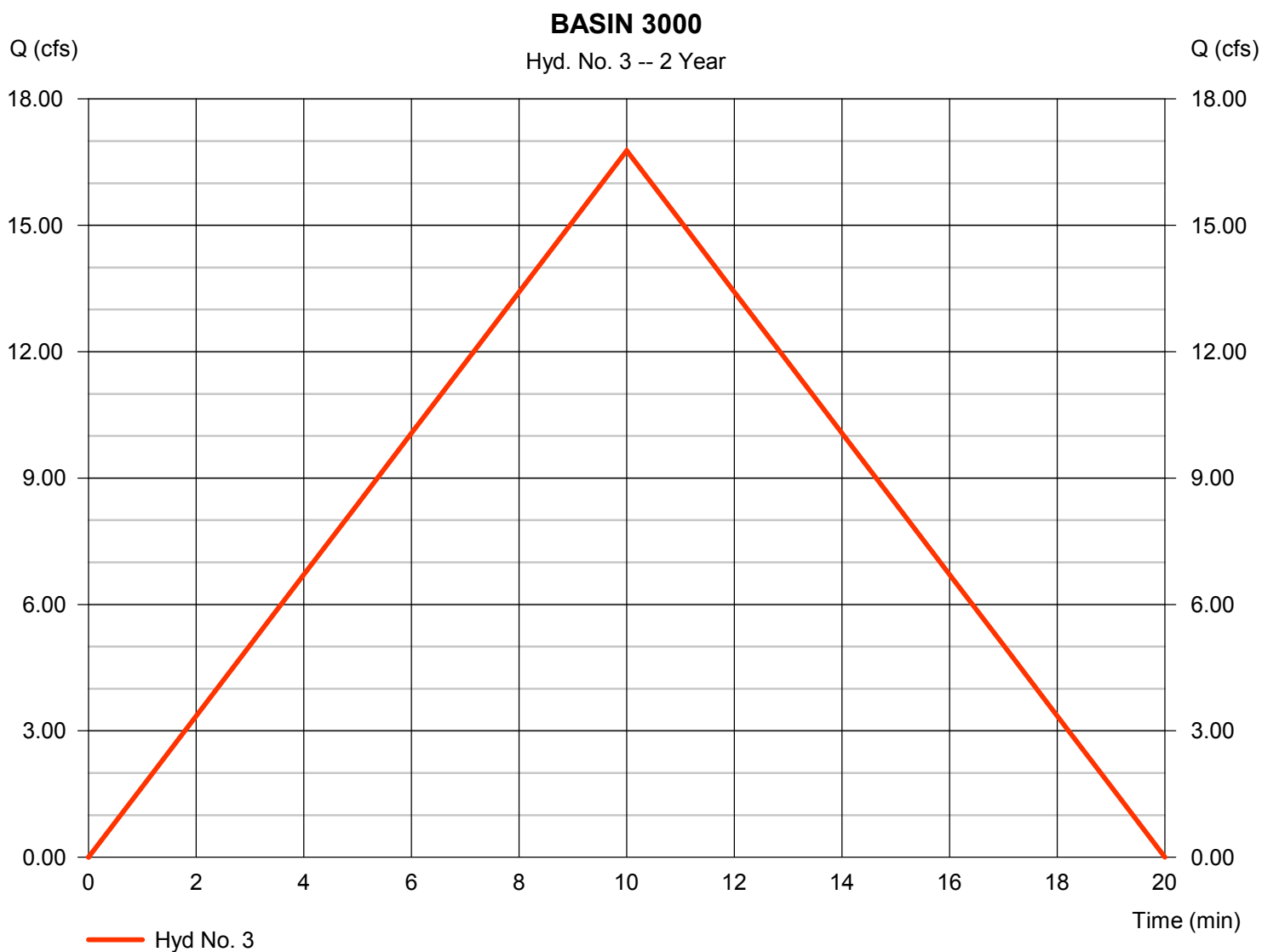
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Monday, 05 / 20 / 2019

Hyd. No. 3

BASIN 3000

Hydrograph type	= Rational	Peak discharge	= 16.77 cfs
Storm frequency	= 2 yrs	Time to peak	= 10 min
Time interval	= 1 min	Hyd. volume	= 10,065 cuft
Drainage area	= 17.200 ac	Runoff coeff.	= 0.8
Intensity	= 1.219 in/hr	Tc by User	= 10.00 min
IDF Curve	= 17671-PRECIP-3.IDF	Asc/Rec limb fact	= 1/1



Hydrograph Report

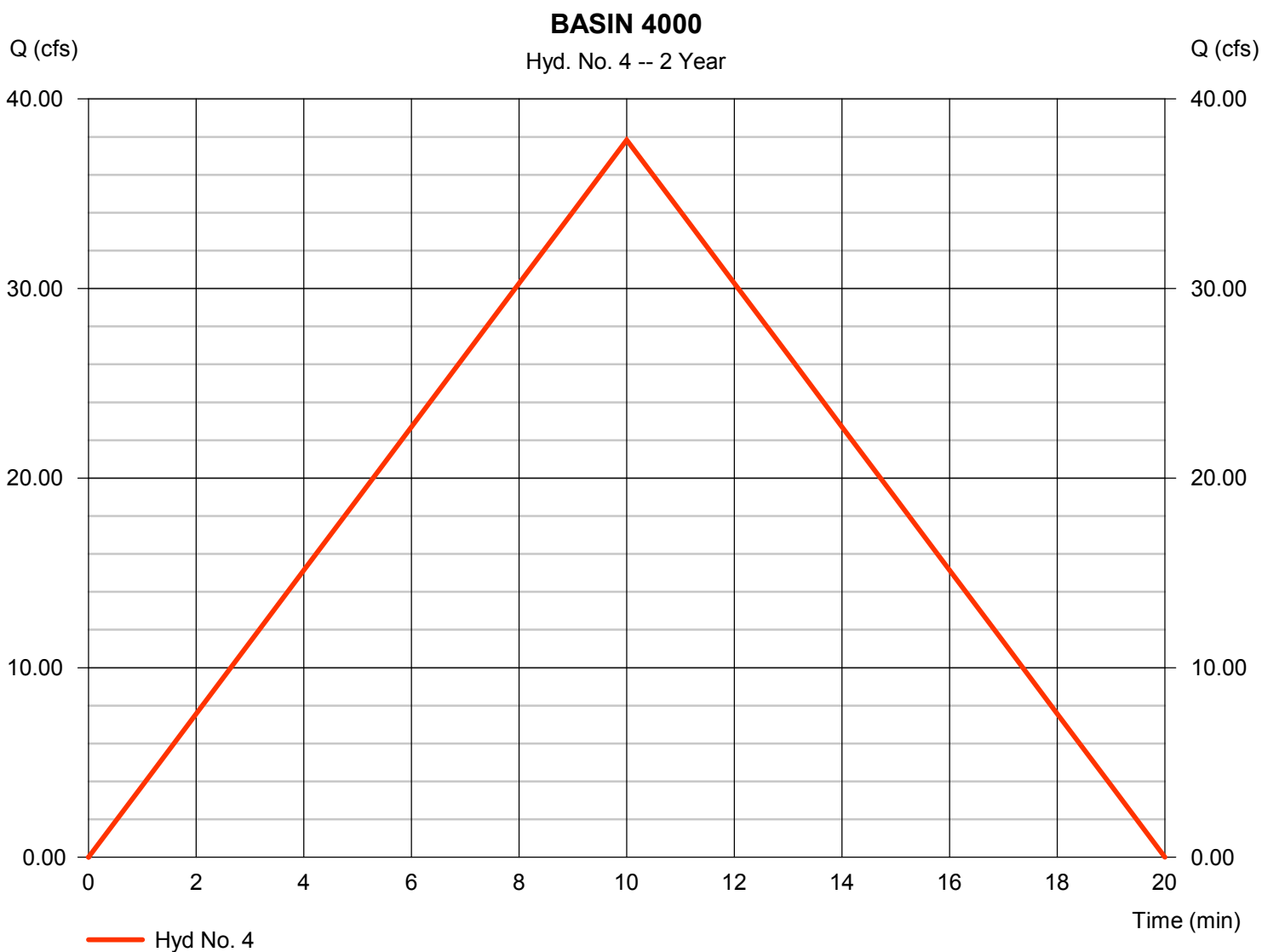
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Monday, 05 / 20 / 2019

Hyd. No. 4

BASIN 4000

Hydrograph type	= Rational	Peak discharge	= 37.84 cfs
Storm frequency	= 2 yrs	Time to peak	= 10 min
Time interval	= 1 min	Hyd. volume	= 22,704 cuft
Drainage area	= 38.800 ac	Runoff coeff.	= 0.8
Intensity	= 1.219 in/hr	Tc by User	= 10.00 min
IDF Curve	= 17671-PRECIP-3.IDF	Asc/Rec limb fact	= 1/1



Hydrograph Report

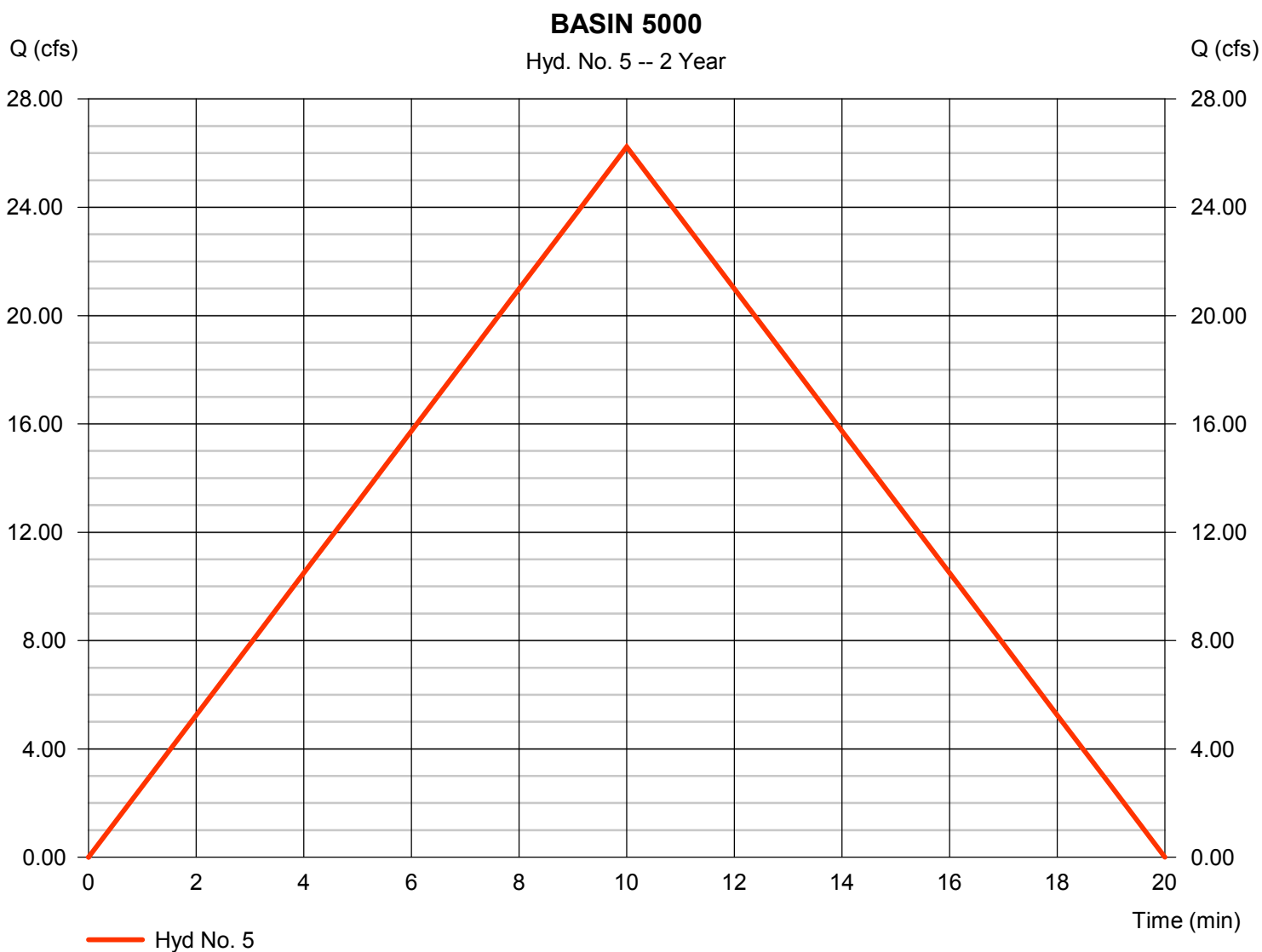
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Monday, 05 / 20 / 2019

Hyd. No. 5

BASIN 5000

Hydrograph type	= Rational	Peak discharge	= 26.23 cfs
Storm frequency	= 2 yrs	Time to peak	= 10 min
Time interval	= 1 min	Hyd. volume	= 15,741 cuft
Drainage area	= 26.900 ac	Runoff coeff.	= 0.8
Intensity	= 1.219 in/hr	Tc by User	= 10.00 min
IDF Curve	= 17671-PRECIP-3.IDF	Asc/Rec limb fact	= 1/1



Hydrograph Report

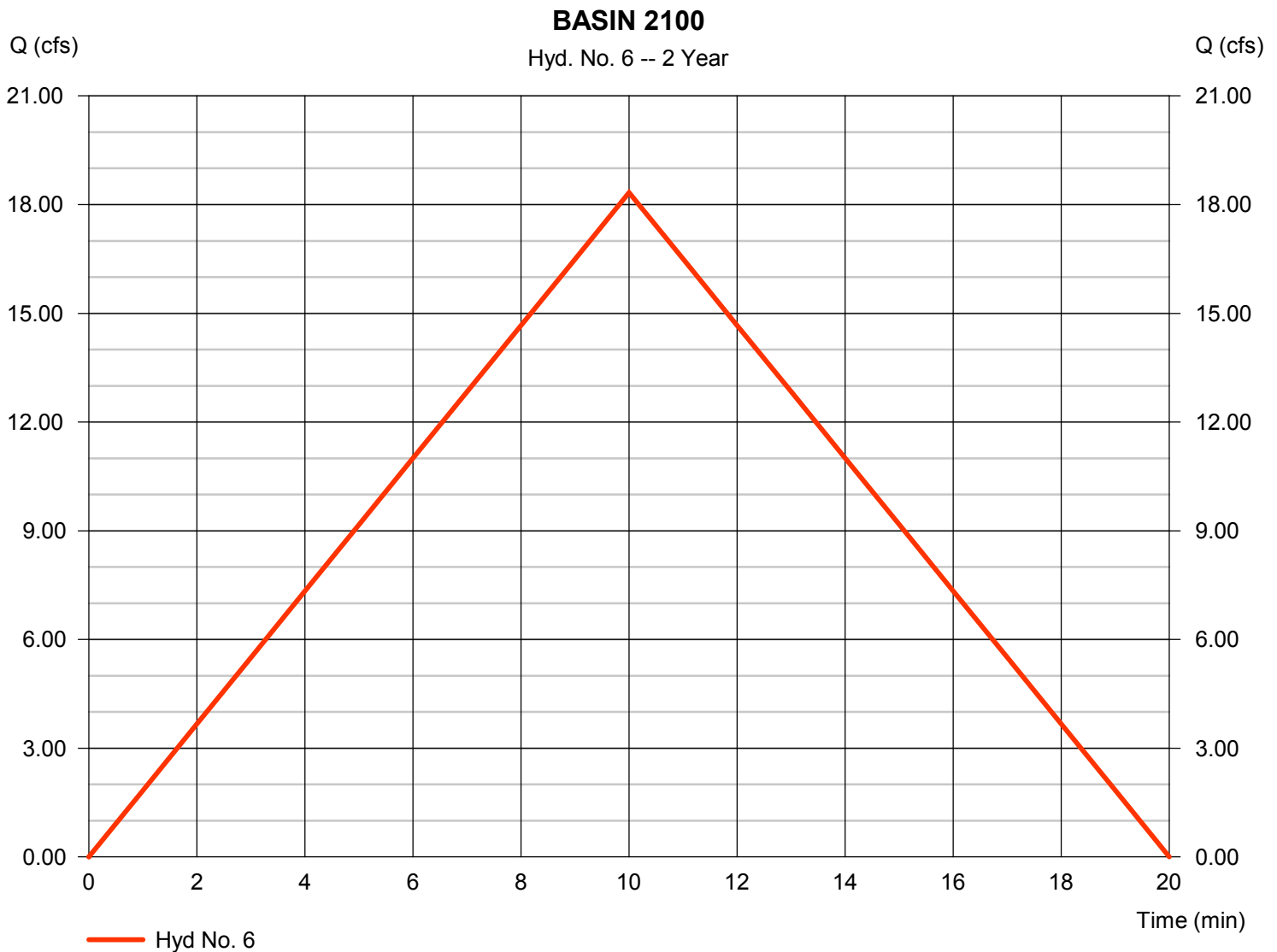
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Monday, 05 / 20 / 2019

Hyd. No. 6

BASIN 2100

Hydrograph type	= Rational	Peak discharge	= 18.34 cfs
Storm frequency	= 2 yrs	Time to peak	= 10 min
Time interval	= 1 min	Hyd. volume	= 11,001 cuft
Drainage area	= 18.800 ac	Runoff coeff.	= 0.8
Intensity	= 1.219 in/hr	Tc by User	= 10.00 min
IDF Curve	= 17671-PRECIP-3.IDF	Asc/Rec limb fact	= 1/1



Hydrograph Report

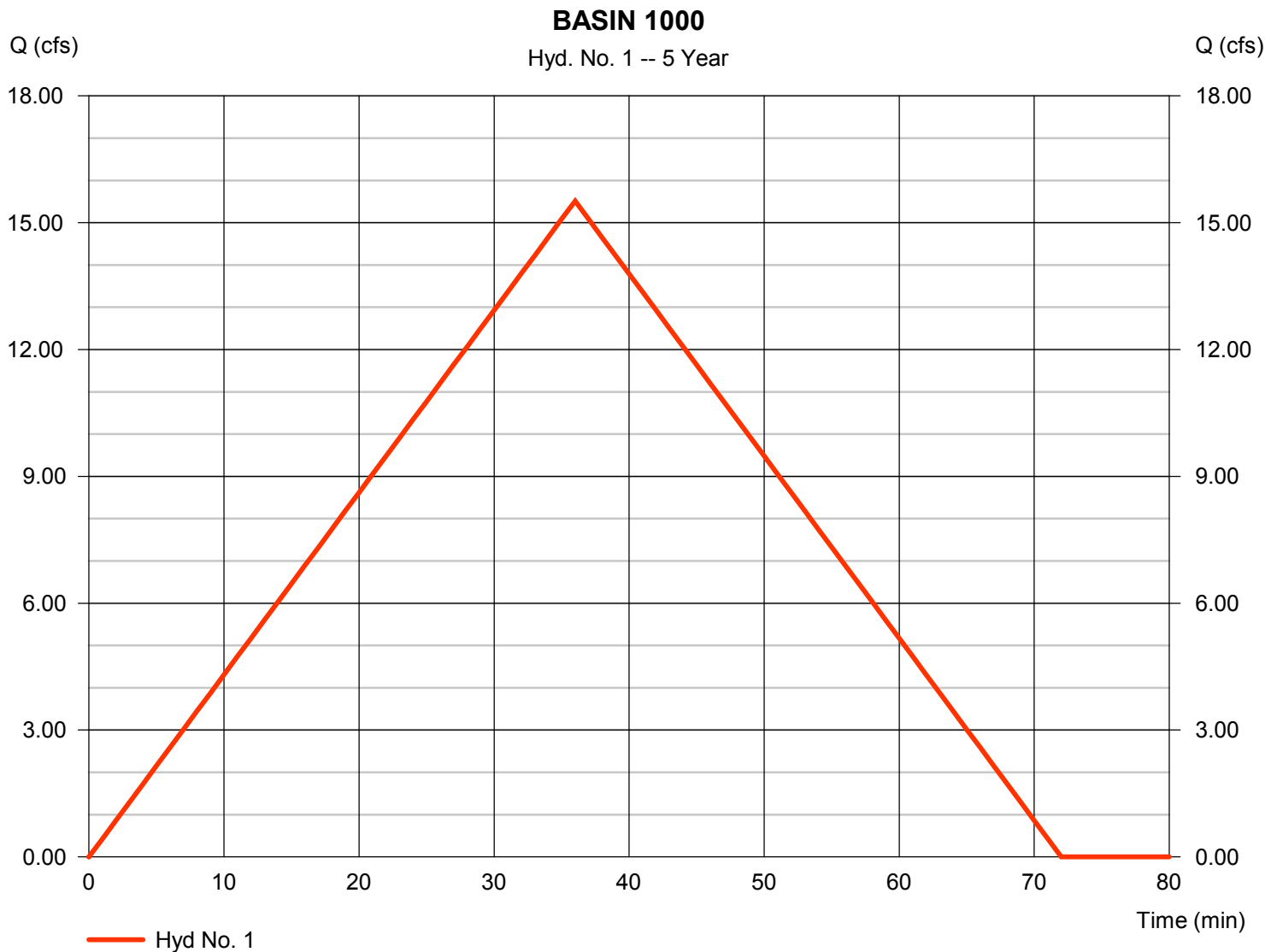
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Monday, 05 / 20 / 2019

Hyd. No. 1

BASIN 1000

Hydrograph type	= Rational	Peak discharge	= 15.51 cfs
Storm frequency	= 5 yrs	Time to peak	= 36 min
Time interval	= 1 min	Hyd. volume	= 33,512 cuft
Drainage area	= 21.500 ac	Runoff coeff.	= 0.8
Intensity	= 0.902 in/hr	Tc by TR55	= 36.00 min
IDF Curve	= 17671-PRECIP-3.IDF	Asc/Rec limb fact	= 1/1



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Monday, 05 / 20 / 2019

Hyd. No. 2

BASIN 2000

Hydrograph type	= Rational	Peak discharge	= 35.74 cfs
Storm frequency	= 5 yrs	Time to peak	= 27 min
Time interval	= 1 min	Hyd. volume	= 57,905 cuft
Drainage area	= 87.200 ac	Runoff coeff.	= 0.4
Intensity	= 1.025 in/hr	Tc by TR55	= 27.00 min
IDF Curve	= 17671-PRECIP-3.IDF	Asc/Rec limb fact	= 1/1



Hydrograph Report

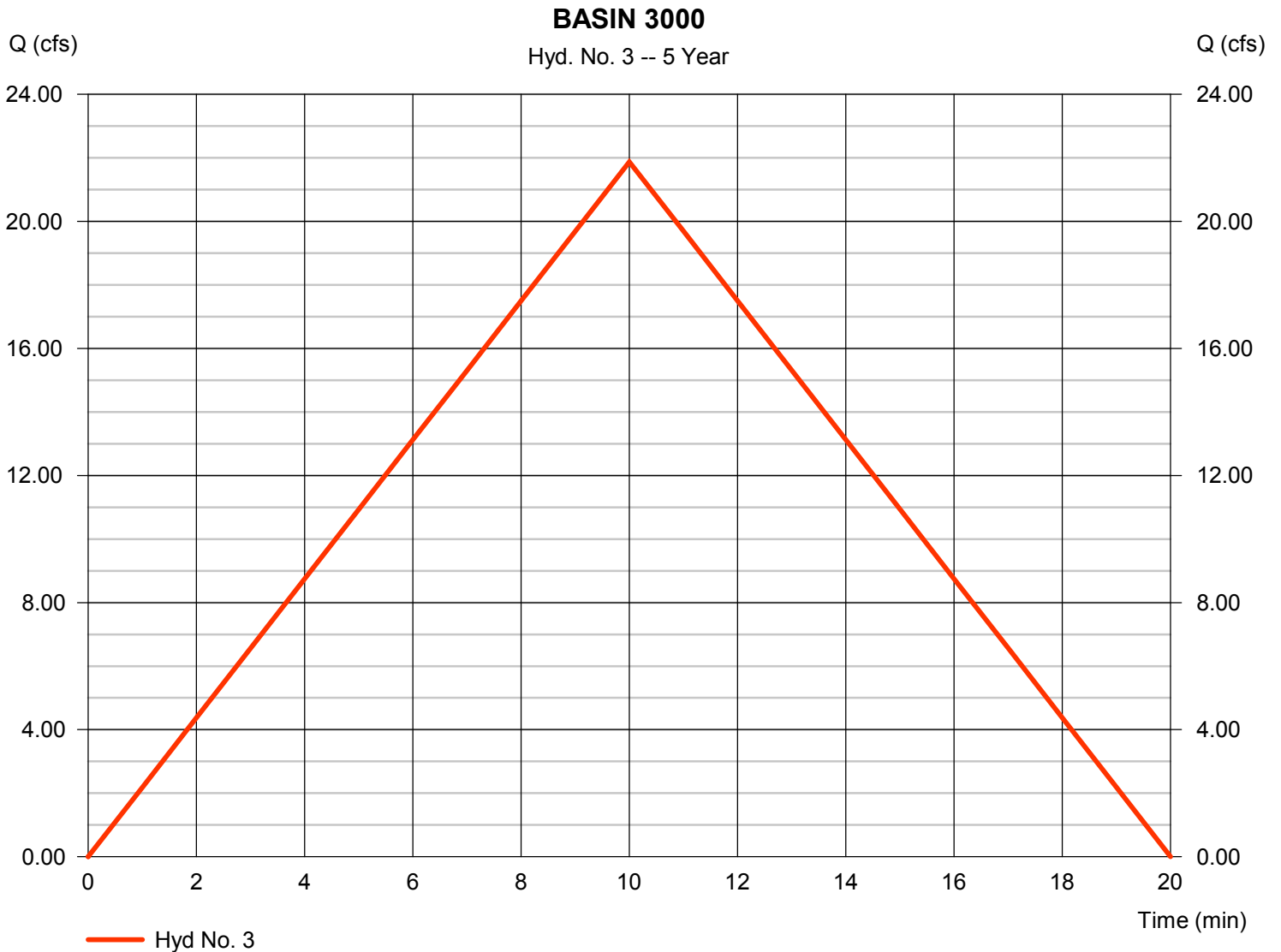
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Monday, 05 / 20 / 2019

Hyd. No. 3

BASIN 3000

Hydrograph type	= Rational	Peak discharge	= 21.88 cfs
Storm frequency	= 5 yrs	Time to peak	= 10 min
Time interval	= 1 min	Hyd. volume	= 13,125 cuft
Drainage area	= 17.200 ac	Runoff coeff.	= 0.8
Intensity	= 1.590 in/hr	Tc by User	= 10.00 min
IDF Curve	= 17671-PRECIP-3.IDF	Asc/Rec limb fact	= 1/1



Hydrograph Report

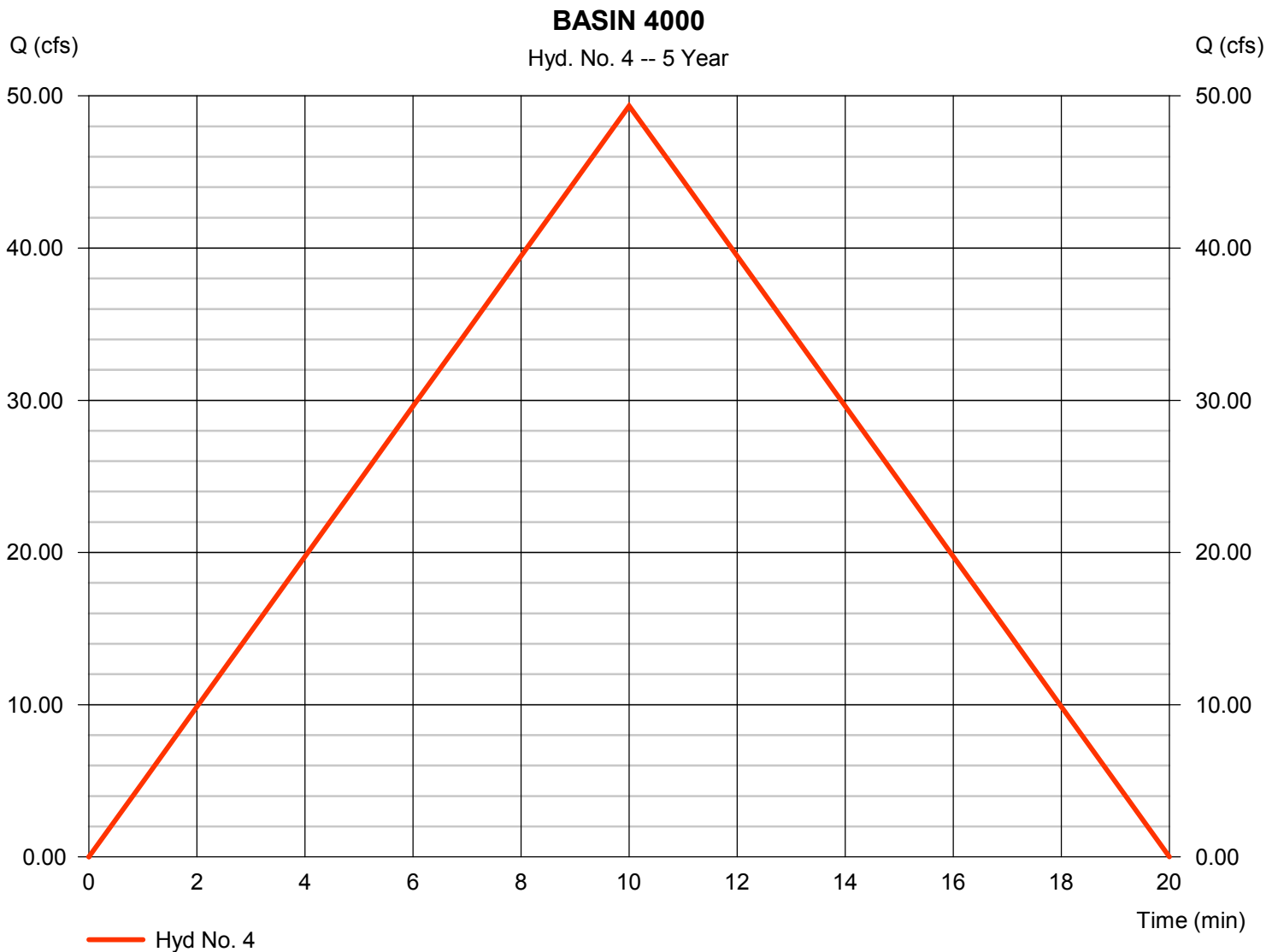
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Monday, 05 / 20 / 2019

Hyd. No. 4

BASIN 4000

Hydrograph type	= Rational	Peak discharge	= 49.35 cfs
Storm frequency	= 5 yrs	Time to peak	= 10 min
Time interval	= 1 min	Hyd. volume	= 29,608 cuft
Drainage area	= 38.800 ac	Runoff coeff.	= 0.8
Intensity	= 1.590 in/hr	Tc by User	= 10.00 min
IDF Curve	= 17671-PRECIP-3.IDF	Asc/Rec limb fact	= 1/1



Hydrograph Report

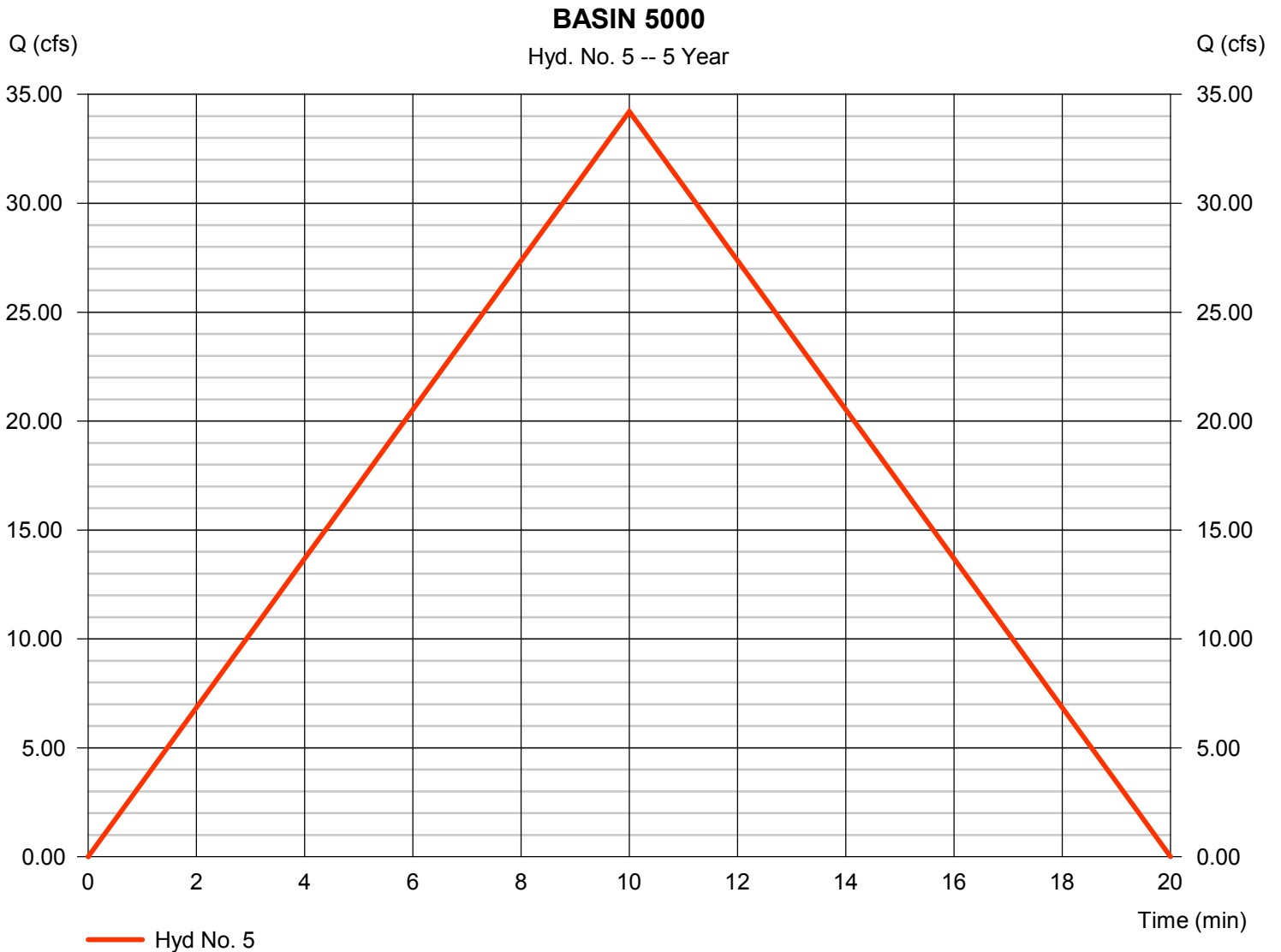
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Monday, 05 / 20 / 2019

Hyd. No. 5

BASIN 5000

Hydrograph type	= Rational	Peak discharge	= 34.21 cfs
Storm frequency	= 5 yrs	Time to peak	= 10 min
Time interval	= 1 min	Hyd. volume	= 20,527 cuft
Drainage area	= 26.900 ac	Runoff coeff.	= 0.8
Intensity	= 1.590 in/hr	Tc by User	= 10.00 min
IDF Curve	= 17671-PRECIP-3.IDF	Asc/Rec limb fact	= 1/1



Hydrograph Report

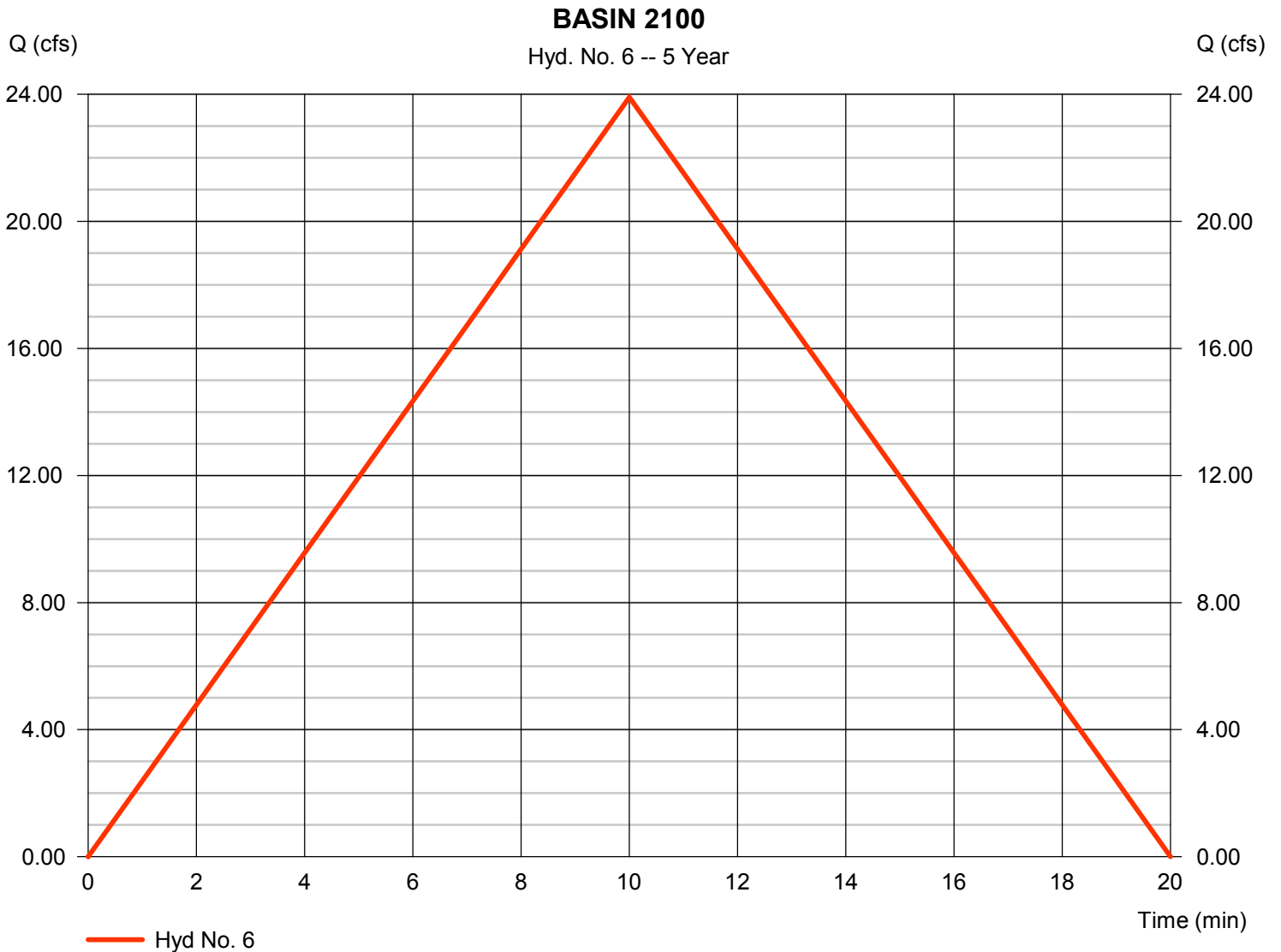
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Monday, 05 / 20 / 2019

Hyd. No. 6

BASIN 2100

Hydrograph type	= Rational	Peak discharge	= 23.91 cfs
Storm frequency	= 5 yrs	Time to peak	= 10 min
Time interval	= 1 min	Hyd. volume	= 14,346 cuft
Drainage area	= 18.800 ac	Runoff coeff.	= 0.8
Intensity	= 1.590 in/hr	Tc by User	= 10.00 min
IDF Curve	= 17671-PRECIP-3.IDF	Asc/Rec limb fact	= 1/1



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Monday, 05 / 20 / 2019

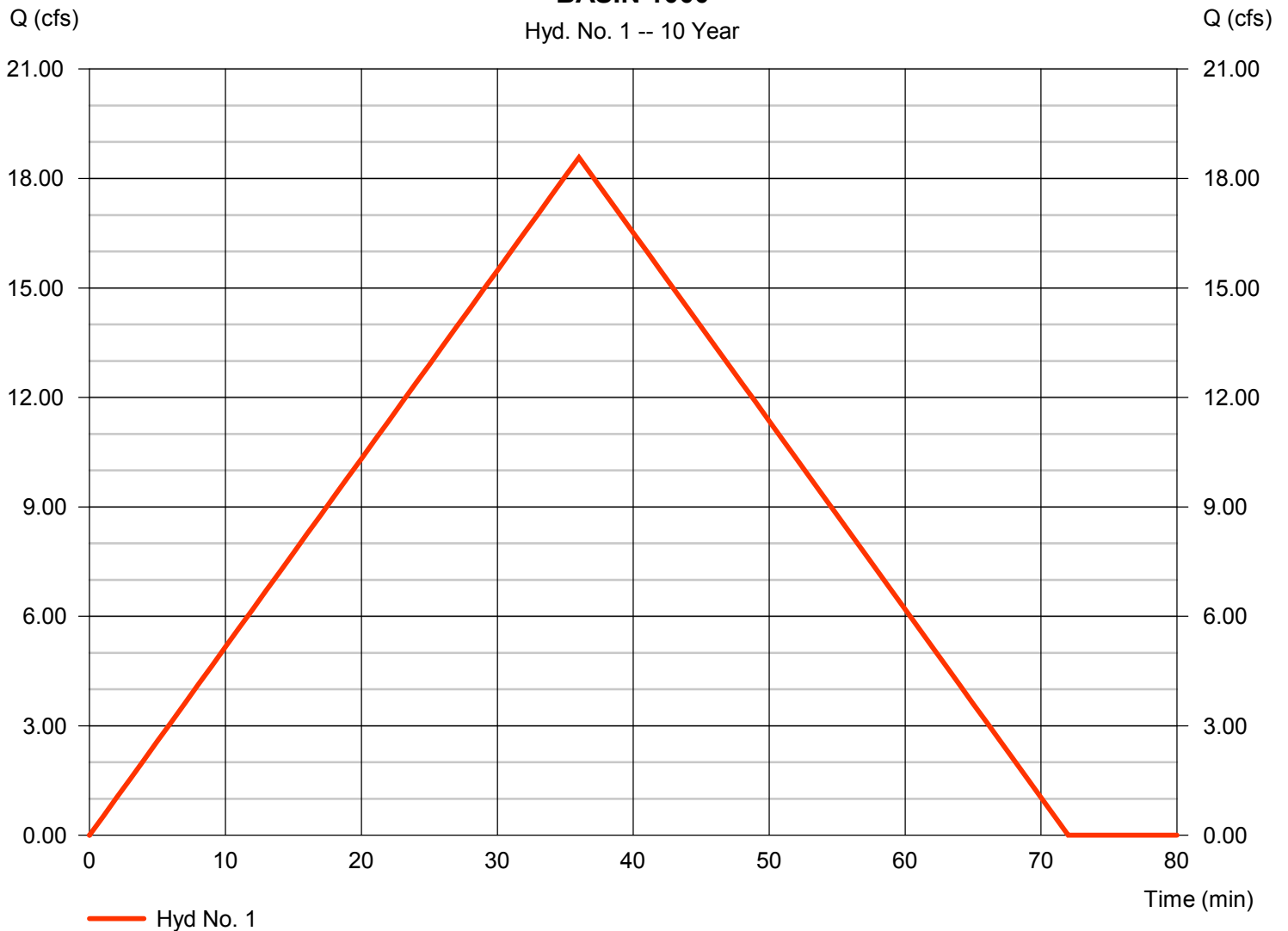
Hyd. No. 1

BASIN 1000

Hydrograph type	= Rational	Peak discharge	= 18.58 cfs
Storm frequency	= 10 yrs	Time to peak	= 36 min
Time interval	= 1 min	Hyd. volume	= 40,126 cuft
Drainage area	= 21.500 ac	Runoff coeff.	= 0.8
Intensity	= 1.080 in/hr	Tc by TR55	= 36.00 min
IDF Curve	= 17671-PRECIP-3.IDF	Asc/Rec limb fact	= 1/1

BASIN 1000

Hyd. No. 1 -- 10 Year



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Monday, 05 / 20 / 2019

Hyd. No. 2

BASIN 2000

Hydrograph type	= Rational	Peak discharge	= 42.74 cfs
Storm frequency	= 10 yrs	Time to peak	= 27 min
Time interval	= 1 min	Hyd. volume	= 69,238 cuft
Drainage area	= 87.200 ac	Runoff coeff.	= 0.4
Intensity	= 1.225 in/hr	Tc by TR55	= 27.00 min
IDF Curve	= 17671-PRECIP-3.IDF	Asc/Rec limb fact	= 1/1



Hydrograph Report

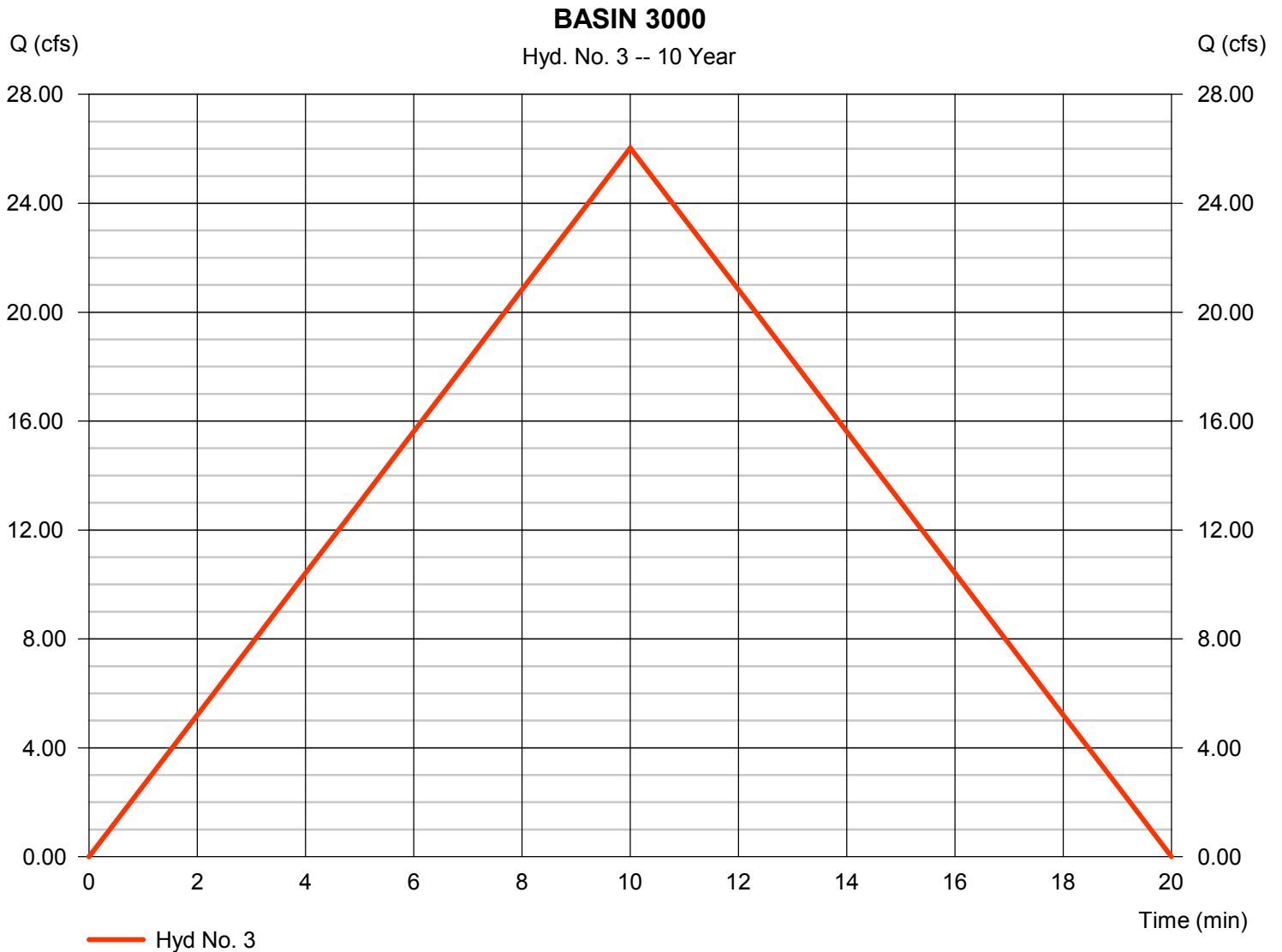
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Monday, 05 / 20 / 2019

Hyd. No. 3

BASIN 3000

Hydrograph type	= Rational	Peak discharge	= 26.03 cfs
Storm frequency	= 10 yrs	Time to peak	= 10 min
Time interval	= 1 min	Hyd. volume	= 15,620 cuft
Drainage area	= 17.200 ac	Runoff coeff.	= 0.8
Intensity	= 1.892 in/hr	Tc by User	= 10.00 min
IDF Curve	= 17671-PRECIP-3.IDF	Asc/Rec limb fact	= 1/1



Hydrograph Report

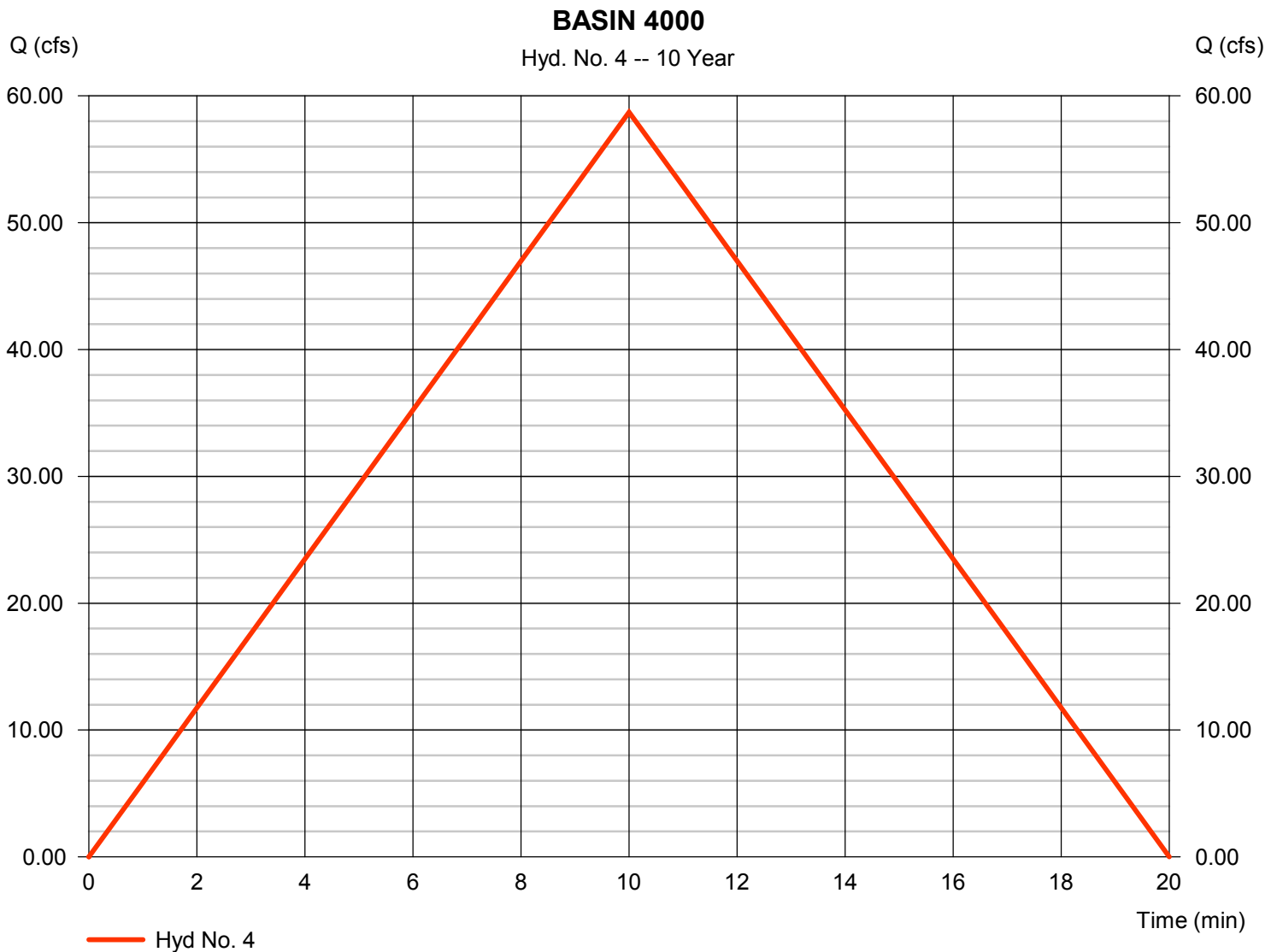
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Monday, 05 / 20 / 2019

Hyd. No. 4

BASIN 4000

Hydrograph type	= Rational	Peak discharge	= 58.73 cfs
Storm frequency	= 10 yrs	Time to peak	= 10 min
Time interval	= 1 min	Hyd. volume	= 35,236 cuft
Drainage area	= 38.800 ac	Runoff coeff.	= 0.8
Intensity	= 1.892 in/hr	Tc by User	= 10.00 min
IDF Curve	= 17671-PRECIP-3.IDF	Asc/Rec limb fact	= 1/1



Hydrograph Report

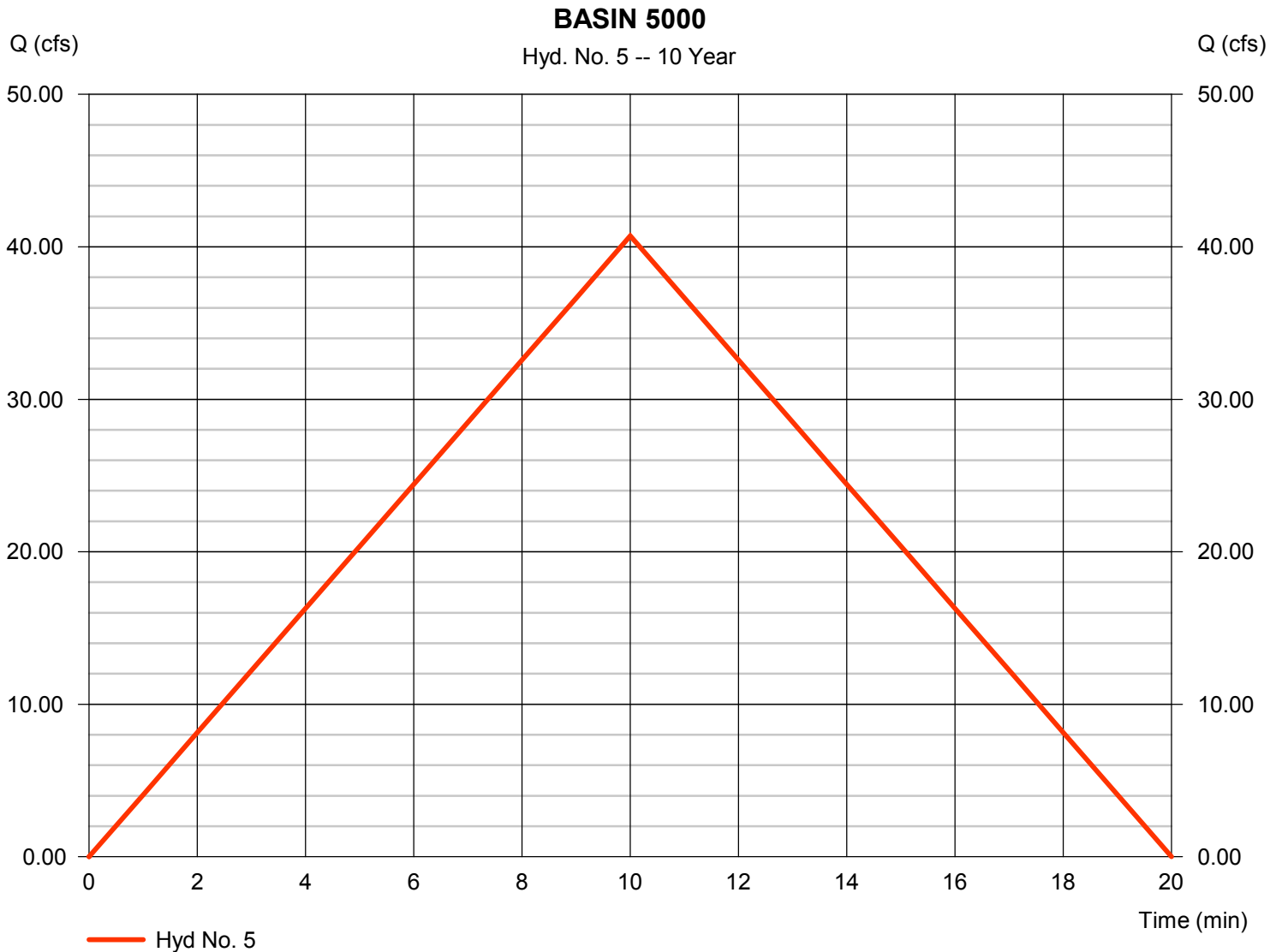
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Monday, 05 / 20 / 2019

Hyd. No. 5

BASIN 5000

Hydrograph type	= Rational	Peak discharge	= 40.72 cfs
Storm frequency	= 10 yrs	Time to peak	= 10 min
Time interval	= 1 min	Hyd. volume	= 24,429 cuft
Drainage area	= 26.900 ac	Runoff coeff.	= 0.8
Intensity	= 1.892 in/hr	Tc by User	= 10.00 min
IDF Curve	= 17671-PRECIP-3.IDF	Asc/Rec limb fact	= 1/1



Hydrograph Report

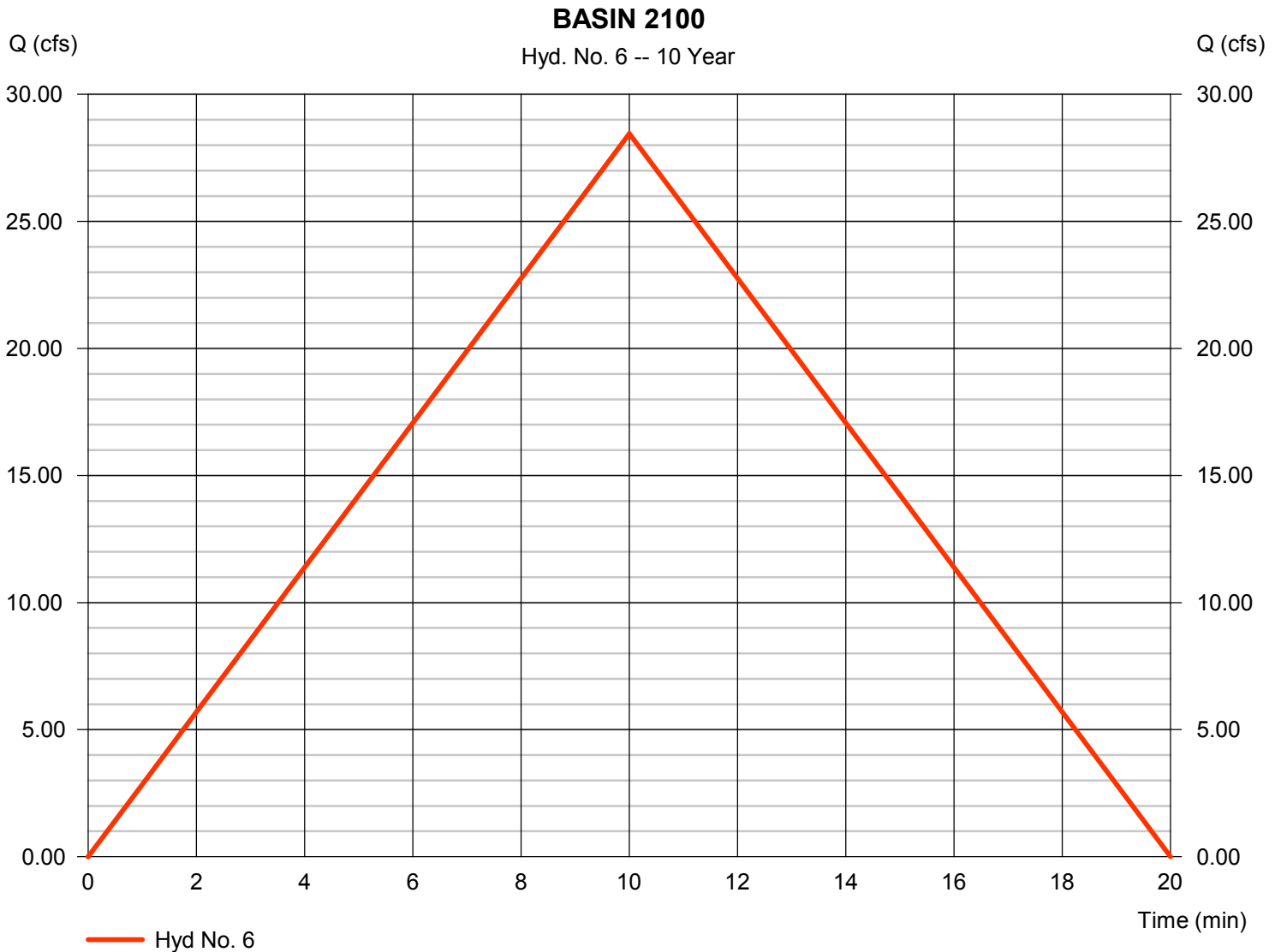
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Monday, 05 / 20 / 2019

Hyd. No. 6

BASIN 2100

Hydrograph type	= Rational	Peak discharge	= 28.46 cfs
Storm frequency	= 10 yrs	Time to peak	= 10 min
Time interval	= 1 min	Hyd. volume	= 17,073 cuft
Drainage area	= 18.800 ac	Runoff coeff.	= 0.8
Intensity	= 1.892 in/hr	Tc by User	= 10.00 min
IDF Curve	= 17671-PRECIP-3.IDF	Asc/Rec limb fact	= 1/1



Hydrograph Report

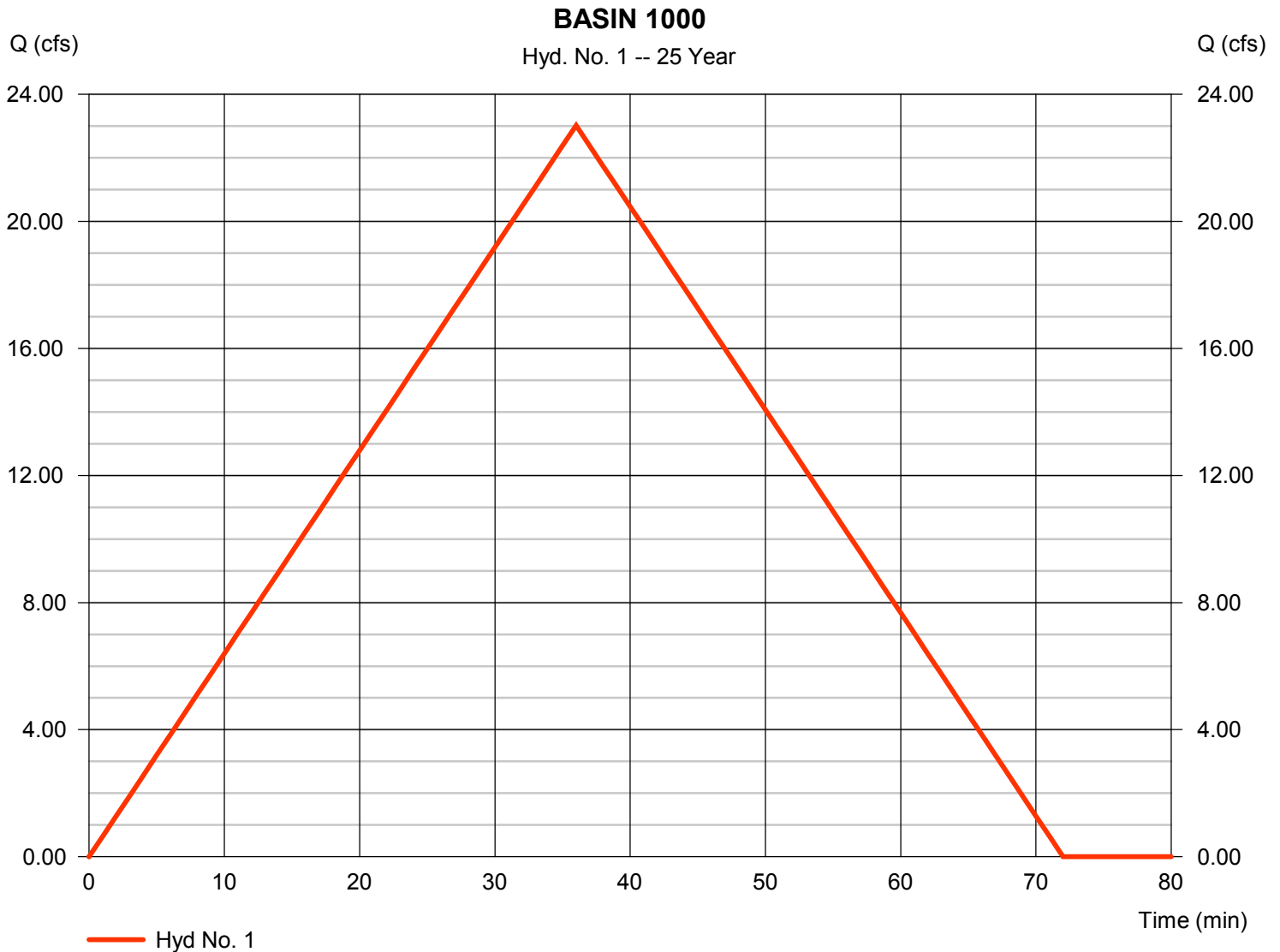
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Monday, 05 / 20 / 2019

Hyd. No. 1

BASIN 1000

Hydrograph type	= Rational	Peak discharge	= 23.03 cfs
Storm frequency	= 25 yrs	Time to peak	= 36 min
Time interval	= 1 min	Hyd. volume	= 49,734 cuft
Drainage area	= 21.500 ac	Runoff coeff.	= 0.8
Intensity	= 1.339 in/hr	Tc by TR55	= 36.00 min
IDF Curve	= 17671-PRECIP-3.IDF	Asc/Rec limb fact	= 1/1



Hydrograph Report

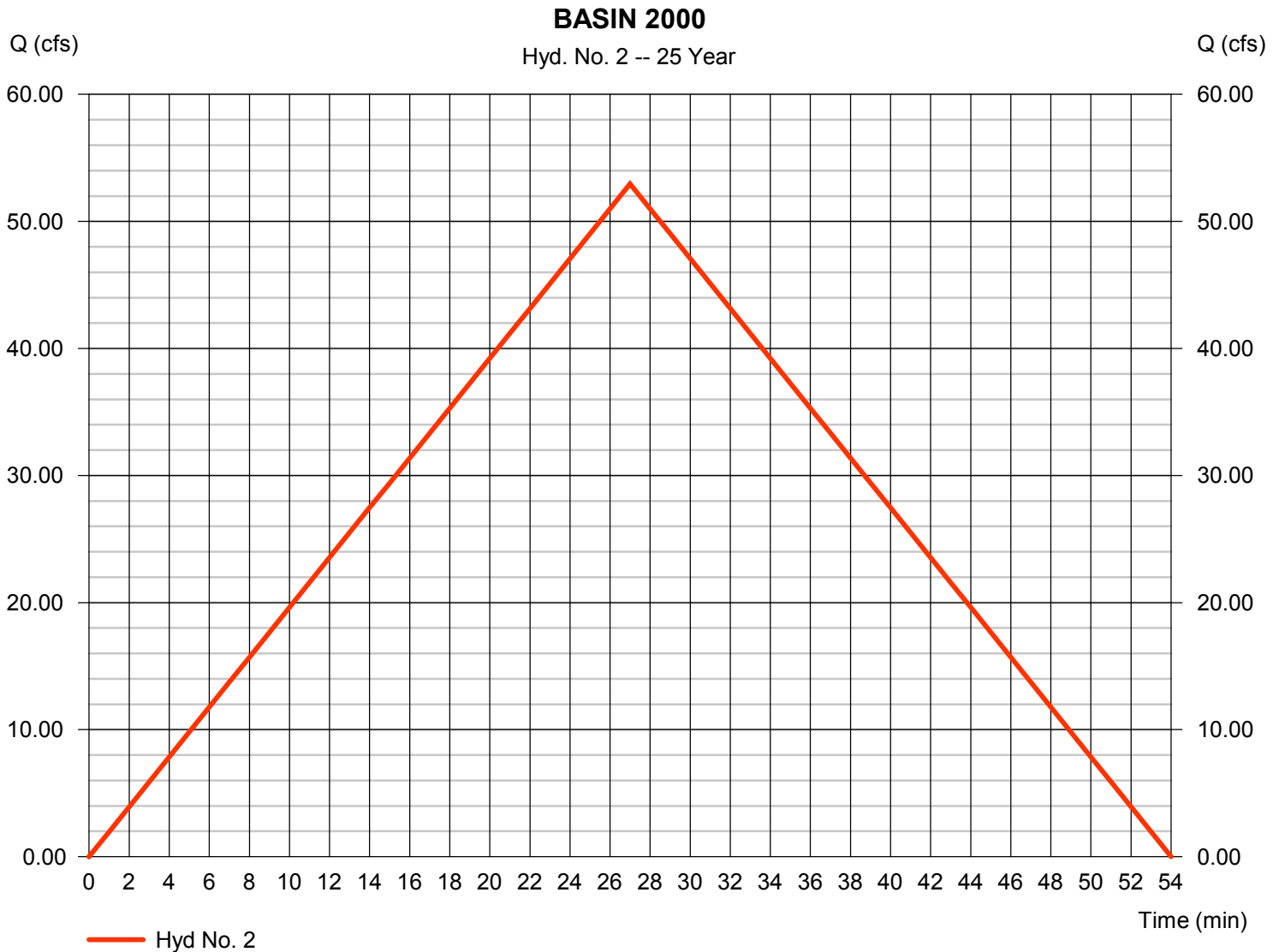
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Monday, 05 / 20 / 2019

Hyd. No. 2

BASIN 2000

Hydrograph type	= Rational	Peak discharge	= 52.96 cfs
Storm frequency	= 25 yrs	Time to peak	= 27 min
Time interval	= 1 min	Hyd. volume	= 85,802 cuft
Drainage area	= 87.200 ac	Runoff coeff.	= 0.4
Intensity	= 1.518 in/hr	Tc by TR55	= 27.00 min
IDF Curve	= 17671-PRECIP-3.IDF	Asc/Rec limb fact	= 1/1



Hydrograph Report

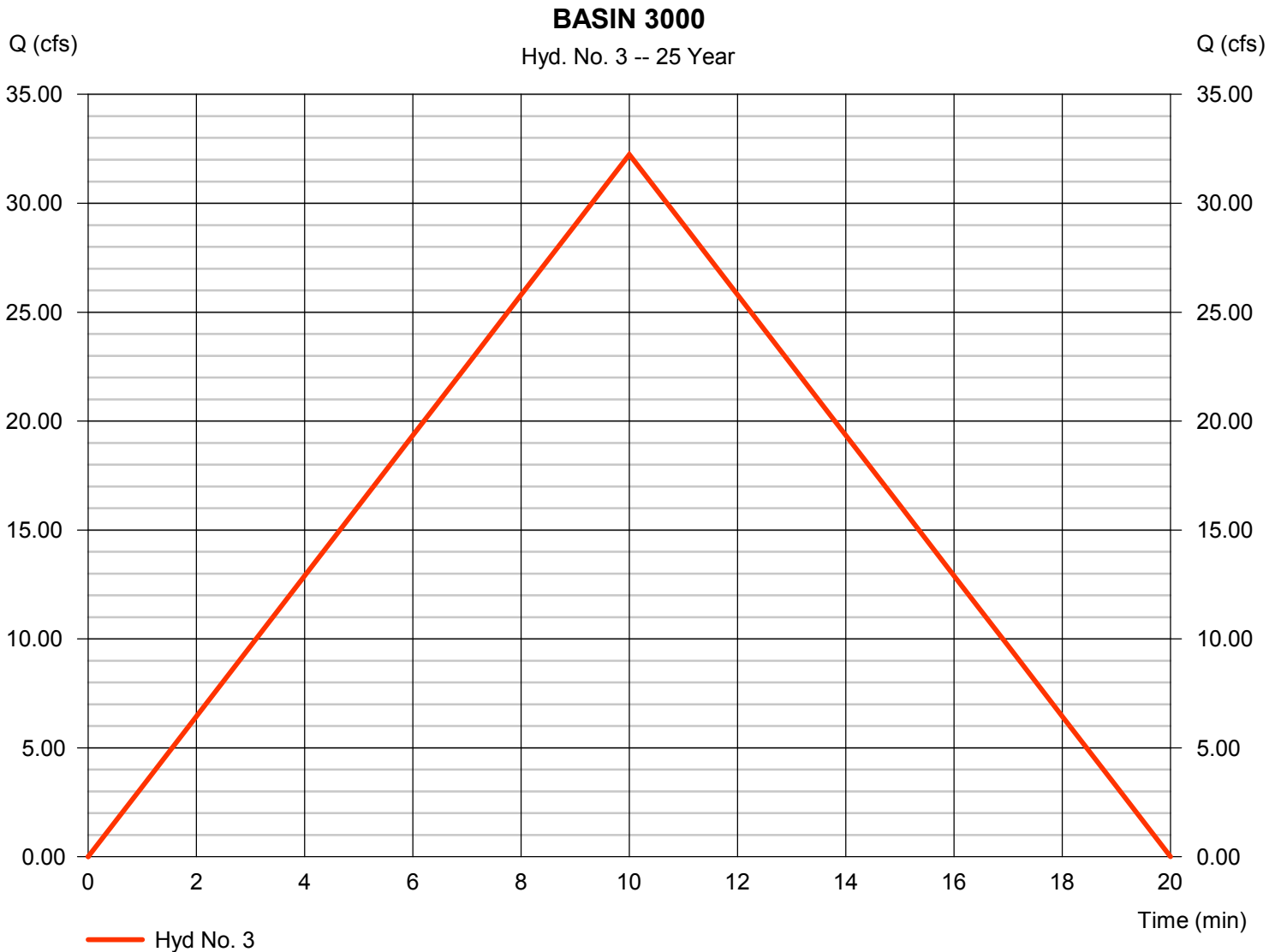
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Monday, 05 / 20 / 2019

Hyd. No. 3

BASIN 3000

Hydrograph type	= Rational	Peak discharge	= 32.24 cfs
Storm frequency	= 25 yrs	Time to peak	= 10 min
Time interval	= 1 min	Hyd. volume	= 19,345 cuft
Drainage area	= 17.200 ac	Runoff coeff.	= 0.8
Intensity	= 2.343 in/hr	Tc by User	= 10.00 min
IDF Curve	= 17671-PRECIP-3.IDF	Asc/Rec limb fact	= 1/1



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Monday, 05 / 20 / 2019

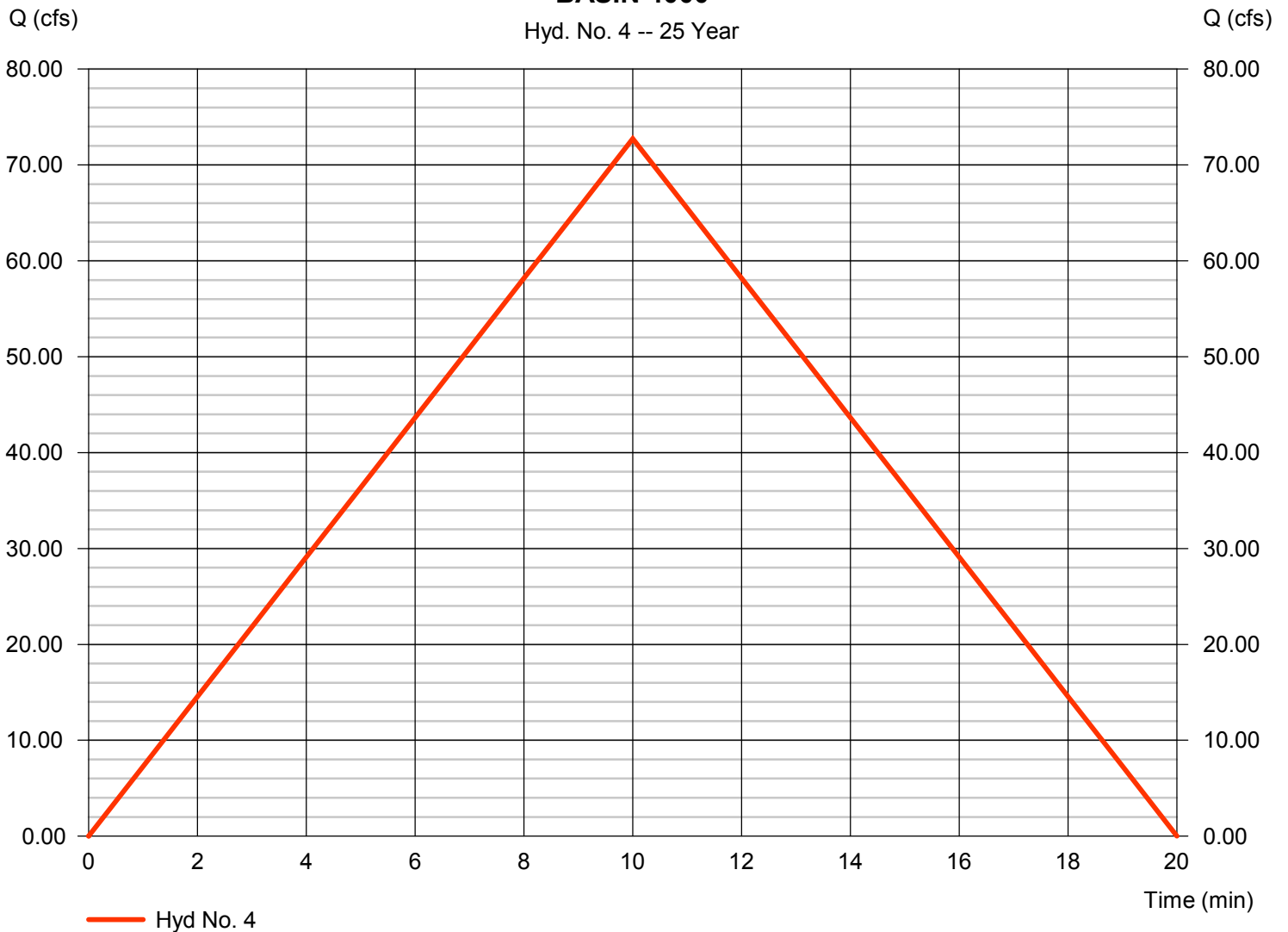
Hyd. No. 4

BASIN 4000

Hydrograph type	= Rational	Peak discharge	= 72.73 cfs
Storm frequency	= 25 yrs	Time to peak	= 10 min
Time interval	= 1 min	Hyd. volume	= 43,639 cuft
Drainage area	= 38.800 ac	Runoff coeff.	= 0.8
Intensity	= 2.343 in/hr	Tc by User	= 10.00 min
IDF Curve	= 17671-PRECIP-3.IDF	Asc/Rec limb fact	= 1/1

BASIN 4000

Hyd. No. 4 -- 25 Year



Hydrograph Report

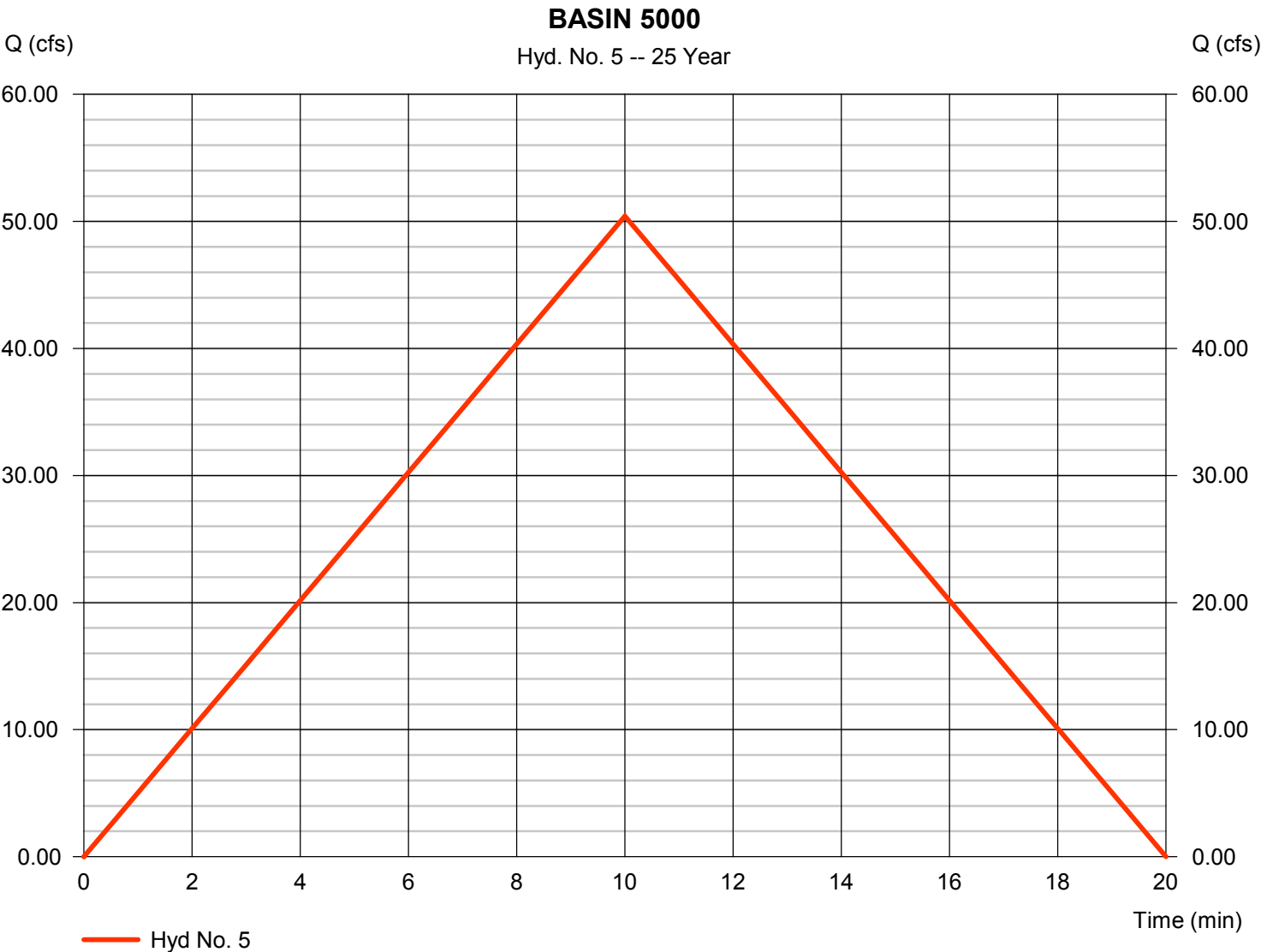
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Monday, 05 / 20 / 2019

Hyd. No. 5

BASIN 5000

Hydrograph type	= Rational	Peak discharge	= 50.42 cfs
Storm frequency	= 25 yrs	Time to peak	= 10 min
Time interval	= 1 min	Hyd. volume	= 30,255 cuft
Drainage area	= 26.900 ac	Runoff coeff.	= 0.8
Intensity	= 2.343 in/hr	Tc by User	= 10.00 min
IDF Curve	= 17671-PRECIP-3.IDF	Asc/Rec limb fact	= 1/1



Hydrograph Report

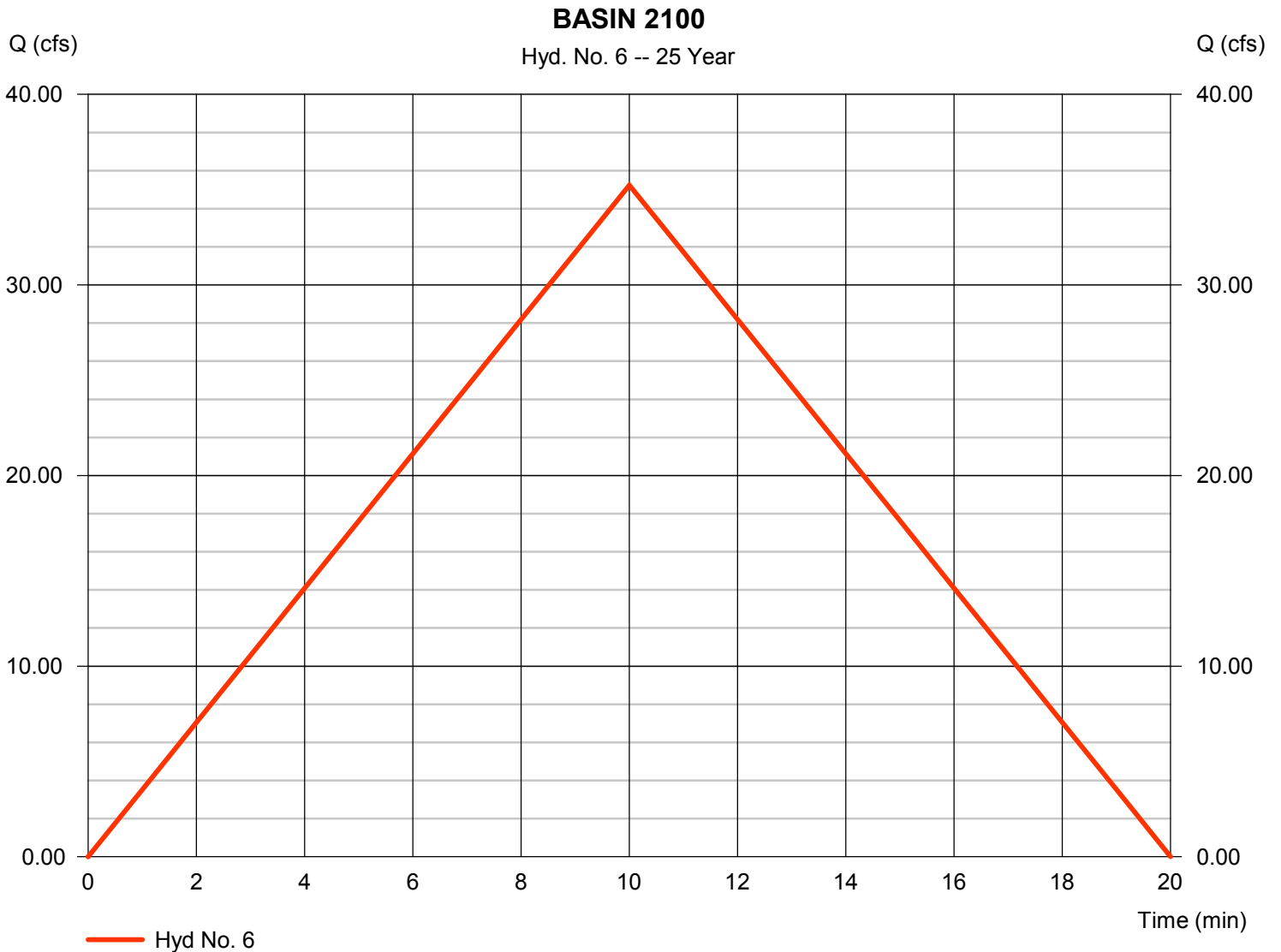
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Monday, 05 / 20 / 2019

Hyd. No. 6

BASIN 2100

Hydrograph type	= Rational	Peak discharge	= 35.24 cfs
Storm frequency	= 25 yrs	Time to peak	= 10 min
Time interval	= 1 min	Hyd. volume	= 21,144 cuft
Drainage area	= 18.800 ac	Runoff coeff.	= 0.8
Intensity	= 2.343 in/hr	Tc by User	= 10.00 min
IDF Curve	= 17671-PRECIP-3.IDF	Asc/Rec limb fact	= 1/1



Hydrograph Report

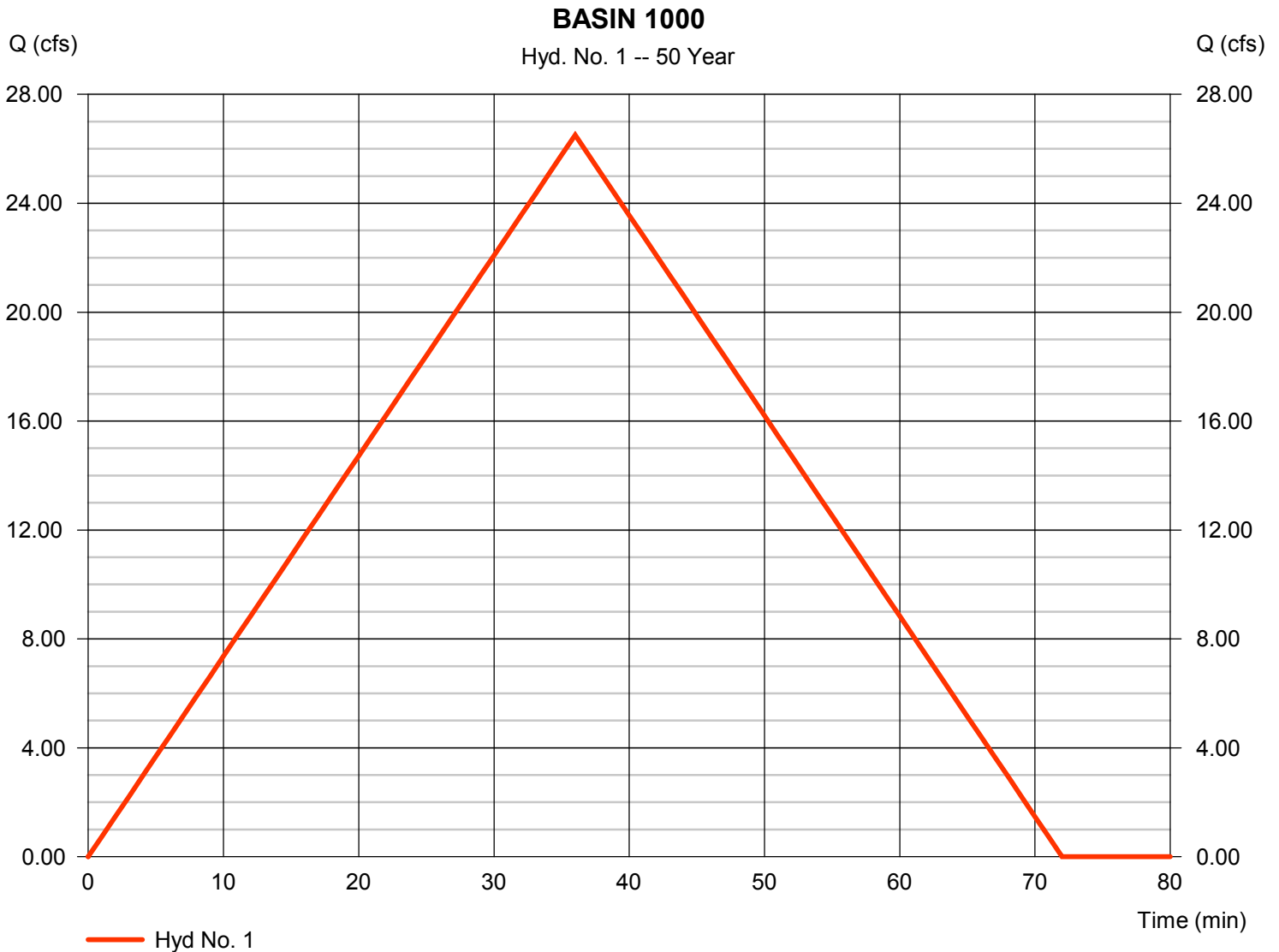
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Monday, 05 / 20 / 2019

Hyd. No. 1

BASIN 1000

Hydrograph type	= Rational	Peak discharge	= 26.51 cfs
Storm frequency	= 50 yrs	Time to peak	= 36 min
Time interval	= 1 min	Hyd. volume	= 57,252 cuft
Drainage area	= 21.500 ac	Runoff coeff.	= 0.8
Intensity	= 1.541 in/hr	Tc by TR55	= 36.00 min
IDF Curve	= 17671-PRECIP-3.IDF	Asc/Rec limb fact	= 1/1



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Monday, 05 / 20 / 2019

Hyd. No. 2

BASIN 2000

Hydrograph type	= Rational	Peak discharge	= 61.02 cfs
Storm frequency	= 50 yrs	Time to peak	= 27 min
Time interval	= 1 min	Hyd. volume	= 98,849 cuft
Drainage area	= 87.200 ac	Runoff coeff.	= 0.4
Intensity	= 1.749 in/hr	Tc by TR55	= 27.00 min
IDF Curve	= 17671-PRECIP-3.IDF	Asc/Rec limb fact	= 1/1



Hydrograph Report

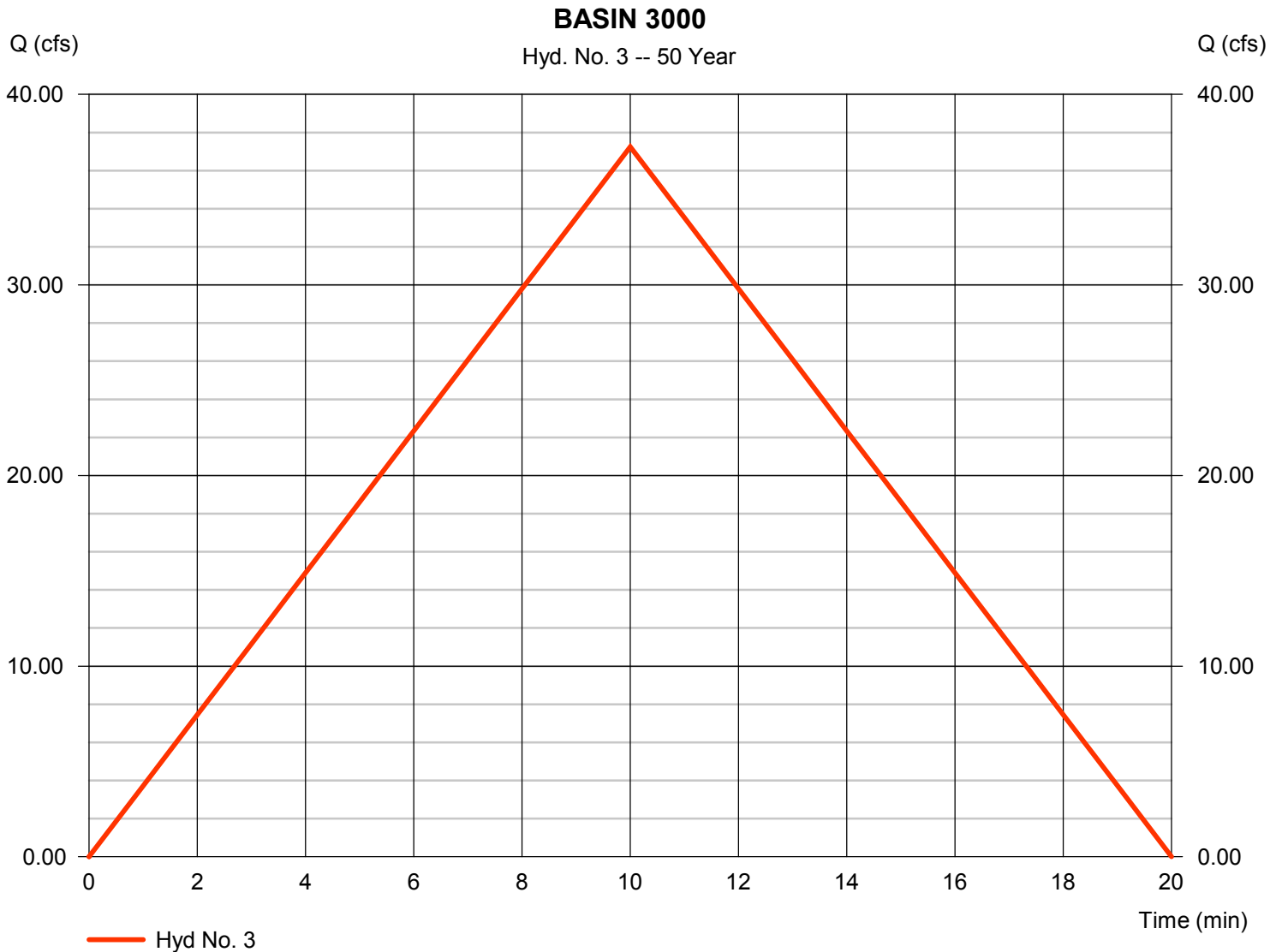
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Monday, 05 / 20 / 2019

Hyd. No. 3

BASIN 3000

Hydrograph type	= Rational	Peak discharge	= 37.25 cfs
Storm frequency	= 50 yrs	Time to peak	= 10 min
Time interval	= 1 min	Hyd. volume	= 22,347 cuft
Drainage area	= 17.200 ac	Runoff coeff.	= 0.8
Intensity	= 2.707 in/hr	Tc by User	= 10.00 min
IDF Curve	= 17671-PRECIP-3.IDF	Asc/Rec limb fact	= 1/1



Hydrograph Report

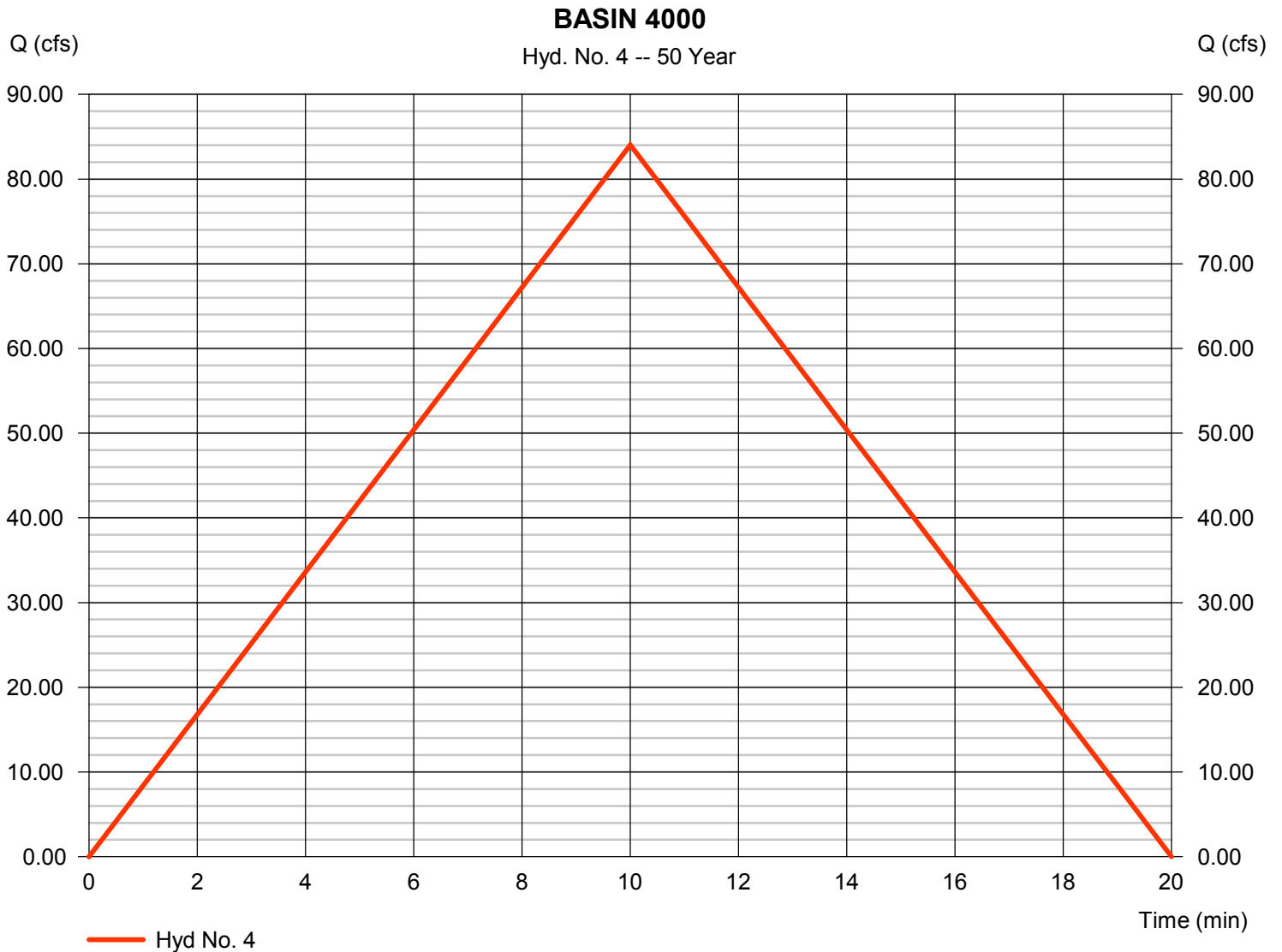
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Monday, 05 / 20 / 2019

Hyd. No. 4

BASIN 4000

Hydrograph type	= Rational	Peak discharge	= 84.02 cfs
Storm frequency	= 50 yrs	Time to peak	= 10 min
Time interval	= 1 min	Hyd. volume	= 50,411 cuft
Drainage area	= 38.800 ac	Runoff coeff.	= 0.8
Intensity	= 2.707 in/hr	Tc by User	= 10.00 min
IDF Curve	= 17671-PRECIP-3.IDF	Asc/Rec limb fact	= 1/1



Hydrograph Report

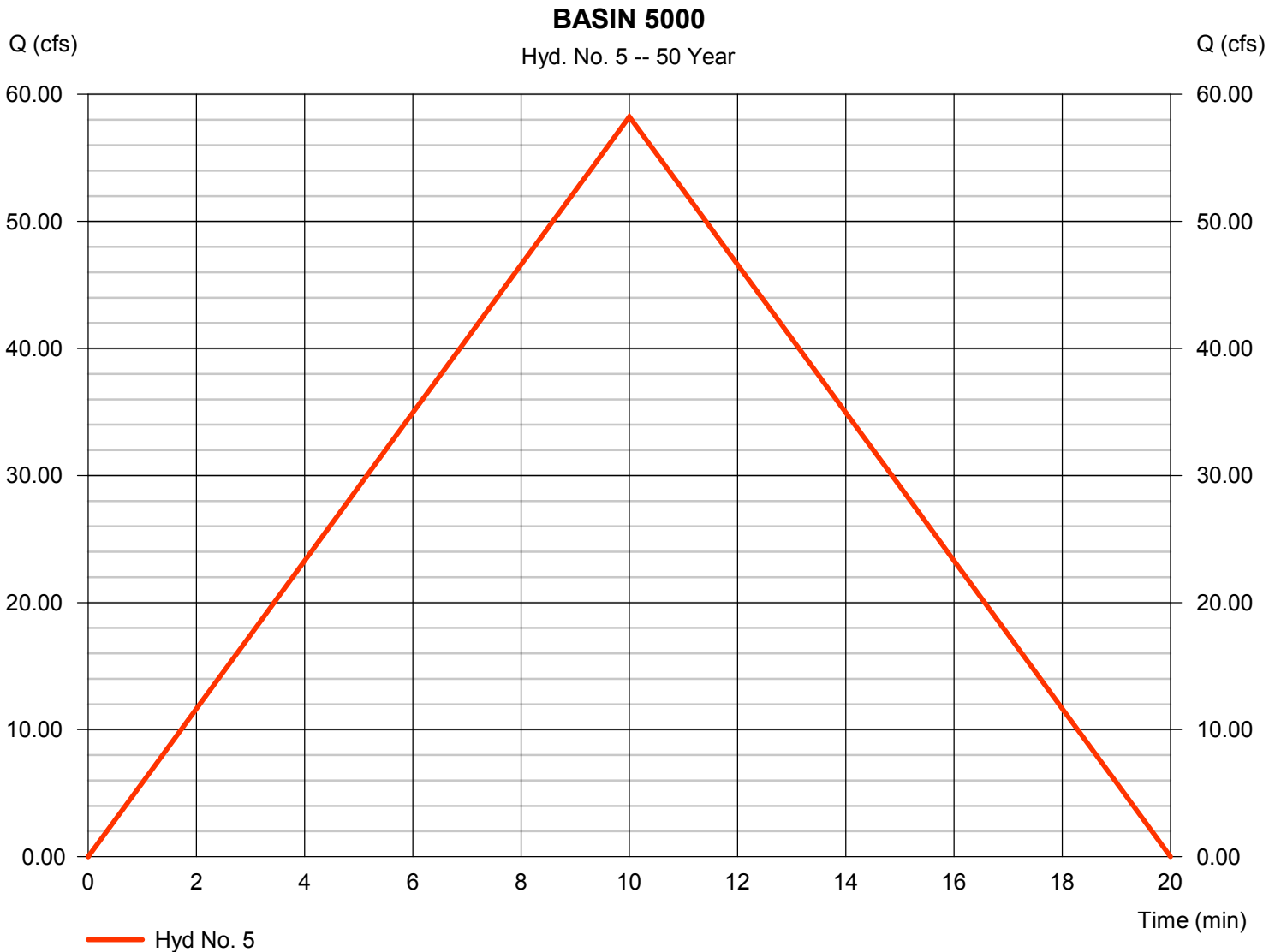
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Monday, 05 / 20 / 2019

Hyd. No. 5

BASIN 5000

Hydrograph type	= Rational	Peak discharge	= 58.25 cfs
Storm frequency	= 50 yrs	Time to peak	= 10 min
Time interval	= 1 min	Hyd. volume	= 34,950 cuft
Drainage area	= 26.900 ac	Runoff coeff.	= 0.8
Intensity	= 2.707 in/hr	Tc by User	= 10.00 min
IDF Curve	= 17671-PRECIP-3.IDF	Asc/Rec limb fact	= 1/1



Hydrograph Report

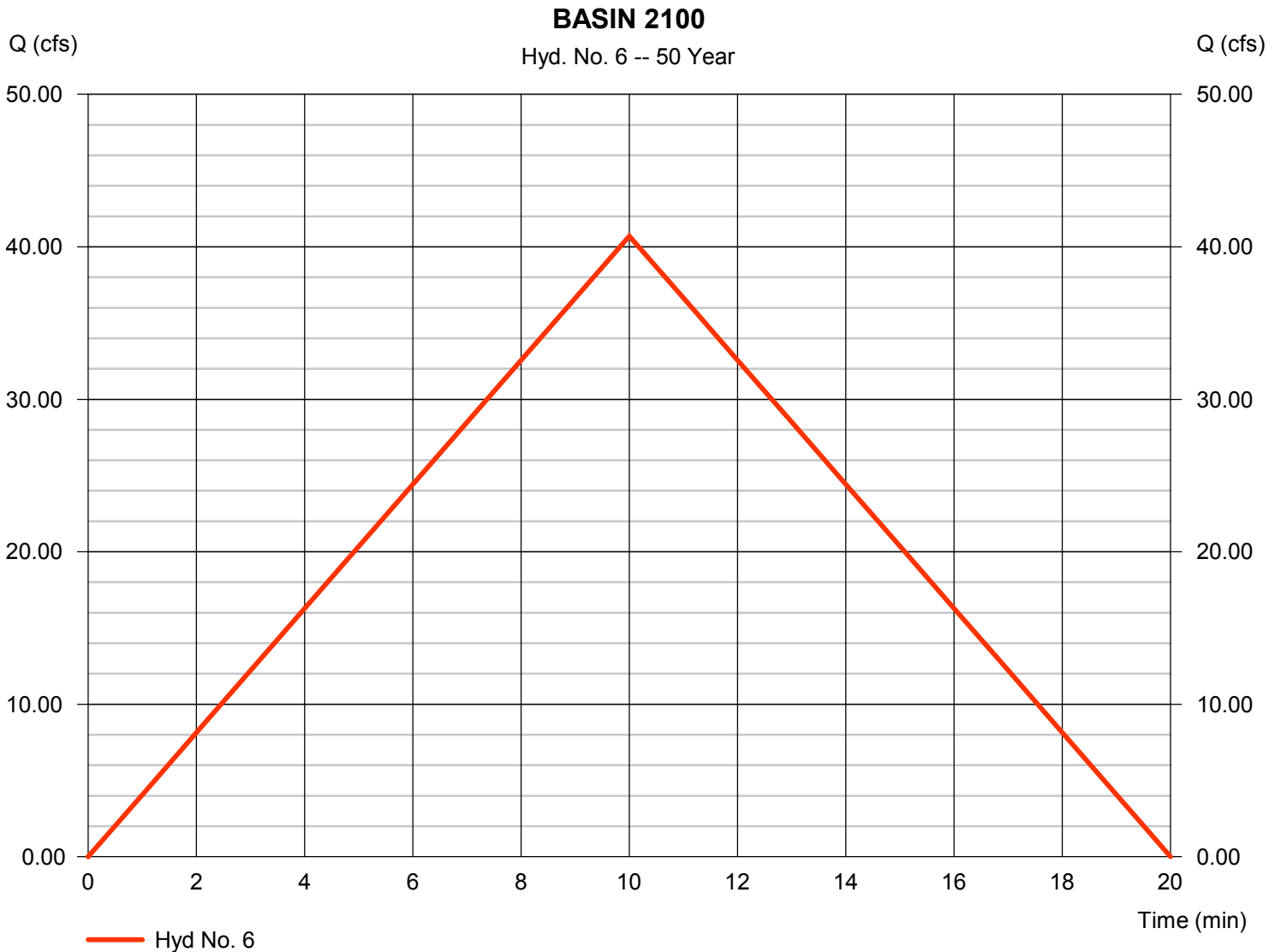
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Monday, 05 / 20 / 2019

Hyd. No. 6

BASIN 2100

Hydrograph type	= Rational	Peak discharge	= 40.71 cfs
Storm frequency	= 50 yrs	Time to peak	= 10 min
Time interval	= 1 min	Hyd. volume	= 24,426 cuft
Drainage area	= 18.800 ac	Runoff coeff.	= 0.8
Intensity	= 2.707 in/hr	Tc by User	= 10.00 min
IDF Curve	= 17671-PRECIP-3.IDF	Asc/Rec limb fact	= 1/1



Hydrograph Report

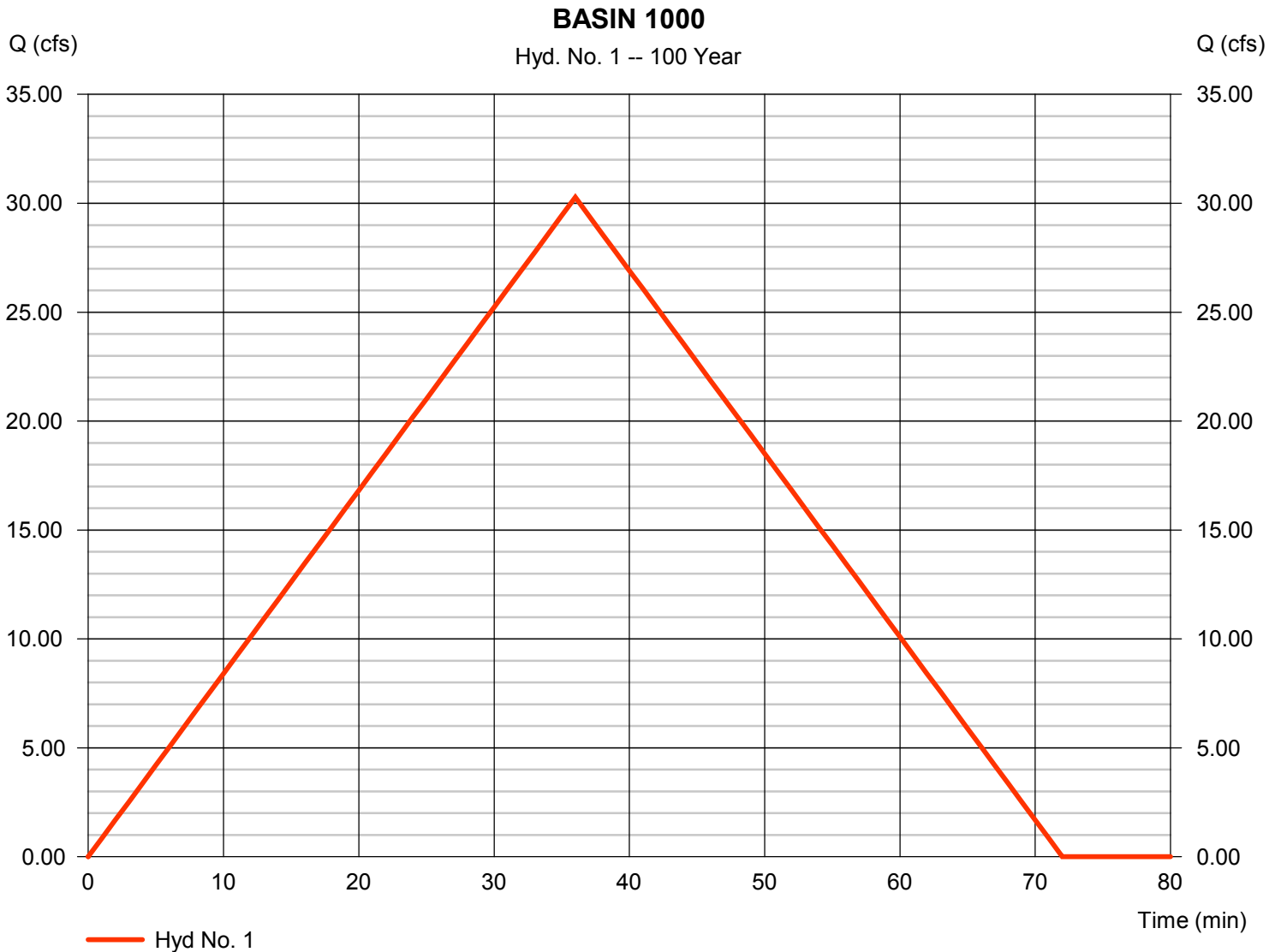
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Monday, 05 / 20 / 2019

Hyd. No. 1

BASIN 1000

Hydrograph type	= Rational	Peak discharge	= 30.28 cfs
Storm frequency	= 100 yrs	Time to peak	= 36 min
Time interval	= 1 min	Hyd. volume	= 65,396 cuft
Drainage area	= 21.500 ac	Runoff coeff.	= 0.8
Intensity	= 1.760 in/hr	Tc by TR55	= 36.00 min
IDF Curve	= 17671-PRECIP-3.IDF	Asc/Rec limb fact	= 1/1



Hydrograph Report

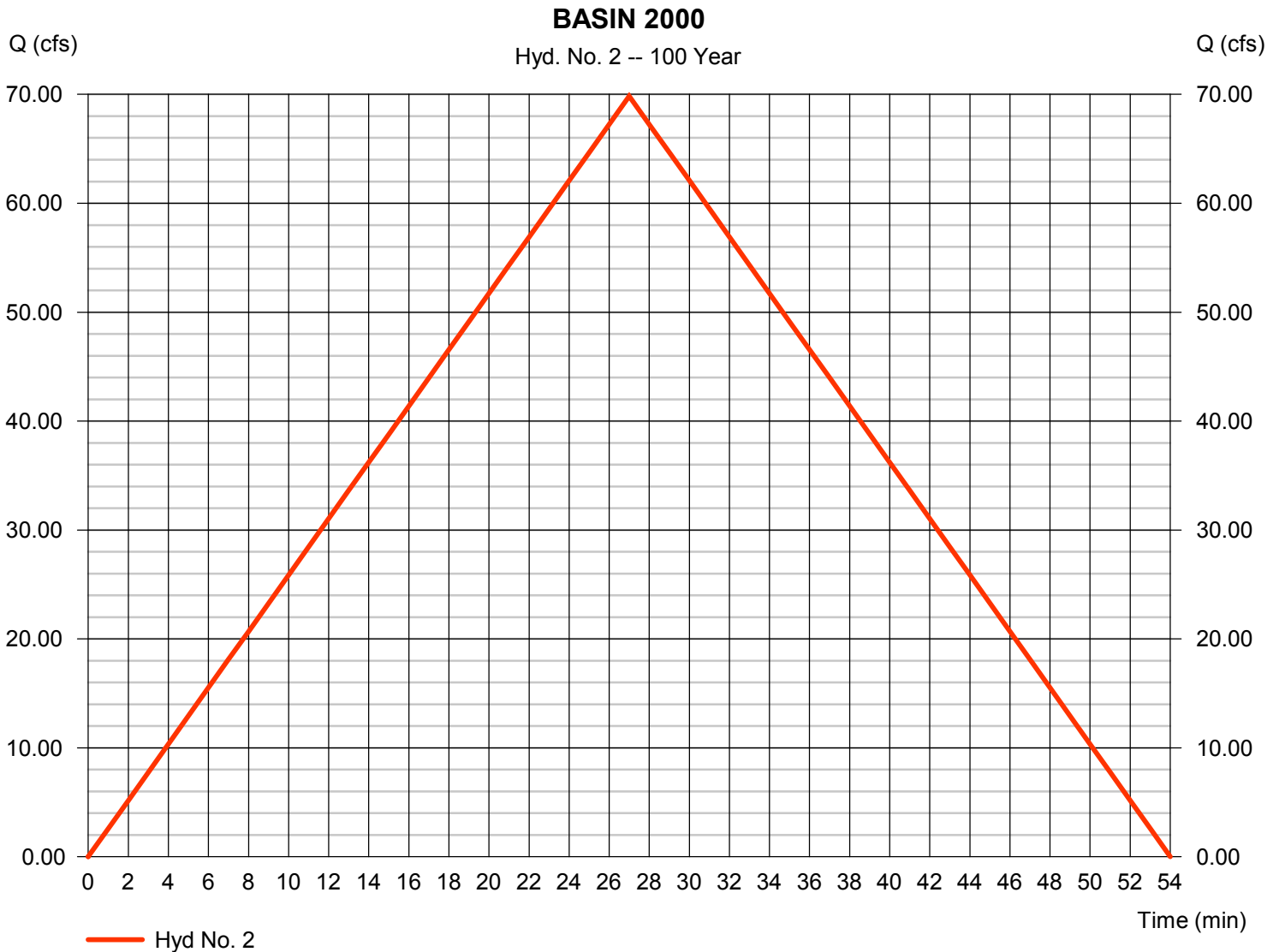
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Monday, 05 / 20 / 2019

Hyd. No. 2

BASIN 2000

Hydrograph type	= Rational	Peak discharge	= 69.84 cfs
Storm frequency	= 100 yrs	Time to peak	= 27 min
Time interval	= 1 min	Hyd. volume	= 113,138 cuft
Drainage area	= 87.200 ac	Runoff coeff.	= 0.4
Intensity	= 2.002 in/hr	Tc by TR55	= 27.00 min
IDF Curve	= 17671-PRECIP-3.IDF	Asc/Rec limb fact	= 1/1



Hydrograph Report

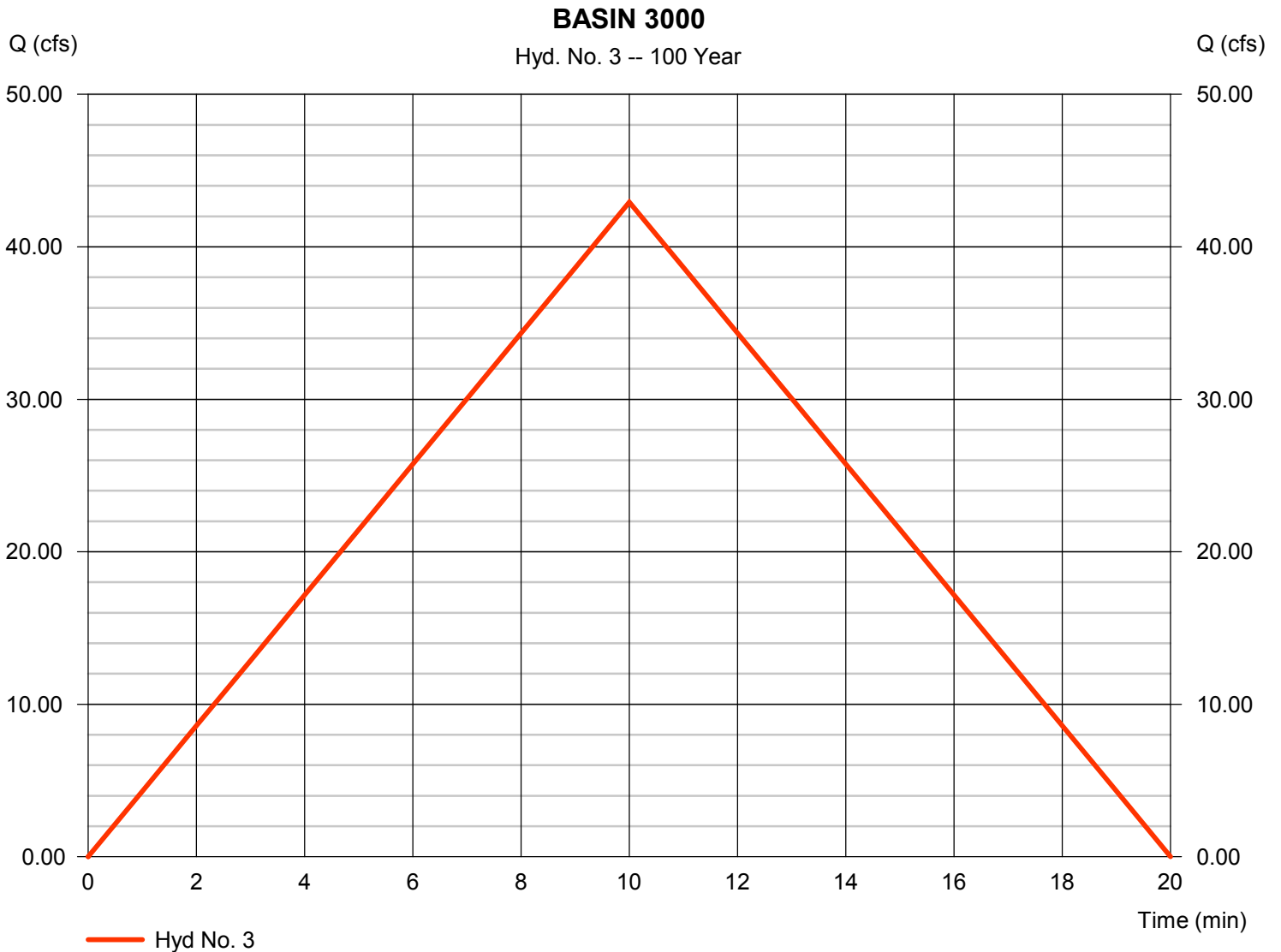
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Monday, 05 / 20 / 2019

Hyd. No. 3

BASIN 3000

Hydrograph type	= Rational	Peak discharge	= 42.92 cfs
Storm frequency	= 100 yrs	Time to peak	= 10 min
Time interval	= 1 min	Hyd. volume	= 25,754 cuft
Drainage area	= 17.200 ac	Runoff coeff.	= 0.8
Intensity	= 3.119 in/hr	Tc by User	= 10.00 min
IDF Curve	= 17671-PRECIP-3.IDF	Asc/Rec limb fact	= 1/1



Hydrograph Report

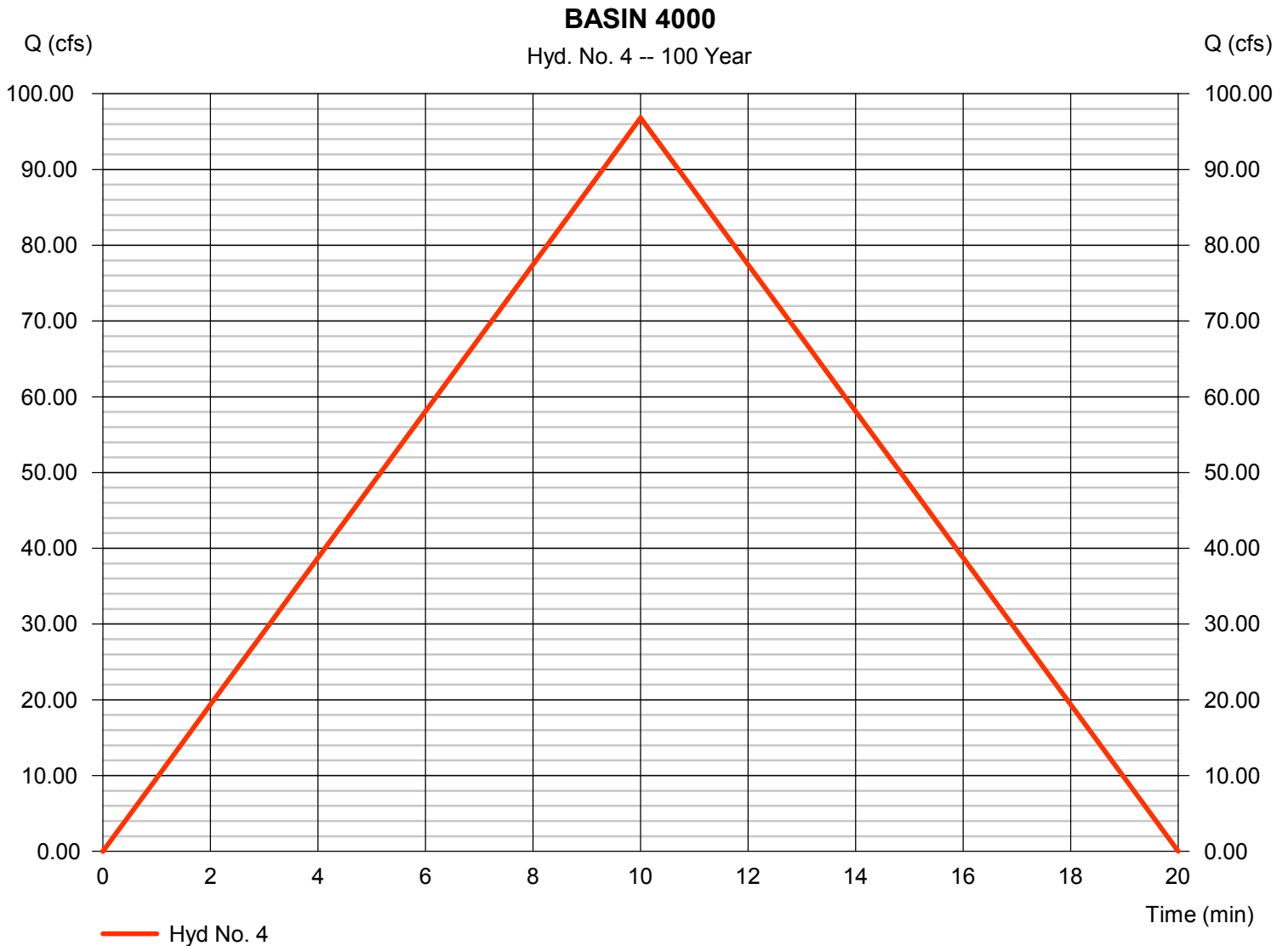
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Monday, 05 / 20 / 2019

Hyd. No. 4

BASIN 4000

Hydrograph type	= Rational	Peak discharge	= 96.83 cfs
Storm frequency	= 100 yrs	Time to peak	= 10 min
Time interval	= 1 min	Hyd. volume	= 58,096 cuft
Drainage area	= 38.800 ac	Runoff coeff.	= 0.8
Intensity	= 3.119 in/hr	Tc by User	= 10.00 min
IDF Curve	= 17671-PRECIP-3.IDF	Asc/Rec limb fact	= 1/1



Hydrograph Report

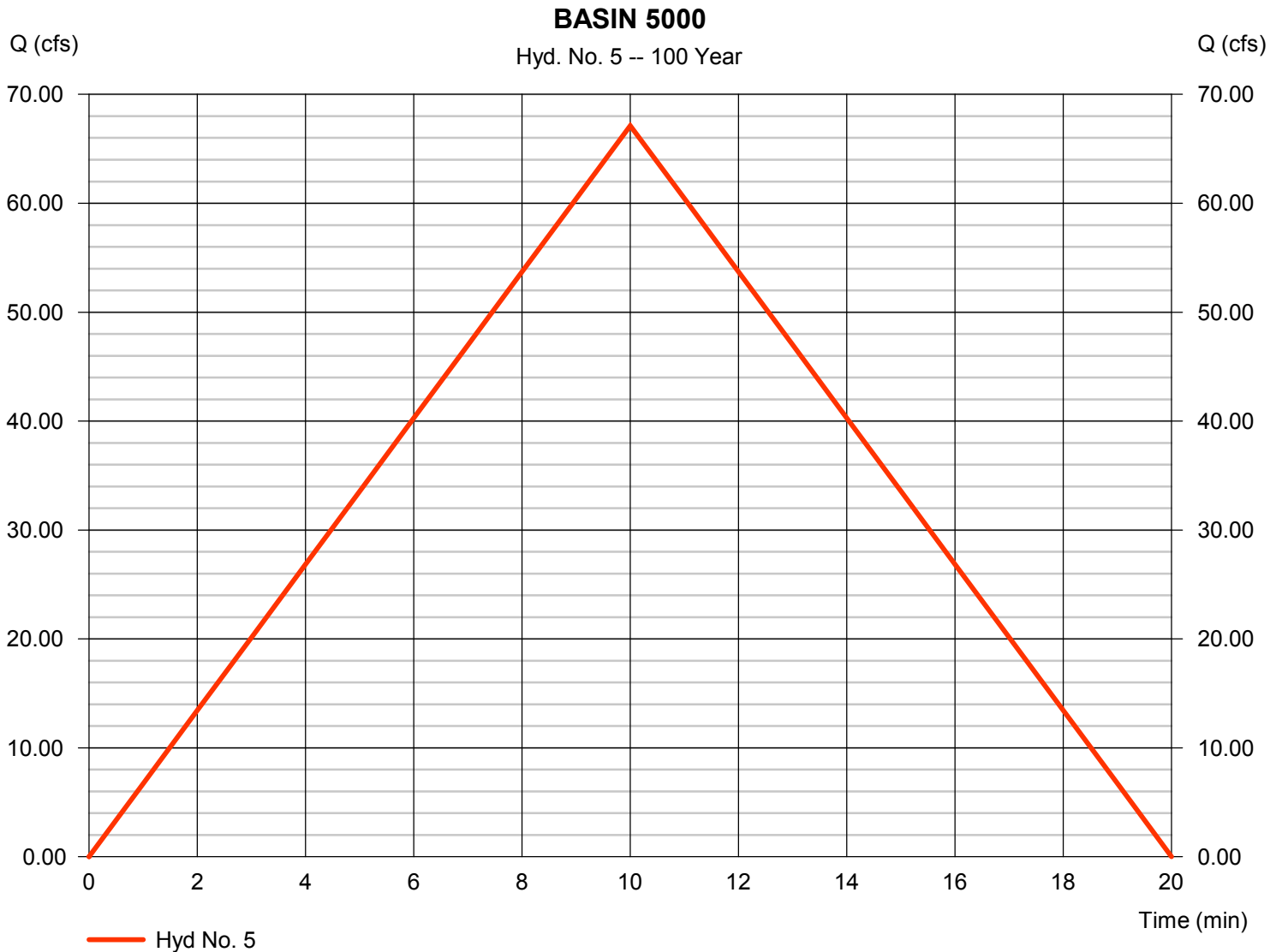
Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Monday, 05 / 20 / 2019

Hyd. No. 5

BASIN 5000

Hydrograph type	= Rational	Peak discharge	= 67.13 cfs
Storm frequency	= 100 yrs	Time to peak	= 10 min
Time interval	= 1 min	Hyd. volume	= 40,278 cuft
Drainage area	= 26.900 ac	Runoff coeff.	= 0.8
Intensity	= 3.119 in/hr	Tc by User	= 10.00 min
IDF Curve	= 17671-PRECIP-3.IDF	Asc/Rec limb fact	= 1/1



Hydrograph Report

Hydraflow Hydrographs Extension for AutoCAD® Civil 3D® 2018 by Autodesk, Inc. v12

Monday, 05 / 20 / 2019

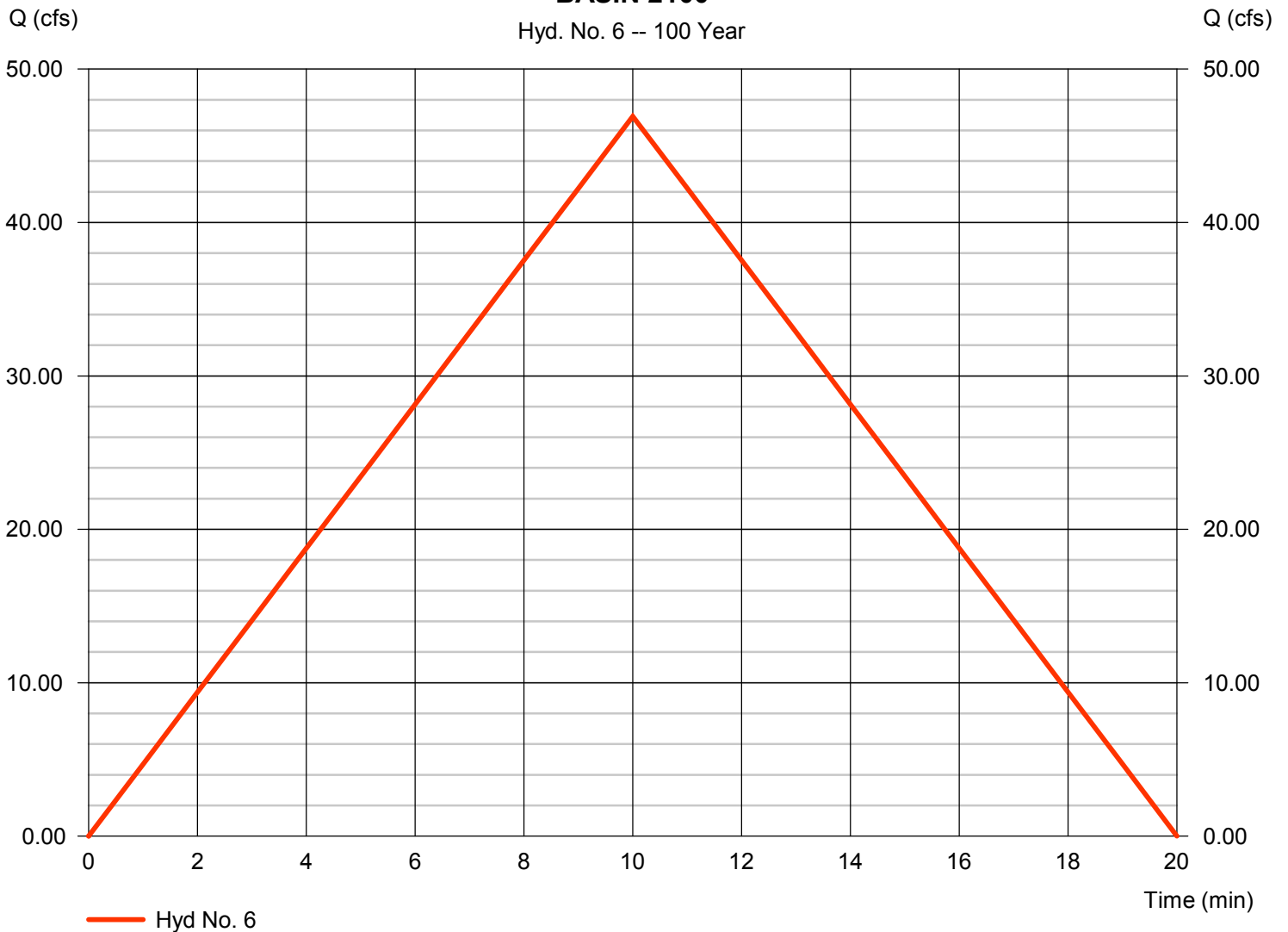
Hyd. No. 6

BASIN 2100

Hydrograph type	= Rational	Peak discharge	= 46.92 cfs
Storm frequency	= 100 yrs	Time to peak	= 10 min
Time interval	= 1 min	Hyd. volume	= 28,150 cuft
Drainage area	= 18.800 ac	Runoff coeff.	= 0.8
Intensity	= 3.119 in/hr	Tc by User	= 10.00 min
IDF Curve	= 17671-PRECIP-3.IDF	Asc/Rec limb fact	= 1/1

BASIN 2100

Hyd. No. 6 -- 100 Year



APPENDIX C
Storm Drain, Inlet, and Ditch Sizing

Preliminary Storm Drain Size

The purpose of this table is to provide an estimated pipe size to convey the 100-year flow rates with a sizing factor.

Manning's n: 0.013

Sizing Factor (%): 30

Slope at:		0.5%		1.0%		2.0%		3.0%	
Q_{100} (cfs ¹)	Q_{100} with Sizing Factor (cfs ¹)	Minimum Pipe Size ² (feet)	Recommended Pipe Size (inches)	Minimum Pipe Size ² (feet)	Recommended Pipe Size (inches)	Minimum Pipe Size ² (feet)	Recommended Pipe Size (inches)	Minimum Pipe Size ² (feet)	Recommended Pipe Size (inches)
1.0	1.3	0.78	10"	0.68	10"	0.60	8"	0.56	8"
2.0	2.6	1.01	12"	0.89	12"	0.78	10"	0.72	10"
5.0	6.5	1.43	18"	1.25	18"	1.10	18"	1.02	18"
10.0	13.0	1.85	24"	1.62	24"	1.43	18"	1.32	18"
15.0	19.5	2.15	30"	1.89	24"	1.66	24"	1.54	24"
20.0	26.0	2.40	30"	2.11	30"	1.85	24"	1.71	24"
24.6	31.9	2.59	36"	2.27	30"	2.00	24"	1.85	24"
30.0	39.0	2.79	36"	2.45	30"	2.15	30"	1.99	24"
35.0	45.5	2.96	36"	2.60	36"	2.28	30"	2.11	30"
40.0	52.0	3.11	42"	2.73	36"	2.40	30"	2.22	30"
50.0	65.0	3.38	42"	2.97	36"	2.61	36"	2.42	30"
60.0	78.0	3.62	48"	3.18	42"	2.79	36"	2.59	36"
70.0	91.0	3.83	48"	3.37	42"	2.96	36"	2.74	36"
80.0	104.0	4.03	54"	3.54	48"	3.11	42"	2.88	36"
90.0	117.0	4.21	54"	3.70	48"	3.25	42"	3.01	42"
110.0	143.0	4.54	60"	3.99	48"	3.50	42"	3.25	42"
145.0	188.5	5.04	72"	4.42	54"	3.89	48"	3.60	48"
170.0	221.0	5.35	72"	4.70	60"	4.12	54"	3.82	48"
240.0	312.0	6.09	84"	5.35	72"	4.69	60"	4.35	54"
350.0	455.0	7.01	96"	6.16	84"	5.41	72"	5.01	72"

Note:

- "cfs" = cubic feet per second.
- Minimum pipe sizes are calculated using the Manning's equation and are based on the flow rates with 30% factor.

Preliminary Storm Drain Size

The purpose of this table is to provide an estimated pipe size to convey the 100-year flow rates with a sizing factor.

Manning's n: 0.013

Sizing Factor (%): 30

Slope at:		4.0%		5.0%		6.0%		7.0%	
Q_{100} (cfs ¹)	Q_{100} with Sizing Factor (cfs ¹)	Minimum Pipe Size ² (feet)	Recommended Pipe Size (inches)	Minimum Pipe Size ² (feet)	Recommended Pipe Size (inches)	Minimum Pipe Size ² (feet)	Recommended Pipe Size (inches)	Minimum Pipe Size ² (feet)	Recommended Pipe Size (inches)
1.0	1.3	0.53	8"	0.51	6"	0.49	6"	0.48	6"
2.0	2.6	0.68	10"	0.66	8"	0.63	8"	0.62	8"
5.0	6.5	0.97	12"	0.93	12"	0.89	12"	0.87	12"
10.0	13.0	1.25	18"	1.20	18"	1.16	18"	1.13	18"
15.0	19.5	1.46	18"	1.40	18"	1.35	18"	1.31	18"
20.0	26.0	1.62	24"	1.56	24"	1.50	18"	1.46	18"
24.6	31.9	1.75	24"	1.68	24"	1.63	24"	1.58	24"
30.0	39.0	1.89	24"	1.81	24"	1.75	24"	1.70	24"
35.0	45.5	2.00	24"	1.92	24"	1.86	24"	1.80	24"
40.0	52.0	2.11	30"	2.02	30"	1.95	24"	1.90	24"
50.0	65.0	2.29	30"	2.19	30"	2.12	30"	2.06	30"
60.0	78.0	2.45	30"	2.35	30"	2.27	30"	2.21	30"
70.0	91.0	2.60	36"	2.49	30"	2.41	30"	2.34	30"
80.0	104.0	2.73	36"	2.62	36"	2.53	36"	2.46	30"
90.0	117.0	2.85	36"	2.74	36"	2.64	36"	2.57	36"
110.0	143.0	3.08	42"	2.95	36"	2.85	36"	2.77	36"
145.0	188.5	3.41	42"	3.27	42"	3.16	42"	3.07	42"
170.0	221.0	3.62	48"	3.47	42"	3.36	42"	3.26	42"
240.0	312.0	4.12	54"	3.95	48"	3.82	48"	3.71	48"
350.0	455.0	4.75	60"	4.55	60"	4.40	54"	4.28	54"

Note:

- "cfs" = cubic feet per second.
- Minimum pipe sizes are calculated using the Manning's equation and are based on the flow rates with 30% factor.

APPENDIX D
Detention Analyses

Detention Analyses will be provided in the Tentative Map Phase and Final Engineering.

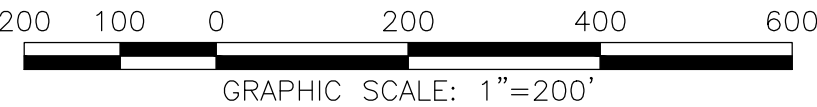
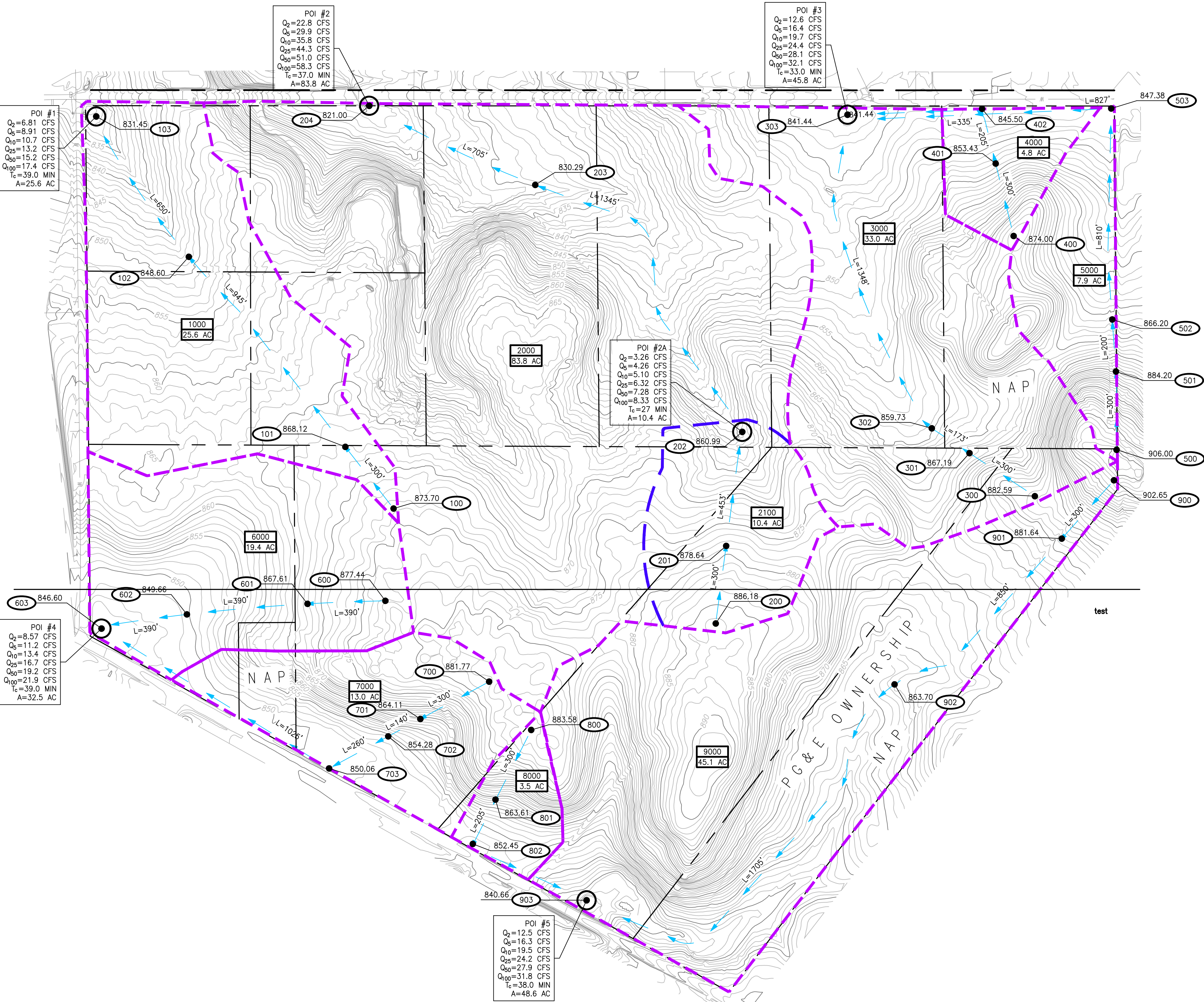
MAP POCKET 1
Drainage Study Map
for
Beechwood
[Pre-Project]

LEGEND

- BASIN BOUNDARY
SUBBASIN BOUNDARY
FLOW PATH
POINT OF INTEREST
BASIN ID & BASIN AREA
FLOW PATH NODE
FLOW PATH LENGTH

NOTES

- POI #2 INCLUDES DRAINAGE BASINS 2000 and 2100. POI #2A WAS SELECTED DUE TO EXISTING WETLAND AREAS FOR COMPARISON PURPOSES WITH POST-PROJECT CONDITIONS. POI #2A ULTIMATELY DRAINS INTO POI #2.
- POI #3 INCLUDES DRAINAGE FOR PARCEL OF A DIFFERENT OWNER. ONLY 52% OF TOTAL FLOW IS FROM THIS PROJECT SITE. THE REMAINING 48% OF FLOW FROM THE OTHER PARCEL WILL BE ADDRESSED AND DETAINED BY THE OTHER OWNER.
- POI #4 CONTAINS DRAINAGE FOR PARCEL OF A DIFFERENT OWNER. IT IS INCLUDED WITHIN OUR DRAINAGE STUDY AS THE FLOWS FOR THIS POI COMINGLE.
- POI #5 INCLUDES DRAINAGE FOR PG&E UTILITY CORRIDOR, WHICH IS NOT A PART OF THIS PROJECT. ONLY 56% OF TOTAL FLOW IS FROM THIS PROJECT SITE. THE REMAINING 44% OF FLOW FROM THE OTHER PARCEL AND WILL REMAIN UNDEVELOPED.
- POI #3 INCLUDES FLOWS FROM DRAINAGE BASINS 3000M 4000 & 5000.
- POI #4 INCLUDES FLOWS FROM DRAINAGE BASINS 8000 & 9000.
- POI #5 INCLUDES FLOWS FROM DRAINAGE BASINS 6000 & 7000.



DRAINAGE STUDY MAP FOR BEECHWOOD (PRE-PROJECT)

DATE: 5/31/2019
REVISED:
SHEET 1 OF 1

J- 17671

MAP POCKET 2
Drainage Study Map
for
Beechwood
[Post-Project]



LEGEND

BASIN BOUNDARY —————

SUBBASIN BOUNDARY - - - - -

FLOW PATH ———→

POINT OF INTEREST ○

BASIN ID & BASIN AREA

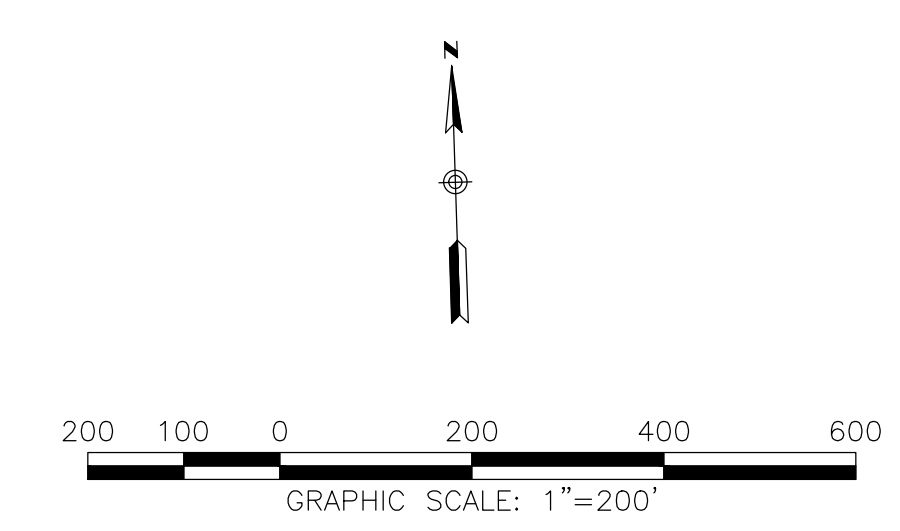
FLOW PATH NODE ● 100.00 100

FLOW PATH LENGTH L=300'

PROPOSED BIORETENTION BMP [Pattern]

PROPOSED UNDERGROUND STORMWATER BMP [Pattern]

- NOTES**
1. FLOW RATES PROVIDED ARE THE POST-PROJECT UNDETAINED FLOW RATES. IT IS ANTICIPATED THAT FLOW RATES WILL REQUIRE DETENTION FOR THE 2-YEAR THROUGH 10-YEAR AND 100-YEAR STORM EVENTS. REFER TO THE PRE-PROJECT EXHIBIT FOR EXISTING FLOW RATES.

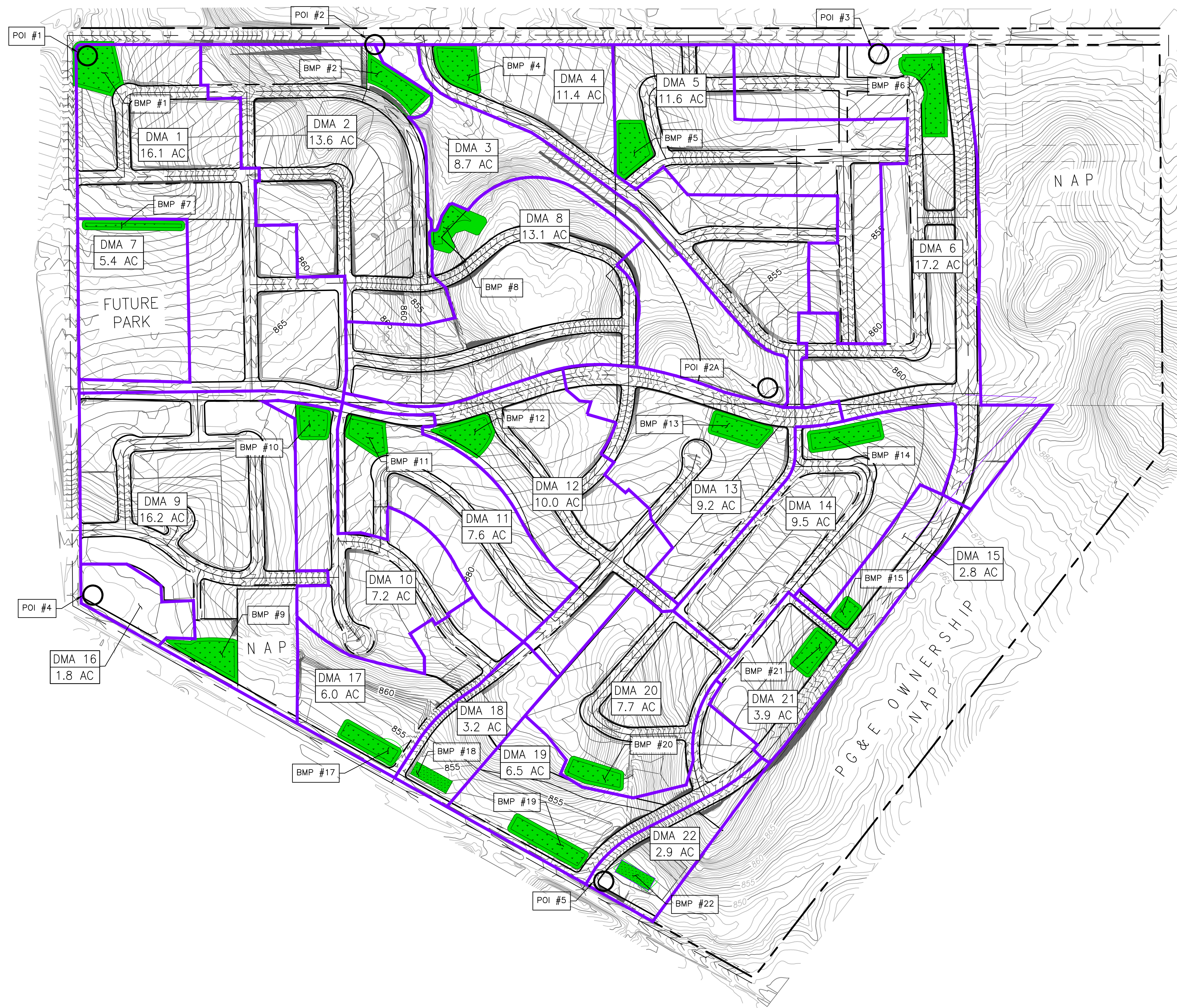


DRAINAGE STUDY MAP FOR BEECHWOOD (POST-PROJECT)

DATE: 5/31/2019
REVISED:
SHEET 1 OF 1

J- 17671

MAP POCKET 3
Stormwater Control Plan Exhibit



LEGEND

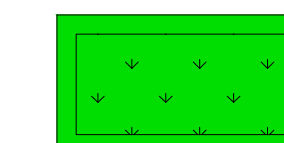
DMA BOUNDARY



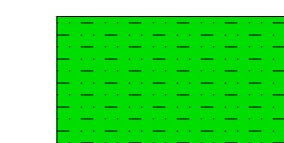
DMA ID & AREA

DMA 1
16.1 AC

PROPOSED BIORETENTION BMP



PROPOSED UNDERGROUND STORMWATER BMP



NOTES

1. GROUND WATER DEPTH WAS FOUND TO BE 15 FEET BELOW EXISTING GRADE PER THE GEOTECHNICAL ENGINEERING REPORT FOR THIS PROJECT.
2. FOR PRELIMINARY ANALYSIS, THE SITE WAS ASSUMED TO BE 80% IMPERVIOUS.
3. PROPOSED BIORETENTION BMPs ALSO PROVIDE INFILTRATION AND DETENTION FOR COMPLIANCE WITH PERFORMANCE REQUIREMENTS 2, 3, AND 4.
4. DMA 3 IS A COMPLETELY PERVIOUS SELF-MITIGATING AREA, THEREFORE IT DOES NOT CONTAIN A BIORETENTION BMP.

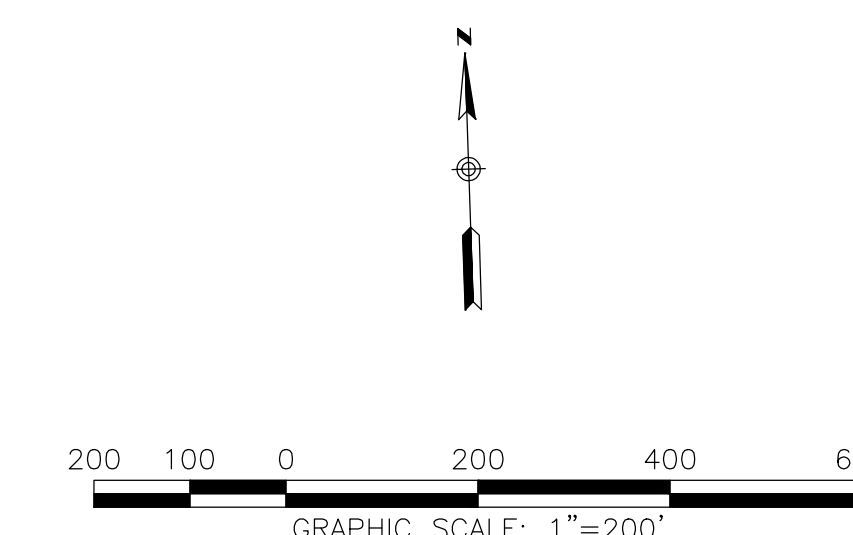
STORMWATER CONTROL PLAN (SWCP) EXHIBIT FOR BEECHWOOD

DATE: 5/31/2019

REVISED:

J-17671

SHEET 1 OF 1



**STORMWATER CONTROL PLAN
FOR
BEECHWOOD SPECIFIC PLAN**

REC Job Number 17671

Date: May 31, 2019

RICK
RICK ENGINEERING COMPANY
ENGINEERING COMPANY
RICK ENGINEERING CO

**STORMWATER CONTROL PLAN
FOR
THE BEECHWOOD SPECIFIC PLAN
(PRELIMINARY ENGINEERING)**

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May 31, 2019

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- Map Pocket 1. Stormwater Control Plan (SWCP) Exhibit for Beechwood
- Map Pocket 2. Stormwater Basin Plan Showing Wetlands

I. Project Data

Table 1: Project Data

Project Name/Number	Beechwood Specific Plan J-17671
Application Submittal Date	5/31/19
Project Location	Intersection of Beechwood Drive & Meadowlark Rd APNs: 09-863-01, -02, -03, -04, -06, -07, -08, -09, -10, -11, -12, & -13
Project Phase No.	Specific Plan
Project Type and Description	Residential: Neighborhood Low Density, Neighborhood Medium Density, Neighborhood High Density Mixed Use: Commercial, Retail, Office Professional, Residential Community Park Open Space - Conservation
Total Project Site Area (acres)	213.2 acres
Total New Impervious Surface Area	Imperviousness is assumed based on proposed land use characteristics. Actual new impervious areas will be provided during Tentative Map and Final Engineering phases.
Total Replaced Impervious Surface Area	All existing impervious areas (buildings) will be removed and will not be replaced.
Total Pre-Project Impervious Surface Area	Assumed to be zero for design purposes.
Total Post-Project Impervious Surface Area	Imperviousness is assumed based on proposed land use characteristics. Actual new impervious areas will be provided during Tentative Map and Final Engineering phases.
Net Impervious Area (Exhibit shall be provided to justify net impervious area results)	Net Impervious Area will be provided with Final Engineering
Watershed Management Zone(s)	WMZ 1
Design Storm Frequency and Depth	85 th Percentile Depth: 0.95"

	95 th Percentile Depth: 1.50"
Drainage Report Name	Drainage Report for Beechwood (Preliminary Engineering)

II. Setting

II.A. Project Location and Description

The project site is located within the City of Paso Robles at the southeast intersection of Meadowlark Road and Beechwood Drive, and is bound to the south by Creston Road and on the east by a Pacific Gas & Electric (PG&E) owned utility corridor and unincorporated County open space land. Refer to Table 1 for project APNs. APN 09-863-01 is under separate ownership and will be addressed by others, but is included within the same Beechwood Specific Plan. APN 09-863-06 is also under separate ownership, however is incorporated in this drainage study due to the assumed comingling of flows in this area. This area will be further studied in the final engineering phase to determine if it will bypass proposed stormwater management features or if it comingled with on-site drainage.

The existing project site is a pentagonal shape and is approximately 215 acres and is comprised by 12 parcels. The site is largely undeveloped with only a few buildings located near the intersection of Beechwood and Meadowlark off of Cattleman Way, and two buildings located off of Creston Road, on the southern side of the site. The proposed project will include single-and multi-family residential, commercial retail, streets, water quality/detention basins, open space areas, and a community park.

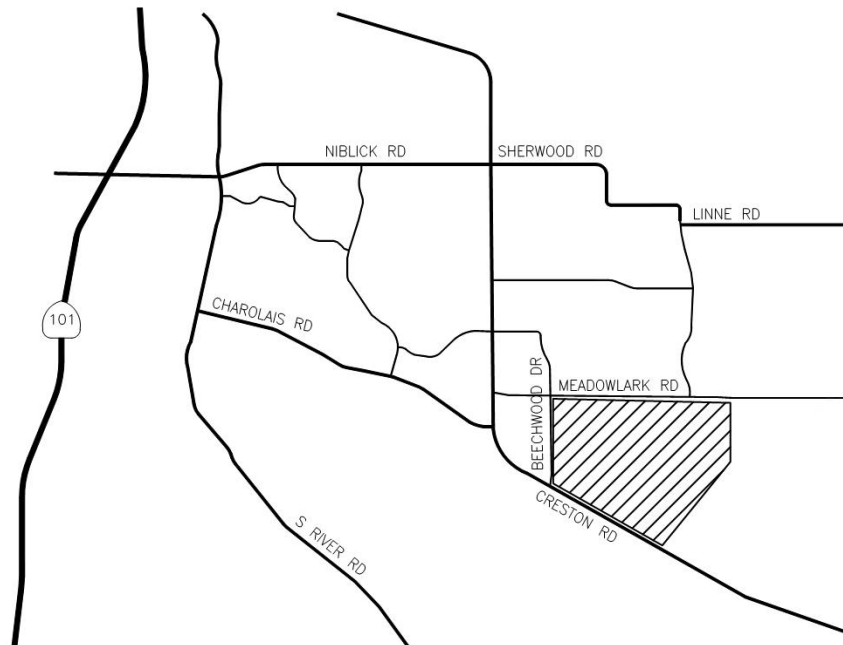


Figure 1: Vicinity Map

II.B. Existing Site Features and Conditions

The project site is primarily undeveloped and comprised of rolling open terrain, with tall prairie grass, scattered old-growth oak trees, and a series of wetland areas. The site is divided by a ridge running from east to west, with approximately half of the site draining to the north towards Beechwood Drive and half to the south towards Creston Road. Refer to the project's Drainage Study for more information regarding existing drainage patterns.

II.C. Opportunities and Constraints for Stormwater Control

The project is located in a Watershed Management Zone 1 and will create over 22,500 SF of impervious area; therefore, the project will be subject to Performance Requirements (PRs) 1 through 4. As required by PR 3, the 95th percentile rainfall event must be retained through infiltration, rainwater harvesting, and/or evapotranspiration. For PR 4, the peak discharge rates for the post-project condition will be detained back to existing condition for the 2- through 10-year storm events.

Pursuant to the project's geotechnical investigation, infiltration rates vary throughout the site from 0 to 48 inches per hour based on Infiltration Tests performed on March 25, 2016 by Mid-Coast Geotechnical, Inc. Refer to Appendix C for the project's infiltration results.

Existing wetlands are located in several locations throughout the site. The project will seek to limit impacts to existing wetlands and will provide mitigation for wetland areas that are impacted. Stormwater from the site will be managed by proposed BMPs prior to discharging into the post-project wetland areas. Stormwater BMP facilities will be located throughout the site to address applicable post-construction requirements.

The Draft Report Storm Drain Master Plan for Paso Robles, California by Schaaf & Wheeler Consulting Civil Engineers, dated March 2007, was referenced in the preparation of this drainage study. In Chapter 5 Storm Drain Collection Systems and Chapter 7 Capital Improvements, Meadowlark Road and Running Stag Way were identified as high priority improvement areas due to street flooding depths greater than one foot in these storm drain collection systems analyzed with a 25-year storm. It should be noted that information found from this report will be incorporated in the design of the Tentative Map and Final Engineering Phases.

III. Low Impact Development Design Strategies

III.A. Optimization of Site Layout

The site layout utilizes drainage as a design element and preserves natural drainage patterns as is feasible. Creeks, wetlands, and riparian areas include a minimum setback distance to limit impacts to natural features. Impervious areas throughout the site are limited by incorporating landscaped areas throughout (e.g., non-contiguous sidewalks).

III.B. Dispersal of Runoff to Pervious Areas (self-retaining areas)

The site will route runoff from impervious surfaces to pervious areas where possible (e.g., downspouts will discharge onto landscaped areas prior to reaching proposed the storm drain system).

III.C. Stormwater Control Measures

Bioretention/filtration BMPs and underground filtration chambers are proposed throughout the site to address PRs 2 through 4. Proposed BMPs will provide infiltration where practical and feasible utilizing recommendations from the project's Geotechnical Engineer. Additionally, BMPs will include raised inlets and mid-flow orifices to provide detention routing for compliance with PR 4 (2-through 10-year storms) and with flood-control (100-year) requirements as applicable.

IV. Documentation of Drainage Design

IV.A. Drainage Management Area Characterization

The project site has been divided into DMAs based on tributary areas to proposed BMPs. Each DMA will discharge into a single BMP. Refer to Map Pocket 1 for a DMA Exhibit identifying DMA boundaries and proposed BMP locations.

The project may further categorize pervious areas as either self-treating or self-retaining areas, if applicable. Pervious area sub-categories are as follows and will be identified within the DMA exhibit during Final Engineering:

- Areas designated as **self-treating** areas are undisturbed areas, or areas planted with native, drought-tolerant, or LID-appropriate vegetation and do not receive runoff from other areas.
- Areas designated as **self-retaining** are low-lying areas that receive runoff from adjoining areas. Self-retaining areas may have natural vegetation, or bed landscape, or may be porous pavements (where the soils underlying the porous pavements drain appropriately to accommodate the additional run-on).

Refer to Table 2 below for a summary of each DMA and Table 3 for SCMs.

Table 2: Table of Drainage Management Areas

DMA ID	SURFACE TYPE & DESCRIPTION	AREA (SF)	DRAINS TO (PROVIDE DMA OR SCM DMA ID)			NOTABLE OR EXCEPTION CHARACTERISTICS OR CONDITIONS
			SELF- TREATING	SELF- RETAINING	SCM	
1	Residential: Low	16.1			1	
2	Residential: Low	13.6			2	

3	Open Space	8.7			N/A	Self-Treating /Mitigating
4	Residential: Low, Medium	11.4			4	
5	Residential: Low	11.6			5	
6	Residential: Low	17.2			6	
7	Community Park	5.4			7	
8	Residential: Low	13.1			8	
9	Residential: Low, Open Space	16.2			9	
10	Residential: Low	7.1			10	
11	Residential: Low	7.6			11	
12	Residential: Low	10.0			12	
13	Residential: Low	9.2			13	
14	Residential: Low, Medium	9.5			14	
15	Residential: Medium	2.8			15	
16	Open Space	1.8			N/A	Self-Treating/ Mitigating
17	Residential: Low, High Open Space	6.0			17	
18	Residential: Low Commercial Mixed Use Open Space	3.2			18	
19	Residential: Low, High Commercial Mixed Use	6.5			19	
20	Residential: Low Open Space	7.7			20	

21	Residential: High	3.9			21	
22	Commercial Mixed Use Open Space	2.9			22	

Table 3: Table of Runoff Reduction and Structural Control Measures

DMA ID	SCM	SCM TYPE	WATER QUALITY FLOW RATE (CFS) OR VOLUME REQUIRED (CF)	WATER QUALITY FLOW RATE (CFS) OR VOLUME PROVIDED (CF)
1	1	BIORETENTION BASIN	26,650	26,665
2	2	BIORETENTION BASIN	21,105	21,627
3	3	SELF-TREATING/MITIGATING AREA	-	-
4	4	BIORETENTION BASIN	18,870	18,992
5	5	BIORETENTION BASIN	18,001	18,402
6	6	BIORETENTION BASIN	26,691	26,960
7	7	BIORETENTION BASIN	5,214	5,391
8	8	BIORETENTION BASIN	20,329	20,400
9	9	BIORETENTION BASIN	25,140	25,453
10	10	BIORETENTION BASIN	11,018	11,311
11	11	BIORETENTION BASIN	11,794	11,903
12	12	BIORETENTION BASIN	15,518	15,567
13	13	BIORETENTION BASIN	14,277	14,385
14	14	BIORETENTION BASIN	16,053	16,630
15	15	BIORETENTION BASIN	4,731	4,798
16	16	SELF-TREATING/MITIGATING AREA	-	-
17	17	BIORETENTION BASIN	12,415	12,494

18	18	UNDERGROUND INFILTRATION CHAMBER	5,959	6,102
19	19	BIORETENTION BASIN	16,363	16,630
20	20	BIORETENTION BASIN	11,949	12,021
21	21	BIORETENTION BASIN	8,069	12,494
22	22	UNDERGROUND INFILTRATION CHAMBER	7,300	11,548

IV.B. Sizing Calculations

For preliminary analysis, percent impervious for each drainage management area (DMA) was found using proposed land use characteristics. Actual imperviousness will be calculated as part of the Tentative Map phase. Sizing of BMPs will be updated during Final Engineering and will incorporate updated proposed impervious areas. Sizing calculations are based on the Stormwater Technical Guide: Compliance with Stormwater Post-Construction Requirements in the City of Paso Robles, dated June 2016, and the County of San Luis Obispo Post-Construction Requirements Handbook Version 1.2, updated March 2017.

Refer to Appendix B for sizing calculations for this project.

Refer to Appendix C for infiltration rates determined using the geotechnical report prepared by Mid-Coast Geotechnical for this project.

IV.B.1. Areas Draining to Bioretention Facilities (PCR 2 Projects)

Refer to Appendix B for sizing calculations and DMA characteristics.

V. Source Control Measures

V.A. Site activities and potential sources of pollutants

Potential sources of pollutants will be provided during Final Engineering.

V.B. Source Control Table

Table 4: Source Control Table

	Pollutants Associated with Activity						
Potential Pollutant Source	Sediment / Litter/ Debris	Nutrients / Organic Matter	Bacteria	Hydro-carbons	Toxics/ Chemicals /Paint	Other	Source Control BMP Proposed
Pets		X	X				Good housekeeping/ Illicit Discharge Control/Pet Waste Station
Parked Vehicles	X			X			Vehicle Maintenance, Fueling and Storage
Roads, Fertilizers, Pesticides, Storm Drains, Etc.	X				X		Storm Drain Signage

V.C.Features, Materials, and Methods of Construction of Source Control BMPs

Source control will be provided during the Final Engineering phase.

VI. Stormwater Facility Maintenance

Operations & Maintenance to be provided during the Tentative Map phase and finalized during Final Engineering.

VI.A. Ownership and Responsibility for Maintenance in Perpetuity

Maintenance documentation will be provided during the Final Engineering phase.

VI.B. Summary of Maintenance Requirements for Each Stormwater Facility

Maintenance requirements will be provided during the Final Engineering phase.

VII. Construction Checklist

Construction drawings with details on the Structural SCMs will be provided during Final Engineering.

Table 5 Construction Checklist Table

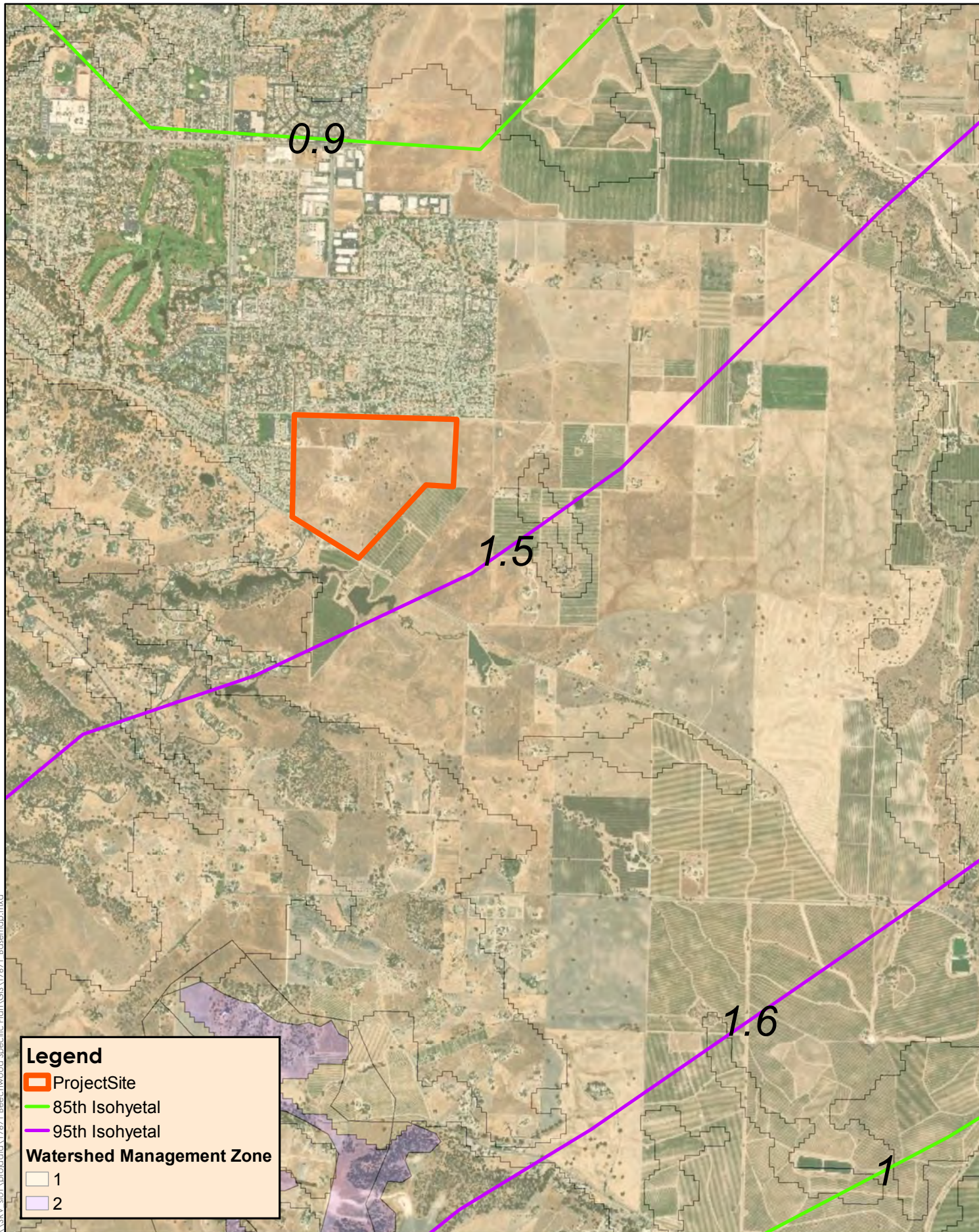
SWCP Page No.	Structural Control Measure SCMs	Plan Sheet No.	SCM Detail No.

VIII. Certifications

The design of stormwater treatment facilities and other stormwater pollution control measures in this plan are in accordance with the current edition of the City of Paso Robles Stormwater Technical Guide.

APPENDIX A
Post-Construction Requirement Back-up Documentation

\\SRV-d01\eroddata\17671 Beechwood Specific Plan\GIS\17671 BaseMap.mxd



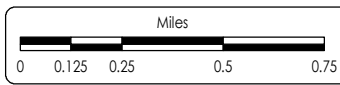
Legend

- Project Site
- 85th Isohyetal
- 95th Isohyetal

Watershed Management Zone

- 1
- 2

Date of Exhibit: 5/20/2019
DigitalGlobe Aerial Image: ESRI



Beechwood Specific Plan
WMZ and Precipitation Exhibit



NOAA Atlas 14, Volume 6, Version 2
Location name: Paso Robles, California, USA*
Latitude: 35.5978°, Longitude: -120.6481°
Elevation: 866.86 ft**

* source: ESRI Maps

** source: USGS



POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Sarah Dietz, Sarah Heim, Lillian Hiner, Kazungu Maitaria, Deborah Martin, Sandra Pavlovic, Ishani Roy, Carl Trypaluk, Dale Unruh, Fenglin Yan, Michael Yekta, Tan Zhao, Geoffrey Bonnin, Daniel Brewer, Li-Chuan Chen, Tye Parzybok, John Yarchoan

NOAA, National Weather Service, Silver Spring, Maryland

[PF_tabular](#) | [PF_graphical](#) | [Maps_&_aerials](#)

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)¹										
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.119 (0.101-0.141)	0.154 (0.130-0.183)	0.201 (0.170-0.240)	0.241 (0.202-0.291)	0.298 (0.241-0.373)	0.344 (0.272-0.440)	0.393 (0.302-0.516)	0.445 (0.331-0.603)	0.519 (0.369-0.736)	0.579 (0.397-0.853)
10-min	0.170 (0.145-0.202)	0.220 (0.187-0.262)	0.288 (0.244-0.344)	0.346 (0.290-0.416)	0.427 (0.345-0.534)	0.493 (0.389-0.631)	0.563 (0.432-0.740)	0.637 (0.475-0.864)	0.744 (0.529-1.06)	0.830 (0.569-1.22)
15-min	0.206 (0.175-0.245)	0.266 (0.226-0.317)	0.348 (0.295-0.416)	0.418 (0.351-0.504)	0.517 (0.418-0.646)	0.596 (0.471-0.763)	0.680 (0.523-0.894)	0.771 (0.574-1.05)	0.899 (0.640-1.28)	1.00 (0.688-1.48)
30-min	0.289 (0.246-0.344)	0.374 (0.317-0.445)	0.489 (0.414-0.584)	0.587 (0.492-0.707)	0.726 (0.586-0.907)	0.837 (0.661-1.07)	0.955 (0.734-1.26)	1.08 (0.806-1.47)	1.26 (0.899-1.79)	1.41 (0.966-2.08)
60-min	0.425 (0.361-0.505)	0.549 (0.466-0.653)	0.719 (0.608-0.858)	0.863 (0.723-1.04)	1.07 (0.862-1.33)	1.23 (0.972-1.57)	1.40 (1.08-1.85)	1.59 (1.19-2.15)	1.86 (1.32-2.63)	2.07 (1.42-3.05)
2-hr	0.628 (0.534-0.747)	0.795 (0.675-0.946)	1.02 (0.867-1.22)	1.22 (1.02-1.47)	1.50 (1.21-1.88)	1.73 (1.37-2.21)	1.97 (1.52-2.59)	2.23 (1.67-3.03)	2.61 (1.86-3.70)	2.92 (2.00-4.30)
3-hr	0.781 (0.664-0.928)	0.987 (0.838-1.17)	1.27 (1.08-1.52)	1.51 (1.27-1.82)	1.86 (1.50-2.33)	2.14 (1.69-2.74)	2.44 (1.88-3.21)	2.76 (2.06-3.75)	3.23 (2.30-4.58)	3.61 (2.47-5.31)
6-hr	1.10 (0.931-1.30)	1.40 (1.19-1.67)	1.83 (1.55-2.18)	2.18 (1.83-2.63)	2.69 (2.17-3.36)	3.10 (2.45-3.96)	3.53 (2.71-4.64)	3.99 (2.97-5.41)	4.64 (3.30-6.58)	5.17 (3.55-7.62)
12-hr	1.37 (1.16-1.62)	1.86 (1.58-2.21)	2.51 (2.13-3.00)	3.05 (2.56-3.68)	3.79 (3.07-4.74)	4.37 (3.45-5.59)	4.96 (3.81-6.52)	5.58 (4.16-7.56)	6.43 (4.58-9.12)	7.10 (4.87-10.5)
24-hr	1.64 (1.48-1.85)	2.37 (2.14-2.67)	3.31 (2.98-3.75)	4.07 (3.64-4.65)	5.11 (4.41-6.03)	5.90 (4.99-7.12)	6.70 (5.52-8.29)	7.52 (6.02-9.57)	8.63 (6.62-11.5)	9.48 (7.03-13.1)
2-day	2.08 (1.88-2.34)	2.95 (2.67-3.33)	4.11 (3.70-4.65)	5.07 (4.53-5.78)	6.39 (5.52-7.55)	7.42 (6.28-8.96)	8.49 (7.00-10.5)	9.61 (7.70-12.2)	11.1 (8.56-14.8)	12.4 (9.16-17.0)
3-day	2.37 (2.15-2.67)	3.31 (2.99-3.74)	4.58 (4.13-5.19)	5.65 (5.05-6.45)	7.15 (6.18-8.45)	8.35 (7.06-10.1)	9.60 (7.91-11.9)	10.9 (8.75-13.9)	12.8 (9.81-17.0)	14.3 (10.6-19.7)
4-day	2.59 (2.35-2.92)	3.58 (3.24-4.05)	4.94 (4.45-5.59)	6.08 (5.44-6.94)	7.71 (6.66-9.11)	9.01 (7.62-10.9)	10.4 (8.57-12.9)	11.9 (9.50-15.1)	13.9 (10.7-18.5)	15.6 (11.6-21.5)
7-day	3.13 (2.83-3.53)	4.23 (3.82-4.77)	5.74 (5.18-6.50)	7.03 (6.29-8.03)	8.88 (7.67-10.5)	10.4 (8.78-12.5)	12.0 (9.87-14.8)	13.7 (11.0-17.4)	16.1 (12.4-21.4)	18.1 (13.4-25.0)
10-day	3.52 (3.19-3.97)	4.71 (4.26-5.31)	6.35 (5.72-7.18)	7.75 (6.93-8.85)	9.77 (8.44-11.5)	11.4 (9.65-13.8)	13.2 (10.8-16.3)	15.0 (12.1-19.2)	17.8 (13.6-23.6)	20.0 (14.8-27.5)
20-day	4.41 (3.99-4.97)	5.86 (5.29-6.61)	7.86 (7.09-8.90)	9.58 (8.57-10.9)	12.1 (10.4-14.2)	14.1 (11.9-17.0)	16.2 (13.4-20.1)	18.6 (14.9-23.7)	22.0 (16.9-29.2)	24.8 (18.3-34.1)
30-day	5.24 (4.75-5.91)	6.98 (6.31-7.87)	9.37 (8.45-10.6)	11.4 (10.2-13.0)	14.4 (12.4-17.0)	16.8 (14.2-20.2)	19.3 (15.9-23.9)	22.1 (17.7-28.2)	26.1 (20.0-34.7)	29.4 (21.8-40.4)
45-day	6.30 (5.71-7.11)	8.41 (7.60-9.49)	11.3 (10.2-12.8)	13.8 (12.3-15.7)	17.3 (14.9-20.4)	20.1 (17.0-24.3)	23.2 (19.1-28.7)	26.4 (21.2-33.7)	31.1 (23.9-41.3)	34.9 (25.9-48.1)
60-day	7.36 (6.66-8.30)	9.83 (8.89-11.1)	13.2 (11.9-14.9)	16.1 (14.4-18.3)	20.1 (17.4-23.8)	23.4 (19.8-28.2)	26.8 (22.1-33.2)	30.6 (24.5-38.9)	35.9 (27.5-47.7)	40.2 (29.8-55.3)

¹ Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

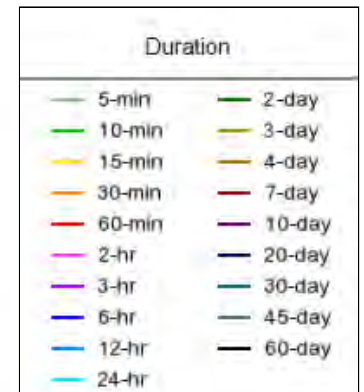
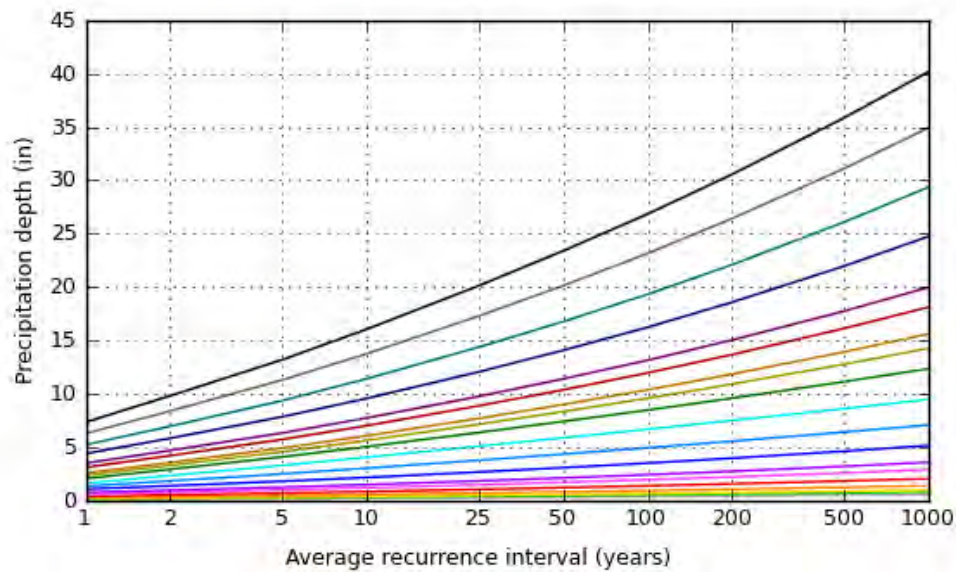
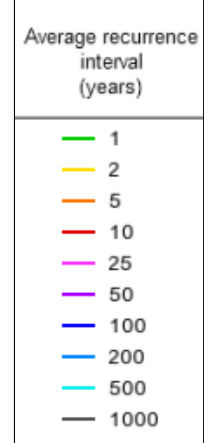
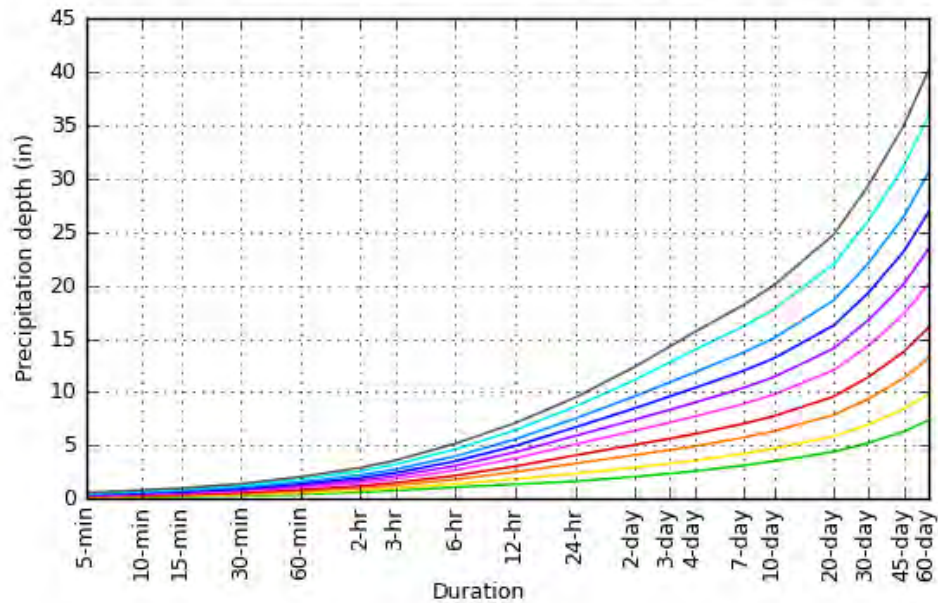
Please refer to NOAA Atlas 14 document for more information.

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PF graphical

PDS-based depth-duration-frequency (DDF) curves

Latitude: 35.5978°, Longitude: -120.6481°



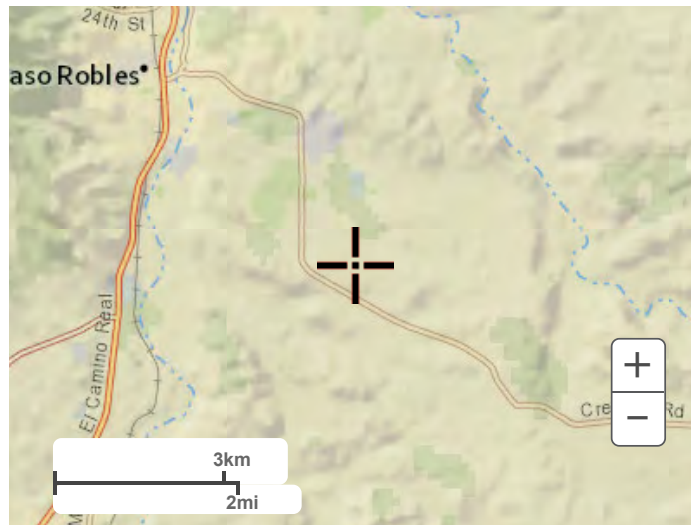
NOAA Atlas 14, Volume 6, Version 2

Created (GMT): Tue Feb 26 16:09:48 2019

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Maps & aerials

Small scale terrain

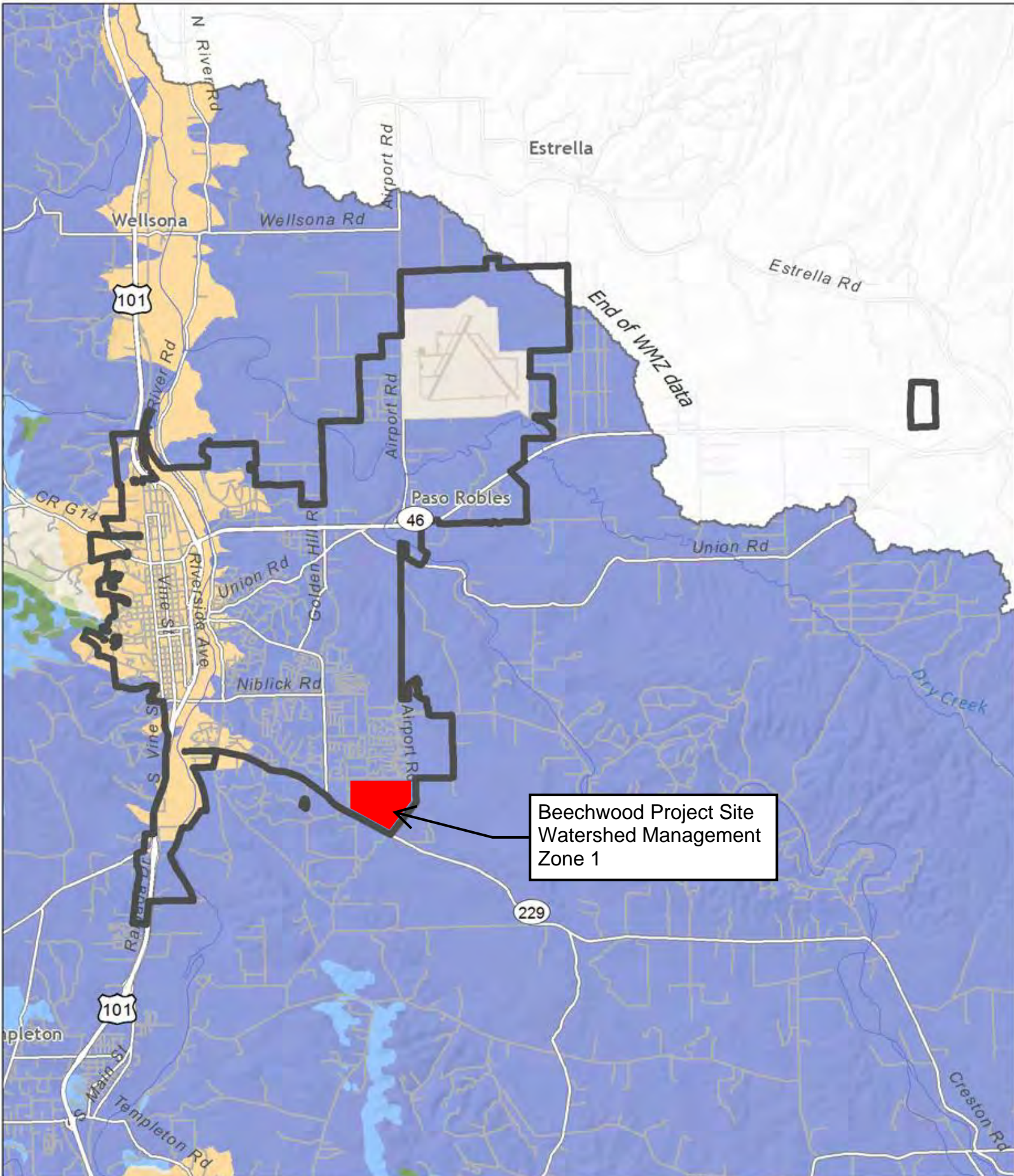
**Large scale terrain****Large scale map****Large scale aerial**



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Questions?: HDSC.Questions@noaa.gov


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CENTRAL COAST JOINT EFFORT **El Paso de Robles, California**


Watershed management zones

1	5	9
2	6	10
3	7	
4	8	

 **Urban area boundary**

Data sources
Watershed management zones: Stillwater Sciences, 2012
Base data: ESRI 2010

0 0.25 0.5 1 Miles
0 0.5 1 2 km

 **Stillwater Sciences**
www.stillwatersci.com

APPENDIX B
BMP Sizing Calculations

Bioretention Sizing

BMP ID	85th Precip ¹ (in)	95th Precip ¹ (in)	Tributary Area (ac)	% Impervious ³	Runoff Coefficient ² "C"	Required Water Quality Volume (ft ³) (PCR2)	Required Retention Volume (ft ³) (PCR 3)	Peak Management Volume (ft ³) (PCR 4)	Assumed Bioretention Bottom Footprint (ft ²)	Side Slopes (Z:1) (H:V)	Bioretention Soil Media Depth (ft)	Gravel Depth (ft)	Water Quality Ponding Depth (ft)	Surface Area at Ponding Depth (ft ²)	Provided Volume at WQ Ponding Depth (ft ³)	Retention Ponding Depth (ft)	Surface Area at Retention Depth (ft ²)	Provided Volume at Retention Ponding Depth (ft ³)	
DMA 1	0.95	1.50	16.1	68%	0.48	26,650	42,079	TBD	22,500	3	2.25	1	0.5	23,409	26,665	1	24,336	47,606	DMA 1
DMA 2			13.6	65%	0.45	21,105	33,323	TBD	12,500	3	2.25	1	1	13,878	21,627	1	13,878	26,626	DMA 2
DMA 3			8.7	0%	<i>DMA 3 is a Self-Mitigating/Treating area; therefore, permanent BMPs are not proposed</i>														DMA 3
DMA 4			11.4	68%	0.48	18,870	29,795	TBD	16,000	3	2.25	1	0.5	16,768	18,992	1	17,554	33,977	DMA 4
DMA 5			11.6	65%	0.45	18,001	28,423	TBD	15,500	3	2.25	1	0.5	16,256	18,402	1	17,030	32,927	DMA 5
DMA 6			17.2	65%	0.45	26,691	42,144	TBD	22,750	3	2.25	1	0.5	23,664	26,960	1	24,596	48,129	DMA 6
DMA 7			5.4	40%	0.28	5,214	8,233	TBD	4,500	3	2.25	1	0.5	4,911	5,391	1	5,341	9,758	DMA 7
DMA 8			13.1	65%	0.45	20,329	32,098	TBD	11,779	3	2.25	1	1	13,118	20,400	1	13,118	25,111	DMA 8
DMA 9			16.2	65%	0.45	25,140	39,694	TBD	14,750	3	2.25	1	1	16,243	25,453	1	16,243	31,353	DMA 9
DMA 10			7.1	65%	0.45	11,018	17,397	TBD	9,500	3	2.25	1	0.5	10,094	11,311	1	10,706	20,315	DMA 10
DMA 11			7.6	65%	0.45	11,794	18,622	TBD	10,000	3	2.25	1	0.5	10,609	11,903	1	11,236	21,368	DMA 11
DMA 12			10.0	65%	0.45	15,518	24,503	TBD	13,100	3	2.25	1	0.5	13,796	15,567	1	14,509	27,887	DMA 12
DMA 13			9.2	65%	0.45	14,277	22,542	TBD	12,100	3	2.25	1	0.5	12,769	14,385	1	13,456	25,786	DMA 13
DMA 14			9.5	70%	0.49	16,053	25,346	TBD	14,000	3	2.25	1	0.5	14,719	16,630	1	15,456	29,778	DMA 14
DMA 15			2.8	70%	0.49	4,731	7,471	TBD	4,000	3	2.25	1	0.5	4,388	4,798	1	4,795	8,697	DMA 15
DMA 16			1.8	0%	<i>DMA 16 is a Self-Mitigating/Treating area; therefore, permanent BMPs are not proposed</i>														DMA 16
DMA 17			6.0	80%	0.6	12,415	19,602	TBD	10,500	3	2.25	1	0.5	11,124	12,494	1	11,766	22,420	DMA 17
DMA 18			3.2	75%	0.54	5,959	9,409	TBD	5,100	3	2.25	1	0.5	5,537	6,102	1	5,993	11,029	DMA 18
DMA 19			6.5	90%	0.73	16,363	25,837	TBD	14,000	3	2.25	1	0.5	14,719	16,630	1	15,456	29,778	DMA 19
DMA 20			7.7	65%	0.45	11,949	18,867	TBD	10,100	3	2.25	1	0.5	10,712	12,021	1	11,342	21,578	DMA 20
DMA 21			3.9	80%	0.6	8,069	12,741	TBD	10,500	3	2.25	1	0.5	11,124	12,494	1	11,766	22,420	DMA 21
DMA 22			2.9	90%	0.73	7,300	11,527	TBD	9,700	3	2.25	1	0.5	10,300	11,548	1	10,918	20,736	DMA 22

1. Precipitation Depth referenced from County of San Luis Obispo's Post Construction Requirements Handbook, dated March 2017

2. $C = 0.8581 \cdot 3 - 0.7812 + 0.7741 + 0.04$, Where "i" is the fraction of the tributary area that is impervious

3. Percent impervious per DMA is assumed to be the following based on Land Use. Some DMAs contain multiple Land Use Types. Actual imperviousness will be calculated as a part of the Tentative Map Phase and Final Engineering.

Neighborhood, Low	65%	Commercial Mixed Use	90%
Neighborhood, Medium	70%	Park & Open Space	40%
Neighborhood, High	80%		

4. DMA 18 and 22 will utilize underground infiltration chambers as BMPs. Exact size and specifications for these BMPs will be provided with Final Engineering.

Note: PCRs for the Central Coast region were used to size proposed BMPs

APPENDIX C
Geotechnical Engineering Report



G e o t e c h n i c a l E n g i n e e r i n g S e r v i c e s

GEOTECHNICAL ENGINEERING REPORT

**Proposed Beechwood Subdivision
Beechwood Drive / Meadowlark Road
Paso Robles, CA**

for:

**Harrod Etal
2530 B Beechwood Drive
Paso Robles, CA 93446**

Date: March 25, 2016

Report No. 16750

File No. 16-7404

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1 INTRODUCTION

This report presents the results of our geotechnical investigation performed at the site of the proposed residential development located on Beechwood Drive in the City of Paso Robles.

The principal purpose of this investigation was to determine the geotechnical properties of the surface and subsurface soils in order to provide recommendations for general site grading and tract improvements. From a geotechnical stand point the site appears to be suitable to support the proposed development when prepared as recommended herein.

Research and exploratory work was conducted in accordance with presently accepted procedures consistent with the scope of work you have requested for this development. No warranty regarding the uniformity of subsurface conditions is implied.

2 SCOPE OF THE GEOTECHNICAL INVESTIGATION

The scope of our geotechnical investigation consisted of the following:

- a. 5 truck mounted auger borings extended to depths of 4 to 15 feet. The location and identification of the excavations are shown on the attached drawings.
- b. Observing existing man-made and natural field conditions.
- c. Obtaining and testing representative bulk and undisturbed soil samples and logging the formations encountered.
- d. Analysis of the field observations and laboratory testing.

3 SUMMARY OF FINDINGS

3.1 SITE DESCRIPTION

The proposed development will be situated on the southeast corner of the intersection of Beechwood Drive and Meadowlark Road. The site contains rolling terrain that varies from nearly level to less than 15 percent slopes with a poorly defined drainage swale descending to the northwest in the northern portion of the site. Mature oak trees are located throughout the site.

3.2 EXPANSIVE NATURE OF THE SOIL

The surface soils are a very low to low expansive sandy material that are underlain with low to medium expansive sandy and clayey soils.

3.3 EXISTING SOIL CONDITIONS

The loose to medium dense sandy surface soils were encountered to 1 to 2 feet below grade and are underlain with firm to stiff clayey material and hard sandy soils.

3.4 GROUND WATER CONDITION

At the time of our investigation no ground water was encountered in the excavations to a depth of 15 feet below existing grade. Fluctuation in the level of the ground water may occur due to variation in rainfall, temperature, or other factors.

3.5 SEISMIC PARAMETERS

We have reviewed the available information regarding the site locations and soil type. The purpose of our review was to determine the appropriate seismic parameters for the 2016 CBC Section 1613 requirements. The site is underlain with generally hard sandy material according to the logs available from the area. Density of the soil with respect to blow counts, shear strength, or shear wave velocities to a depth of 100 feet, has not been determined. However, due to the sandy nature of the near-surface material and the high blow counts in the upper 15 feet of material, we recommend that a site class D be used for the project. Based on information provided in IBC Figures 1613.5(3) and 1613.5(4) and Tables 1613.5.3, the maximum considered earthquake spectral response acceleration values, adjusted for site class effects, are as follows:

short periods: $S_{DS} = 0.890g$

1-second periods: $S_{D1} = 0.498g$

3.6 LIQUEFACTION POTENTIAL

We have reviewed the subsurface data to provide an opinion regarding the liquefaction potential of the site. Exploratory borings were extended 15 feet deep in the proposed area. In all of the excavations, hard sandy material was noted within about 2 to 4 feet of the existing grade. In addition, no groundwater was observed in either test boring.

Liquefaction is generally considered a result from development of pore pressure in loose saturated sandy soil during a seismic event. The potential of liquefaction is based on the seismicity of the site, the presence and depth of groundwater, the presence of sandy soil, and density of the soil.

We have not extended an exploratory boring more than 15 feet deep in the building area. Based on the presence of hard sandy material at a depth of about 2 to 4 feet and no groundwater in the area, it is our opinion that the likelihood of liquefaction of the site is very low.

4 GRADING RECOMMENDATIONS

The following recommendations are made based on your representations that a residential development will be constructed on the site. This report will address the grading of the tract improvements only. Lot specific grading recommendations can be provided once the grading plans are prepared. It is your responsibility to notify the geotechnical engineer of any changes to the proposed development. If changes occur, the recommendations contained in this report will be reviewed and may need to be revised.

4.1 GENERAL GRADING RECOMMENDATIONS

- a. All grading work should be done in a professional manner and in conformance with the current local jurisdiction's grading ordinances and per the grading recommendations stated herein. In addition, all grading work shall be observed by the geotechnical engineers representatives.

- b. All removal areas, keys and footing excavations shall be observed by the representative of the geotechnical engineer before any fill or steel reinforcement is placed. It is your responsibility to notify MID-COAST Geotechnical, Inc. when grading operations or construction begins so that the required observations can be made.
- c. All surface vegetation and debris shall be removed from the work area as grading operations begin.
- d. A careful search shall be made for subsurface debris and abandoned water wells, septic tanks, etc., during grading operations. If any such subsurface cavities are encountered, they shall be removed down to the firm underlying soil and properly backfilled and compacted as directed by a representative of the geotechnical engineer.
- e. Special inspections should be performed in accordance with Table 1705.6 below:

**TABLE 1705.6
REQUIRED VERIFICATION AND INSPECTION OF SOILS**

VERIFICATION AND INSPECTION TASK	CONTINUOUS DURING TASK LISTED	PERIODICALLY DURING TASK LISTED
1. Verify materials below footings are adequate to achieve the design bearing capacity.	-----	X
2. Verify excavations are extended to proper depth and have reached proper material.	-----	X
3. Perform classification and testing of controlled filled materials.	-----	X
4. Verify use of proper materials, densities and lift thicknesses during placement and compaction of controlled fill.	X	-----
5. Prior to placement of controlled fill, observe subgrade and verify that the site has been prepared properly.	-----	X

*2016 California Building Code

4.2 PREPARATION OF DRIVEWAYS AND STREETS

The following guidelines are to be used for grading in the streets and driveways:

- a. **Fill areas:** In those areas to receive fill, the existing surface soils shall be removed down to firm native material. The exposed soils at the bottom of the removal areas

shall then be scarified to a depth of 8 inches, brought to near optimum moisture content, and compacted to a minimum of 90 percent of the maximum density (ASTM D-1557) before any fill is placed.

- b. **Cut areas:** In those areas where the existing surface elevation is to be lowered more than 18 inches below the original grade, the exposed material at the bottom of the cut areas shall be processed and recompact to a minimum of 95 percent of maximum density (ASTM D-1557) for a minimum depth of 12 inches below the structural section.

4.3 TENTATIVE STRUCTURAL SECTION

A tentative structural section for the roadway and driveway areas is 3" AC / 12"AB. All subgrade soils shall be compacted to a minimum of 95 percent of the maximum density (ASTM D1557) to a minimum depth of 12 inches below the subgrade elevation.

Aggregate Base (AB) shall be defined as "Processed Miscellaneous Base" or "Class II Base" material as required by the local jurisdiction. The structural sections will need to be confirmed or modified by R-value testing as necessary when the subgrade is prepared.

4.4 BOTTOM CHECK AND PROCESSING OF REMOVAL AREA

Field observations will be required to confirm that the removal bottom has been established in firm natural material prior to processing operations.

The exposed material at the bottom of the removal areas shall then be properly prepared and brought to near optimum moisture content before any fill is placed. The removed soil may be used as backfill providing all the deleterious materials, if any, are picked out.

4.5 PLACEMENT OF FILL

All fill shall be placed in layers approximately 8 inches in depth, brought to a moisture content near optimum moisture content, and compacted to a minimum of 90 percent of the maximum density (ASTM D1557) up to final pad subgrade. Fill compacted at high moisture content may be subject to yielding. Yielding or pumping grades will not be approved by this office.

Material placed as certified fill shall be free of debris and rocks greater than six inches in width across the widest point.

4.6 IMPORT MATERIAL

All imported material, if any, to be used for structural fills shall be observed and approved by a representative of the geotechnical engineer prior to transport to the site. Imported fill material shall be free of debris and rocks greater than six (6) inches at the widest point. Imported soils shall be similar or less expansive than those existing on the site. The rock-to-soil ratio of the import material shall not exceed 50 percent.

4.7 FILL SLOPE CONSTRUCTION

A key shall be provided at the toe of all fills placed on an existing slope steeper than 5:1. The key is a significant initial bench at the base of the proposed fill slope used to lock the slope into the existing grade. The key shall extend a minimum of 18 inches into firm natural material and a minimum of 3 feet beyond the toe of the slope. The depth of the key is measured on the down hill side of the excavation. The exposed soils at the bottom of the removal areas shall then be properly prepared and brought to near optimum moisture content before any fill is replaced. As the fill is replaced, it shall be properly benched into the existing slopes. A typical detail, Plate E, is provided as an enclosure of this report.

We recommend that the resulting fill slopes be overfilled and trimmed back in order to ensure proper compaction at the face of the slope. Alternatively, the slope faces may be compacted by backing compaction equipment over the slope at frequent vertical intervals. Thin layers of material should not be placed on the outside of the finished slope without proper benching.

All fill slopes shall be constructed at a maximum 2:1 ratio and in compliance with the recommendations contained herein and with the local jurisdiction's requirements.

4.8 CUT SLOPE CONSTRUCTION

Cut slopes may be constructed at maximum 2:1 gradient and in compliance with the local jurisdiction's grading ordinance. The cut slope shall be observed by a representative from our office during excavation. Any loose or raveling material left on the cut slope after grading should be removed.

4.9 EROSION CONTROL

Any slopes constructed flatter than 10 percent should be planted with a deep-rooted, light-weight ground cover. This ground cover should be maintained to control surficial and larger-scale erosion and surficial stability of the slopes. Steeper slopes may require a permanent erosion control blanket to reduce surficial erosion and instability.

4.10 SITE DRAINAGE

Small ponds of water near any structure should be eliminated. Final grading shall provide a positive drainage away from the footings. If a swale is required to collect the flow, the swale bottom should preferably be at least 5 feet from the footings or outside of the foundation wall backfill and sloped sufficiently to direct the runoff away from the building area and lot. All pad and roof drainage should be collected and transferred away from the buildings in non-erosive devices. Proper drainage shall also be provided away from the

building footings and from the lot during construction. This is especially important when construction takes place during the rainy season. All drainage plans should also be in compliance with the local jurisdictions grading requirements.

5 FOUNDATION DESIGN RECOMMENDATIONS

The foundation design recommended below shall be confirmed or modified, if necessary, after grading operations are completed, depending upon the nature of the soils resulting on the surface of the graded building pad. The following recommendations would apply to structures associated with the site improvements. Foundation design for residential structures can be provided on a site specific basis.

5.1 SOIL EXPANSION POTENTIAL

At a minimum, any foundation design should take into consideration construction on soils in the expansion index range of 51 to 90. The actual expansion index range may vary depending on the nature of the soil resulting after the completion of grading. Structural details of any foundations, such as footing thickness, concrete strength and the amount of reinforcement should be established by your structural engineer.

5.2 BEARING CAPACITY: CONTINUOUS FOOTINGS

Continuous footings supported on firm native or certified fill material are adequate for foundation support of the proposed structures and may be designed using a bearing pressure of 1500 psf. The footing depth should meet the minimum recommendations noted above. The recommended bearing values are based on an assumed embedment of a minimum of 21 inches into certified fill material and be a minimum of 12 inches wide. A 5 percent increase of bearing pressure values is allowable for each additional 6-inch increment of width or depth up to a maximum value of 2500 psf.

5.3 FOUNDATIONS NEAR SLOPES

All foundations excavated on or adjacent to any existing or proposed slopes will require a minimum 10 feet horizontal distance to daylight. The horizontal distance is measured from the bottom of the footings to daylight on the slope or to the extent of the competent material on the slope, i.e., all slough or loose material on the slope will be discounted when measuring the distance to daylight.

5.4 WIND AND SEISMIC LOADS

The bearing pressures given are for the total of dead and frequently applied live loads and may be increased by one-third for short duration loading which includes the effects of wind or seismic forces.

5.5 PASSIVE AND FRICTIONAL RESISTANCE

Resistance to lateral loading may be provided by friction acting at the base of foundations and by passive earth pressure. An allowable coefficient of friction of 0.35 may be used with the dead load forces in the approved bearing material.

Passive earth pressure may be computed as an equivalent fluid having a density of 350 pcf with a maximum earth pressure of 1750 psf. When combining passive and friction for lateral resistance, the passive component should be reduced by one-third.

5.6 RETAINING WALLS: ACTIVE EARTH PRESSURE

Retaining walls may be designed for an equivalent fluid pressure of 35 psf per foot of depth. Additional active pressure should be added for a surcharge condition due to sloping ground, vehicular traffic, or adjacent structures. The allowable bearing, friction, and passive earth pressure may be found in the preceding sections.

All other retaining walls may be designed for the corresponding active pressures shown on the table below:

Surface Slope of Retained Material <u>Horizontal to Vertical</u>	Equivalent Fluid Weight <u>(pcf)</u>
Level	35
5 to 1	37
4 to 1	40
3 to 1	43
2 to 1	48

All walls should be backfilled with a minimum 1-foot wide layer of free draining soil, approved by MID-COAST Geotechnical, Inc., synthetic drain product, or clean, uniform sized gravel placed against the wall up to 18 inches below finish grade. Where the cavity to be filled behind a wall is less than 18 inches at the surface, the use of gravel is allowed without testing if compacted to the satisfaction of the geotechnical engineer. In the case of walls constructed with gravel backfill in areas where subsurface water is anticipated, we recommend that a geotextile fabric be placed between the backfill and cut.

In order to reduce the migration of water behind the wall, the surface of the gravel backfill should be sealed by pavement or covered by 18 inches of compacted soil. The surface water drainage shall be directed away from the wall and shall meet the requirements of the current local jurisdiction's building code. Where weep holes are not used at the base of the retaining wall, a perforated pipe shall be placed within a bed of approved rock at the base of the retaining wall and shall be drained to discharge into an approved drainage course.

6 ADDITIONAL RECOMMENDATIONS

6.1 COMPACTION OF EXCESS SOIL

Soils generated during footing excavation operations should not be placed across the pads unless the materials are compacted to at least 90 percent relative compaction. This also applies to sand, agricultural, and landscape fill exceeding 12 inches in depth. Compaction

tests should be taken in additional fills placed in order to confirm that the minimum relative compaction requirements are achieved. It is your responsibility to notify MID-COAST Geotechnical, Inc. if testing is needed.

7 OBSERVATIONS AND TESTING

All foundation excavations should be approved by this firm prior to placing concrete or any steel reinforcement. All removal excavation bottoms shall be observed and approved by a geotechnical engineer or his representative prior to placement of backfill. Any fill placed for engineering purposes should be tested and certified.

Temporary wall excavations should be observed by a representative of this firm. It is your responsibility to notify MID-COAST Geotechnical, Inc. at each stage of the excavations so that observations can be made. If the examination reveals any hazard, appropriate treatment will be recommended. Please advise this office at least 24 hours prior to any required observations.

8 LIMITS AND LIABILITY

Please be aware that our contract fee for our services to prepare this report do not include additional work which may be required such as grading observation and testing, footing observations, presaturation observations, etc. Since the extent of grading and the amount of involvement of our services varies for each project, our services are normally billed on an hourly rate or per-test basis.

This report provides recommendations and comments in accordance with currently accepted practice applicable to the scope of your project. Further requirements may be imposed by the reviewing agency or necessary as a result of changes to your building or grading plans. Where additional services are requested or required, you will be billed for any equipment costs and on an hourly basis for consultation or analysis.

All documents, including maps, plans, drawings, specification and test results which we prepare or furnish or which are prepared or furnished by our independent professional associates and consultants pursuant to this agreement are considered instruments of service with respect to the project, and we will retain an ownership and property interest therein, whether or not the project is completed. Without limiting the foregoing, we reserve the right to make use of all information obtained in the performance of our services in projects for other clients, including without limitation, the right to use all test results and reports in performing services for future owners of your property.

The limits of our liability for data contained in this report and our warranty are presented on the following page.

This report is issued with the understanding that it is the responsibility of the owner, or his representative, to assure that the information and recommendations contained herein are called to the attention of the designers and builders for the project.



Respectfully submitted,
MID-COAST Geotechnical, Inc.

A handwritten signature in blue ink, appearing to read "Dane C. Jensen", written over the printed name.

Dane C. Jensen, RCE/CE0675
Expiration Date 12/31/2016

DCJ/ans
Harrod Etal (3 + email)

9 WARRANTY

This report is based on the development plans provided to our office. In the event that any significant changes in the design or location of the structure(s) as outlined in this report are planned, the conclusions and recommendations contained in this report may not be considered valid unless the changes are reviewed and the conclusions of this report are modified or approved by the geotechnical engineer.

The subsurface conditions, excavations, and characteristics described herein have been projected from individual borings or test pits placed on the subject property. The subsurface conditions, excavation, and characteristics shown should in no way be construed to reflect any variation which may occur between these borings or test pits.

It should be noted that fluctuations in the level of the groundwater may occur due to variation in rainfall, temperature, changes in drainage and grading, and other factors not evident at the time measurements were made and reported herein. MID-COAST Geotechnical, Inc. assumes no responsibility for variations which may occur across the site.

If conditions encountered during construction appear to differ from those disclosed, this office shall be notified so as to consider the need for modifications. No responsibility for construction compliance with the design concepts, specifications or recommendations is assumed unless on-site construction review is performed during the course of construction which pertains to the specific recommendations contained herein.

This report has been prepared in accordance with generally accepted practice. No warranties, either express or implied, are made as to the professional advice provided under the terms of the agreement and included in this report.

APPENDIX

(Laboratory results, maps, and logs)

10 LABORATORY TEST RESULTS

10.1 MOISTURE-DENSITY DETERMINATIONS

Maximum Density-Optimum Moisture data were determined in the laboratory from soil samples using the ASTM D-1557-07 Method of Compaction.

<u>SOIL TYPE</u>	<u>SOIL DESCRIPTION</u>	<u>MAXIMUM DRY DENSITY (lbs/cu.ft)</u>	<u>OPTIMUM MOISTURE (%)</u>
C1	Reddish brown sandy CLAY	122/0	11/5
S2	Reddish brown silty SAND	128.0	8.5
S5	Reddish brown silty SAND w/ gr.	124.5	9.5
S6	Brown clayey SAND	120.0	12.0
S7	Dark brown silty SAND w/ gr.	125.0	10.0

10.2 FIELD DENSITY SUMMARY (Ring Density Method)

<u>TEST NO.</u>	<u>DEPTH (FT)</u>	<u>SOIL TYPE</u>	<u>FIELD MOISTURE CONTENT (%)</u>	<u>DRY DENSITY (lbs/cu.ft)</u>	<u>% OF MAX. DRY DENSITY</u>
B1	2	C1	18.2	108.0	89
B1	5	S2	9.5	111.2	87
B1	10	C2	20.3		
B1	15	S3	12.2		
B2	2	S5	10.2		
B3	2	S5	8.5	117.4	94
B4	2	C1	12.5	107.6	88
B4	5	S6	16.6	109.8	92
B4	10	S6	11.4		
B4	15	S7	4.5		
B5	2	S6	14.4	102.7	86
B5	5	S6	19.7	102.7	86
B5	10	S7	8.9	114.9	92

10.3 EXPANSION INDEX TEST

Each Expansion Index Test was performed on a representative bulk sample of the soil collected during our investigation. Expansion index test procedure is performed in accordance with ASTM D4289-03. The results follow:

<u>SOIL TYPE</u>	<u>LOCATION</u>	<u>EXPANSION INDEX</u>
C1	B1 @ 2-3'	44
C1	B4 @ 0-2.5'	67



Legend

- Exploratory Soils Boring

N.T.S.

*PLAN PROVIDED BY OTHERS



Harrod Etal
Proposed Beechwood Subdivision
Beechwood Drive / Meadowlark Road
Paso Robles
California

Date: March 25, 2016

Plate 2

LOG OF BORING B1



3124 El Camino Real Atascadero CA 93422
Telephone: 805-461-0965 Fax:

CLIENT: Harrod Etal
PROJECT: Beechwood Subdivision
LOCATION: Beechwood Drive / Meadowlark Road, Paso Robles
NUMBER: 16-7404

DATE(S) DRILLED: 2/24/2016

FIELD DATA				LABORATORY DATA						CLASS.		DRILLING METHOD(S):			
DEPTH (FT)	SAMPLES	N: BLOWS/FT P: TONS/SQ FT T: TONS/SQ FT PERCENT RECOVERY/ ROCK QUALITY DESIGNATION	MOISTURE CONTENT (%)	DRY DENSITY POUNDS/CU.FT	RELATIVE COMPACTION (%)	ATTERBERG LIMITS			EXPANSION INDEX	MINUS NO. 200 SIEVE (%)	USCS	SOIL SYMBOL	SOIL TYPE	B24 Mobile Auger Drill Rig	
						LL	PL	PI						GROUNDWATER INFORMATION:	
														No ground water encountered at time of drilling.	
SURFACE ELEVATION:														DESCRIPTION OF STRATUM	
1													S1	Aggregate Base	
2	✕ N = 18		18	108	89				44				C1	Reddish brown sandy CLAY, stiff, moist	
3														Reddish brown silty SAND, hard, damp	
4													S2		
5	✕ N = 45		9	111	87										
6														Light brown sandy CLAY, stiff, damp	
7															
8															
9															
10	🔍		20										C2		
11															
12															
13															
14													S3	Reddish brown clayey SAND, hard, damp	
15	🔍		12											Boring was terminated at 15' below grade.	
N - STANDARD PENETRATION TEST RESISTANCE P - POCKET PENETROMETER RESISTANCE T - POCKET TORVANE SHEAR STRENGTH														REMARKS: Boring was backfilled with auger clippings.	

LOG OF BORING 16-7404 SOILS.GPJ MIDCOAST.GDT 5/30/16

LOG OF BORING B2



3124 El Camino Real Atascadero CA 93422
Telephone: 805-461-0965 Fax:

CLIENT: Harrod Etal
PROJECT: Beechwood Subdivision
LOCATION: Beechwood Drive / Meadowlark Road, Paso Robles
NUMBER: 16-7404

DATE(S) DRILLED: 2/24/2016

FIELD DATA			LABORATORY DATA							CLASS.		DRILLING METHOD(S): B24 Mobile Auger Drill Rig	
DEPTH (FT)	SAMPLES N: BLOWS/FT P: TONS/SQ FT T: TONS/SQ FT PERCENT RECOVERY/ ROCK QUALITY DESIGNATION	MOISTURE CONTENT (%)	DRY DENSITY POUNDS/CU.FT	RELATIVE COMPACTION (%)	ATTERBERG LIMITS			EXPANSION INDEX	MINUS NO. 200 SIEVE (%)	USCS	SOIL SYMBOL	SOIL TYPE	GROUNDWATER INFORMATION: No ground water encountered at time of drilling.
					LL	PL	PI						
					LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX						
1												S4	Brown silty SAND w/ gravel, medium dense, damp
2	N = 50+	10										S5	Mottled brown silty SAND w/ gravel, hard, damp
3													
4													Refusal at 4' Gravels
N - STANDARD PENETRATION TEST RESISTANCE P - POCKET PENETROMETER RESISTANCE T - POCKET TORVANE SHEAR STRENGTH												REMARKS: Boring was backfilled with auger clippings.	

LOG OF BORING 16-7404 SOIL S.GPJ MIDCOAST.GDT 5/30/16

LOG OF BORING B3



3124 El Camino Real Atascadero CA 93422
Telephone: 805-461-0965 Fax:

CLIENT: Harrod Etal
PROJECT: Beechwood Subdivision
LOCATION: Beechwood Drive / Meadowlark Road, Paso Robles
NUMBER: 16-7404

DATE(S) DRILLED: 2/24/2016

DRILLING METHOD(S):
B24 Mobile Auger Drill Rig

GROUNDWATER INFORMATION:
No ground water encountered at time of drilling.

SURFACE ELEVATION:

DESCRIPTION OF STRATUM

Brown clayey SAND w/gravel, medium dense, humid

S1

Reddish brown silty SAND w/ gravel, hard, damp

S5

Refusal at 4' on Gravels

N - STANDARD PENETRATION TEST RESISTANCE
P - POCKET PENETROMETER RESISTANCE
T - POCKET TORVANE SHEAR STRENGTH

REMARKS:
Boring was backfilled with auger clippings.

LOG OF BORING B4



3124 El Camino Real Atascadero CA 93422
Telephone: 805-461-0965 Fax:

CLIENT: Harrod Etal
PROJECT: Beechwood Subdivision
LOCATION: Beechwood Drive / Meadowlark Road, Paso Robles
NUMBER: 16-7404
DATE(S) DRILLED: 2/24/2016

FIELD DATA				LABORATORY DATA							CLASS.		DRILLING METHOD(S):		
DEPTH (FT)	SAMPLES	N: BLOWS/FT P: TONS/SQ FT T: TONS/SQ FT PERCENT RECOVERY/ ROCK QUALITY DESIGNATION	MOISTURE CONTENT (%)	DRY DENSITY POUNDS/CU.FT	RELATIVE COMPACTION (%)	ATTERBERG LIMITS			EXPANSION INDEX	MINUS NO. 200 SIEVE (%)	USCS	SOIL SYMBOL	SOIL TYPE	GROUNDWATER INFORMATION:	
						LL	PL	PI						No ground water encountered at time of drilling.	
														SURFACE ELEVATION:	
														DESCRIPTION OF STRATUM	
1									67			C1	Brown sandy CLAY w/gravel, firm, damp		
2	N = 32		12	108	88									Brown clayey SAND, hard, damp	
3															
4															
5	N = 42		17	110	92										
6															
7															
8													S6		
9															
10			11												
11															
12															
13														Brown silty SAND, hard, damp	
14													S7		
15			4											Boring was terminated at 15' below grade.	
N - STANDARD PENETRATION TEST RESISTANCE P - POCKET PENETROMETER RESISTANCE T - POCKET TORVANE SHEAR STRENGTH														REMARKS: Boring was backfilled with auger clippings.	

LOG OF BORING 16-7404 SOILS.GPJ MIDCOAST.GDT 5/30/16

LOG OF BORING B5



3124 El Camino Real Atascadero CA 93422
Telephone: 805-461-0965 Fax:

CLIENT: Harrod Etal
PROJECT: Beechwood Subdivision
LOCATION: Beechwood Drive / Meadowlark Road, Paso Robles
NUMBER: 16-7404
DATE(S) DRILLED: 2/24/2016

FIELD DATA			LABORATORY DATA							CLASS.		DRILLING METHOD(S): B24 Mobile Auger Drill Rig			
DEPTH (FT)	SAMPLES	N: BLOWS/FT P: TONS/SQ FT T: TONS/SQ FT PERCENT RECOVERY/ ROCK QUALITY DESIGNATION	MOISTURE CONTENT (%)	DRY DENSITY POUNDS/CU.FT	RELATIVE COMPACTION (%)	ATTERBERG LIMITS			EXPANSION INDEX	MINUS NO. 200 SIEVE (%)	USCS	SOIL SYMBOL	SOIL TYPE	GROUNDWATER INFORMATION: No ground water encountered at time of drilling.	
						LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX						SURFACE ELEVATION:	
						LL	PL	PI						DESCRIPTION OF STRATUM	
1													S1	Brown silty SAND, loose, humid	
2													C1	Brown sandy CLAY, stiff, damp	
3														Brown clayey SAND, hard, damp	
4															
5															
6														Brown clayey SAND, hard, damp	
7															
8															
9														Dark brown silty SAND w/ gravel, hard, damp	
10															
11															
12														Boring was terminated at 15' below grade.	
13															
14															
REMARKS:															
Boring was backfilled with auger clippings.															

March 25, 2016
File No. 16-7404
Report No. 16751

Harrod, Et al
2530 B Beechwood Drive
Paso Robles, CA 93446

SUBJECT: Proposed Development, Beechwood Street and Meadowlark Road, Paso Robles

Dear Mr. Harrod:

We have performed shallow quick infiltration testing at the subject site, in the area of the proposed stormwater control measures (SCM). The testing was performed in fifteen locations, at depths of 3 to 5 feet below the existing grade, the assumed bottom of the SCM. The test pits were excavated using a 6" solid flight auger and were cased with a 4" diameter perforated pipe and fine gravel. In addition to the test pits, a 15' deep profile boring was excavated in the area of the test pits. A site plan showing the location of the infiltration test pits and the profile borings is attached to this report. The test pits were pre-saturated the day before the testing was performed. The infiltration tests were performed between February 11 and March 4, 2016 with the final test duration of two hours. The results of the testing follow:

Infiltration Test Location	Slowest Inf. Rate Observed (in/hr)	
	3' Depth	5' Depth
P1	0	2
P2	1.75	3.75
P3	0.13	0.38
P4	0.71	0
P5	0	0
P6	48	48
P7	1.5	3.25
P8	0	0

Infiltration Test Location	Slowest Inf. Rate Observed (in/hr)	
	3' Depth	5' Depth
P9	2	4
P10	No readings	due to large gravel at 3'
P11	0	0
P12	4	3
P13	0	8
P14	0.63	2.25
P15	0	2

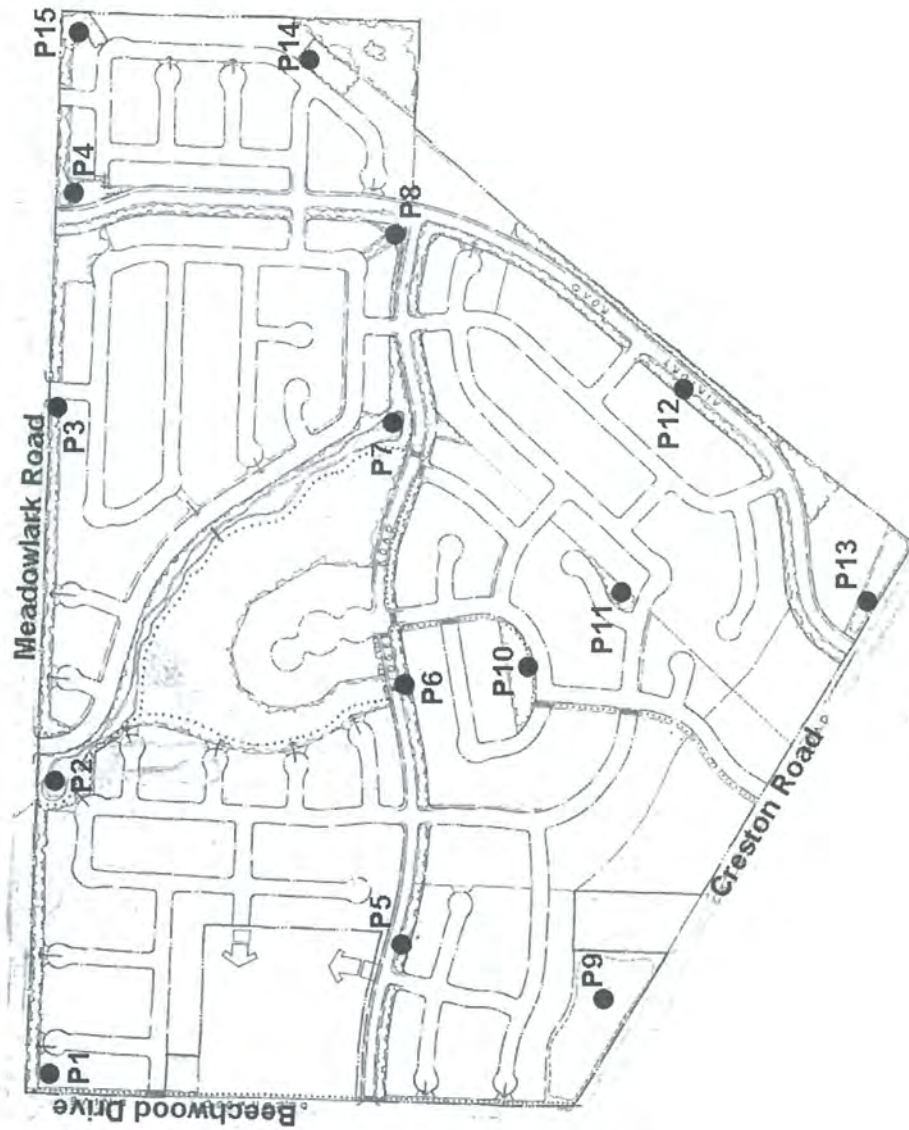
Based on the standards set forth in the *Post Construction Requirement Handbook (Version 1.1-March 2014 Draft)*, Appendix D, infiltration of small volumes of stormwater at the depths and locations tested appears to be feasible at some locations. If we can be of further assistance in this matter, please contact the undersigned.



Respectfully submitted,
MID-COAST Geotechnical, Inc.

Dane C. Jensen
Dane C. Jensen, RCE 60675
Expiration date, 12-31-2014

DCJ:dmv
Harrod, Et al (2)
Dan Lloyd (e-mail)



Legend N.T.S.

- Infiltration Test Location

*PLAN PROVIDED BY OTHERS



Harrod, Et al
Proposed Residential Development
Beechwood Drive and Meadowlark Road
Paso Robles
California

Date: 03-25-2016

Plate 1

LOG OF BORING P1



3124 El Camino Real Atascadero CA 93422
Telephone: 805-461-0965 Fax:

CLIENT: Harrod Etal
PROJECT: Beechwood Subdivision
LOCATION: Beechwood Drive / Meadowlark Road, Paso Robles
NUMBER: 16-7404
DATE(S) DRILLED: 2/24/2016

FIELD DATA			LABORATORY DATA							CLASS.		DRILLING METHOD(S): B24 Mobile Auger Drill Rig	
DEPTH (FT)	SAMPLES N: BLOWS/FT P: TONS/SQ FT T: TONS/SQ FT PERCENT RECOVERY/ ROCK QUALITY DESIGNATION	MOISTURE CONTENT (%)	DRY DENSITY POUNDS/CU.FT	RELATIVE COMPACTION (%)	ATTERBERG LIMITS			EXPANSION INDEX	MINUS NO. 200 SIEVE (%)	USCS	SOIL SYMBOL	SOIL TYPE	GROUNDWATER INFORMATION: No ground water encountered at time of drilling.
					LL	PL	PI						
					LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX						
													SURFACE ELEVATION:
													DESCRIPTION OF STRATUM
1													Brown sandy CLAY w/gravel, firm, moist
2													Light brown sandy CLAY w/gravel, firm, damp
3													
4													
5													Light brown clayey SAND, hard, damp
6													
7													
8													Light brown poorly graded SAND, hard, damp
9													
10													Light brown sandy CLAY w/gravel, stiff, damp
11													
12													
13													
14													
15													Boring was terminated at 15' below grade.
N - STANDARD PENETRATION TEST RESISTANCE P - POCKET PENETROMETER RESISTANCE T - POCKET TORVANE SHEAR STRENGTH												REMARKS: Boring was backfilled with auger clippings.	

LOG OF BORING 16-7404 INFIL.GPJ MIDCOAST.GDT 5/30/16

LOG OF BORING P2



3124 El Camino Real Atascadero CA 93422
Telephone: 805-461-0965 Fax:

CLIENT: Harrod Etal
PROJECT: Beechwood Subdivision
LOCATION: Beechwood Drive / Meadowlark Road, Paso Robles
NUMBER: 16-7404

DATE(S) DRILLED: 2/24/2016

FIELD DATA			LABORATORY DATA							CLASS.		DRILLING METHOD(S): B24 Mobile Auger Drill Rig	
DEPTH (FT)	SAMPLES N: BLOWS/FT P: TONS/SQ FT T: TONS/SQ FT PERCENT RECOVERY/ ROCK QUALITY DESIGNATION	MOISTURE CONTENT (%)	DRY DENSITY POUNDS/CU.FT	RELATIVE COMPACTION (%)	ATTERBERG LIMITS			EXPANSION INDEX	MINUS NO. 200 SIEVE (%)	USCS	SOIL SYMBOL	SOIL TYPE	GROUNDWATER INFORMATION: No ground water encountered at time of drilling.
					LL	PL	PI						
					LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX						
													SURFACE ELEVATION:
													DESCRIPTION OF STRATUM
1													Brown sandy CLAY w/ gravel, firm, moist
2													Brown clayey SAND w/ gravel, medium dense, damp
3													
4													Light brown silty SAND, hard, damp
5													
6													
7													
8													
9													Light brown sandy CLAY w/gravel, stiff, damp
10													
11													
12													
13													
14													
15													Boring was terminated at 15' below grade.
N - STANDARD PENETRATION TEST RESISTANCE P - POCKET PENETROMETER RESISTANCE T - POCKET TORVANE SHEAR STRENGTH												REMARKS: Boring was backfilled with auger clippings.	

LOG OF BORING 16-7404 INFIL.GPJ MIDCOAST.GDT 5/30/16

LOG OF BORING P3



3124 El Camino Real Atascadero CA 93422
Telephone: 805-461-0965 Fax:

CLIENT:	Harrod Etal
PROJECT:	Beechwood Subdivision
LOCATION:	Beechwood Drive / Meadowlark Road, Paso Robles
NUMBER:	16-7404

DATE(S) DRILLED: 2/24/2016

FIELD DATA				LABORATORY DATA						CLASS.		DRILLING METHOD(S):			
DEPTH (FT)	SAMPLES	N: BLOWS/FT P: TONS/SQ FT T: TONS/SQ FT PERCENT RECOVERY/ ROCK QUALITY DESIGNATION	MOISTURE CONTENT (%)	DRY DENSITY POUNDS/CU.FT	RELATIVE COMPACTION (%)	ATTERBERG LIMITS			EXPANSION INDEX	MINUS NO. 200 SIEVE (%)	USCS	SOIL SYMBOL	SOIL TYPE	B24 Mobile Auger Drill Rig	
						LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX						GROUNDWATER INFORMATION:	
						LL	PL	PI						No ground water encountered at time of drilling.	
														SURFACE ELEVATION:	
														DESCRIPTION OF STRATUM	
1														Brown sandy CLAY w/ gravel, soft, moist	
2														Light brown clayey SAND, hard, damp	
3															
4															
5															
6															
7															
8															
9															
10															
11															
12															
13															
14															
15														Boring was terminated at 15' below grade.	

N - STANDARD PENETRATION TEST RESISTANCE
P - POCKET PENETROMETER RESISTANCE
T - POCKET TORVANE SHEAR STRENGTH

REMARKS:
Boring was backfilled with auger clippings.

LOG OF BORING P4



3124 El Camino Real Atascadero CA 93422
Telephone: 805-461-0965 Fax:

CLIENT: Harrod Etal
PROJECT: Beechwood Subdivision
LOCATION: Beechwood Drive / Meadowlark Road, Paso Robles
NUMBER: 16-7404
DATE(S) DRILLED: 2/24/2016

FIELD DATA				LABORATORY DATA						CLASS.		DRILLING METHOD(S): B24 Mobile Auger Drill Rig	
DEPTH (FT)	SAMPLES	N: BLOWS/FT P: TONS/SQ FT T: TONS/SQ FT PERCENT RECOVERY/ ROCK QUALITY DESIGNATION	MOISTURE CONTENT (%)	DRY DENSITY POUNDS/CU.FT	RELATIVE COMPACTION (%)	ATTERBERG LIMITS			EXPANSION INDEX	MINUS NO. 200 SIEVE (%)	USCS	SOIL SYMBOL	SOIL TYPE
						LL	PL	PI					
						LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX					
GROUNDWATER INFORMATION: No ground water encountered at time of drilling.													
SURFACE ELEVATION:													
DESCRIPTION OF STRATUM													
1													Brown sandy CLAY w/ gravel, firm, moist
2													
3													
4													Light brown clayey SAND w/ gravel, hard, damp
5													
6													
7													
8													
9													Light brown sandy CLAY w/ gravel, stiff, damp
10													
11													
12													
13													
14													
15													Boring was terminated at 15' below grade.
N - STANDARD PENETRATION TEST RESISTANCE P - POCKET PENETROMETER RESISTANCE T - POCKET TORVANE SHEAR STRENGTH												REMARKS: Boring was backfilled with auger clippings.	

LOG OF BORING 16-7404 INFIL.GPJ MIDCOAST.GDT 5/30/16

LOG OF BORING P5



3124 El Camino Real Atascadero CA 93422
Telephone: 805-461-0965 Fax:

CLIENT: Harrod Etal
PROJECT: Beechwood Subdivision
LOCATION: Beechwood Drive / Meadowlark Road, Paso Robles
NUMBER: 16-7404
DATE(S) DRILLED: 2/24/2016

FIELD DATA				LABORATORY DATA						CLASS.		DRILLING METHOD(S): B24 Mobile Auger Drill Rig	
DEPTH (FT)	SAMPLES	N: BLOWS/FT P: TONS/SQ FT T: TONS/SQ FT PERCENT RECOVERY/ ROCK QUALITY DESIGNATION	MOISTURE CONTENT (%)	DRY DENSITY POUNDS/CU.FT	RELATIVE COMPACTION (%)	ATTERBERG LIMITS			EXPANSION INDEX	MINUS NO. 200 SIEVE (%)	USCS	SOIL SYMBOL	SOIL TYPE
						LL	PL	PI					
						LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX					
GROUNDWATER INFORMATION: No ground water encountered at time of drilling.													
SURFACE ELEVATION:													
DESCRIPTION OF STRATUM													
1													Brown sandy CLAY w/ gravel, firm, damp
2													Light brown sandy CLAY w/ gravel, stiff, damp
3													
4													
5													
6													
7													Refusal at 7' on Large Gravel
N - STANDARD PENETRATION TEST RESISTANCE P - POCKET PENETROMETER RESISTANCE T - POCKET TORVANE SHEAR STRENGTH												REMARKS: Boring was backfilled with auger clippings.	

LOG OF BORING 16-7404 INEIL.GPJ MIDCOAST.GDT 5/30/16

LOG OF BORING P6



3124 El Camino Real Atascadero CA 93422
Telephone: 805-461-0965 Fax:

CLIENT: Harrod Etal
PROJECT: Beechwood Subdivision
LOCATION: Beechwood Drive / Meadowlark Road, Paso Robles
NUMBER: 16-7404
DATE(S) DRILLED: 2/24/2016

FIELD DATA		LABORATORY DATA							CLASS.		DRILLING METHOD(S): B24 Mobile Auger Drill Rig	
DEPTH (FT)	SAMPLES N: BLOWS/FT P: TONS/SQ FT T: TONS/SQ FT PERCENT RECOVERY/ ROCK QUALITY DESIGNATION	MOISTURE CONTENT (%)	DRY DENSITY POUNDS/CU.FT	RELATIVE COMPACTION (%)	ATTERBERG LIMITS			EXPANSION INDEX	MINUS NO. 200 SIEVE (%)	USCS	SOIL SYMBOL	SOIL TYPE
					LL	PL	PI					
GROUNDWATER INFORMATION: No ground water encountered at time of drilling.												
SURFACE ELEVATION:												
DESCRIPTION OF STRATUM												
1												Brown silty SAND w/ gravel, medium dense, damp
2												
3												Lt brown silty SAND w/ gravel, medium dense, damp
4												
5												
6												
7												
8												Brown clayey SAND w/ gravel, hard, damp
9												
10												
11												
12												
13												
14												
15												Boring was terminated at 15' below grade.
N - STANDARD PENETRATION TEST RESISTANCE P - POCKET PENETROMETER RESISTANCE T - POCKET TORVANE SHEAR STRENGTH												REMARKS: Boring was backfilled with auger clippings.

LOG OF BORING 16-7404 INFIL.GPJ MIDCOAST.GDT 5/30/16

LOG OF BORING P7



3124 El Camino Real Atascadero CA 93422
Telephone: 805-461-0965 Fax:

CLIENT: Harrod Etal
PROJECT: Beechwood Subdivision
LOCATION: Beechwood Drive / Meadowlark Road, Paso Robles
NUMBER: 16-7404

DATE(S) DRILLED: 2/24/2016

FIELD DATA			LABORATORY DATA							CLASS.		DRILLING METHOD(S): B24 Mobile Auger Drill Rig	
DEPTH (FT)	SAMPLES N: BLOWS/FT P: TONS/SQ FT T: TONS/SQ FT PERCENT RECOVERY/ ROCK QUALITY DESIGNATION	MOISTURE CONTENT (%)	DRY DENSITY POUNDS/CU.FT	RELATIVE COMPACTION (%)	ATTERBERG LIMITS			EXPANSION INDEX	MINUS NO. 200 SIEVE (%)	USCS	SOIL SYMBOL	SOIL TYPE	GROUNDWATER INFORMATION: No ground water encountered at time of drilling.
					LL	PL	PI						
					LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX						
													SURFACE ELEVATION:
													DESCRIPTION OF STRATUM
1													Brown sandy CLAY w/gravel, soft, moist
2													
3													Light brown clayey SAND, hard, moist
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													Boring was terminated at 15' below grade.
N - STANDARD PENETRATION TEST RESISTANCE P - POCKET PENETROMETER RESISTANCE T - POCKET TORVANE SHEAR STRENGTH													REMARKS: Boring was backfilled with auger clippings.

LOG OF BORING 16-7404 INFIL.GPJ MIDCOAST.GDT 5/30/16

LOG OF BORING P8



3124 El Camino Real Atascadero CA 93422
Telephone: 805-461-0965 Fax:

CLIENT: Harrod Etal
PROJECT: Beechwood Subdivision
LOCATION: Beechwood Drive / Meadowlark Road, Paso Robles
NUMBER: 16-7404

DATE(S) DRILLED: 2/24/2016

DRILLING METHOD(S):

B24 Mobile Auger Drill Rig

GROUNDWATER INFORMATION:

No ground water encountered at time of drilling.

SURFACE ELEVATION:

DESCRIPTION OF STRATUM

Brown sandy CLAY, firm, moist

Light brown sandy CLAY, stiff, damp

Light brown clayey SAND, hard, damp

Boring was terminated at 15' below grade

REMARKS:

Boring was backfilled with auger clippings.

FIELD DATA

LABORATORY DATA

CLASS.

DEPTH (FT)	SAMPLES	N: BLOWS/FT P: TONS/SQ FT T: TONS/SQ FT PERCENT RECOVERY/ ROCK QUALITY DESIGNATION	MOISTURE CONTENT (%)	DRY DENSITY POUNDS/CU.FT	RELATIVE COMPACTION (%)	ATTERBERG LIMITS			EXPANSION INDEX	MINUS NO. 200 SIEVE (%)	USCS	SOIL SYMBOL	SOIL TYPE
						LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX					
						LL	PL	PI					
1													
2													
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													

N - STANDARD PENETRATION TEST RESISTANCE
P - POCKET PENETROMETER RESISTANCE
T - POCKET TORVANE SHEAR STRENGTH

LOG OF BORING 16-7404 INFIL.GPJ MIDCOAST.GDT 5/30/16

LOG OF BORING P9



3124 El Camino Real Atascadero CA 93422
Telephone: 805-461-0965 Fax:

CLIENT: Harrod Etal
PROJECT: Beechwood Subdivision
LOCATION: Beechwood Drive / Meadowlark Road, Paso Robles
NUMBER: 16-7404
DATE(S) DRILLED: 2/24/2016

FIELD DATA				LABORATORY DATA						CLASS.		DRILLING METHOD(S): B24 Mobile Auger Drill Rig	
DEPTH (FT)	SAMPLES	N: BLOWS/FT P: TONS/SQ FT T: TONS/SQ FT PERCENT RECOVERY/ ROCK QUALITY DESIGNATION	MOISTURE CONTENT (%)	DRY DENSITY POUNDS/CU.FT	RELATIVE COMPACTION (%)	ATTERBERG LIMITS			EXPANSION INDEX	MINUS NO. 200 SIEVE (%)	USCS	SOIL SYMBOL	SOIL TYPE
						LL	PL	PI					
						LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX					
1													
2													
3													
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													
<p>GROUNDWATER INFORMATION: No ground water encountered at time of drilling.</p>													
<p>SURFACE ELEVATION:</p>													
<p>DESCRIPTION OF STRATUM</p>													
Brown clayey SAND, medium dense, damp													
Light brown silty SAND, cemented, hard, damp													
Boring was terminated at 15' below grade.													
<p>REMARKS: Boring was backfilled with auger clippings.</p>													

N - STANDARD PENETRATION TEST RESISTANCE
P - POCKET PENETROMETER RESISTANCE
T - POCKET TORVANE SHEAR STRENGTH

LOG OF BORING 16-7404 INFIL.GPJ MIDCOAST.GDT 5/30/16

LOG OF BORING P10



3124 El Camino Real Atascadero CA 93422
Telephone: 805-461-0965 Fax:

CLIENT: Harrod Etal
PROJECT: Beechwood Subdivision
LOCATION: Beechwood Drive / Meadowlark Road, Paso Robles
NUMBER: 16-7404
DATE(S) DRILLED: 2/24/2016

FIELD DATA				LABORATORY DATA						CLASS.		DRILLING METHOD(S): B24 Mobile Auger Drill Rig	
DEPTH (FT)	SAMPLES	N: BLOWS/FT P: TONS/SQ FT T: TONS/SQ FT PERCENT RECOVERY/ ROCK QUALITY DESIGNATION	MOISTURE CONTENT (%)	DRY DENSITY POUNDS/CU.FT	RELATIVE COMPACTION (%)	ATTERBERG LIMITS			EXPANSION INDEX	MINUS NO. 200 SIEVE (%)	USCS	SOIL SYMBOL	SOIL TYPE
						LL	PL	PI					
						LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX					
1													
2													
3													
													GROUNDWATER INFORMATION: No ground water encountered at time of drilling.
													SURFACE ELEVATION: DESCRIPTION OF STRATUM Brown clayey SAND w/ gravel, medium dense, damp
													Refusal at 3' on Large Gravel
N - STANDARD PENETRATION TEST RESISTANCE P - POCKET PENETROMETER RESISTANCE T - POCKET TORVANE SHEAR STRENGTH													REMARKS: Boring was backfilled with auger clippings.

LOG OF BORING 16-7404 INFIL.GPJ MIDCOAST.GDT 5/30/16

LOG OF BORING P11



3124 El Camino Real Atascadero CA 93422
Telephone: 805-461-0965 Fax:

CLIENT: Harrod Etal
PROJECT: Beechwood Subdivision
LOCATION: Beechwood Drive / Meadowlark Road, Paso Robles
NUMBER: 16-7404

DATE(S) DRILLED: 2/24/2016

DRILLING METHOD(S):
B24 Mobile Auger Drill Rig

GROUNDWATER INFORMATION:
No ground water encountered at time of drilling.

SURFACE ELEVATION:

DESCRIPTION OF STRATUM

Brown clayey SAND w/gravel, medium dense, damp

Light brown sandy CLAY w/ gravel, stiff, damp

Refusal at 7' on Large Gravel

REMARKS:

Boring was backfilled with auger clippings.

FIELD DATA

LABORATORY DATA

CLASS.

DEPTH (FT)	SAMPLES	N: BLOWS/FT P: TONS/SQ FT T: TONS/SQ FT PERCENT RECOVERY/ ROCK QUALITY DESIGNATION	MOISTURE CONTENT (%)	DRY DENSITY POUNDS/CU.FT	RELATIVE COMPACTION (%)	ATTERBERG LIMITS			EXPANSION INDEX	MINUS NO. 200 SIEVE (%)	USCS	SOIL SYMBOL	SOIL TYPE
						LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX					
						LL	PL	PI					
1													
2													
3													
4													
5													
6													
7													

N - STANDARD PENETRATION TEST RESISTANCE
P - POCKET PENETROMETER RESISTANCE
T - POCKET TORVANE SHEAR STRENGTH

LOG OF BORING 16-7404 INFIL.GPJ MIDCOAST.GDT 5/30/16

LOG OF BORING P12



3124 El Camino Real Atascadero CA 93422
Telephone: 805-461-0965 Fax:

CLIENT: Harrod Etal
PROJECT: Beechwood Subdivision
LOCATION: Beechwood Drive / Meadowlark Road, Paso Robles
NUMBER: 16-7404

DATE(S) DRILLED: 2/24/2016

FIELD DATA				LABORATORY DATA						CLASS.		DRILLING METHOD(S): B24 Mobile Auger Drill Rig	
DEPTH (FT)	SAMPLES	N: BLOWS/FT P: TONS/SQ FT T: TONS/SQ FT PERCENT RECOVERY/ ROCK QUALITY DESIGNATION	MOISTURE CONTENT (%)	DRY DENSITY POUNDS/CU.FT	RELATIVE COMPACTION (%)	ATTERBERG LIMITS			EXPANSION INDEX	MINUS NO. 200 SIEVE (%)	USCS	SOIL SYMBOL	SOIL TYPE
						LL	PL	PI					
						LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX					
GROUNDWATER INFORMATION: No ground water encountered at time of drilling.													
SURFACE ELEVATION:													
DESCRIPTION OF STRATUM													
1													Aggregate Base
2													Brown clayey SAND w/gravel, medium dense, humid
3													Reddish brown sandy CLAY, stiff, moist
4													Reddish brown silty SAND, hard, damp
5													
6													Light brown sandy CLAY, stiff, damp
7													
8													
9													
10													
11													
12													
13													
14													Reddish brown clayey SAND, hard, damp
15													Boring was terminated at 15' below grade.
N - STANDARD PENETRATION TEST RESISTANCE P - POCKET PENETROMETER RESISTANCE T - POCKET TORVANE SHEAR STRENGTH												REMARKS: Boring was backfilled with auger clippings.	

LOG OF BORING 16-7404 INFIL.GPJ MIDCOAST.GDT 5/30/16

LOG OF BORING P13



3124 El Camino Real Atascadero CA 93422
Telephone: 805-461-0965 Fax:

CLIENT: Harrod Etal
PROJECT: Beechwood Subdivision
LOCATION: Beechwood Drive / Meadowlark Road, Paso Robles
NUMBER: 16-7404

DATE(S) DRILLED: 2/24/2016

FIELD DATA				LABORATORY DATA							CLASS.		DRILLING METHOD(S): B24 Mobile Auger Drill Rig	
DEPTH (FT)	SAMPLES N: BLOWS/FT P: TONS/SQ FT T: TONS/SQ FT PERCENT RECOVERY/ ROCK QUALITY DESIGNATION	MOISTURE CONTENT (%)	DRY DENSITY POUNDS/CU.FT	RELATIVE COMPACTION (%)	ATTERBERG LIMITS			EXPANSION INDEX	MINUS NO. 200 SIEVE (%)	USCS	SOIL SYMBOL	SOIL TYPE	GROUNDWATER INFORMATION: No ground water encountered at time of drilling.	
					LL	PL	PI						SURFACE ELEVATION:	
													DESCRIPTION OF STRATUM	
1													Brown sandy CLAY, firm, damp	
2														
3														
4													Light brown silty SAND, medium dense to hard, damp	
5														
6														
7														
8													Light brown sandy CLAY, stiff, damp	
9														
10														
11														
12														
13														
14														
15													Boring was terminated at 15' below grade.	
N - STANDARD PENETRATION TEST RESISTANCE P - POCKET PENETROMETER RESISTANCE T - POCKET TORVANE SHEAR STRENGTH													REMARKS: Boring was backfilled with auger clippings.	

LOG OF BORING 16-7404 INFIL.GPJ MIDCOAST.GDT 5/30/16

LOG OF BORING P14



3124 El Camino Real Atascadero CA 93422
Telephone: 805-461-0965 Fax:

CLIENT: Harrod Etal
PROJECT: Beechwood Subdivision
LOCATION: Beechwood Drive / Meadowlark Road, Paso Robles
NUMBER: 16-7404

DATE(S) DRILLED: 2/24/2016

FIELD DATA				LABORATORY DATA							CLASS.		DRILLING METHOD(S): B24 Mobile Auger Drill Rig		
DEPTH (FT)	SAMPLES	N: BLOWS/FT P: TONS/SQ FT T: TONS/SQ FT PERCENT RECOVERY/ ROCK QUALITY DESIGNATION	MOISTURE CONTENT (%)	DRY DENSITY POUNDS/CU.FT	RELATIVE COMPACTION (%)	ATTERBERG LIMITS			EXPANSION INDEX	MINUS NO. 200 SIEVE (%)	USCS	SOIL SYMBOL	SOIL TYPE	GROUNDWATER INFORMATION: No ground water encountered at time of drilling.	
						LL	PL	PI							
						LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX							
														SURFACE ELEVATION:	
														DESCRIPTION OF STRATUM	
1														Brown silty SAND, medium dense, damp	
2														Brown sandy CLAY, stiff, damp	
3														Light brown clayey SAND, hard, damp	
4															
5															
6															
7															
8															
9															
10															
11															
12															
13															
14															
15														Boring was terminated at 15' below grade.	
N - STANDARD PENETRATION TEST RESISTANCE P - POCKET PENETROMETER RESISTANCE T - POCKET TORVANE SHEAR STRENGTH														REMARKS: Boring was backfilled with auger clippings.	

LOG OF BORING 16-7404 INFIL.GPJ MIDCOAST.GDT 5/30/16

LOG OF BORING P15



3124 El Camino Real Atascadero CA 93422
Telephone: 805-461-0965 Fax:

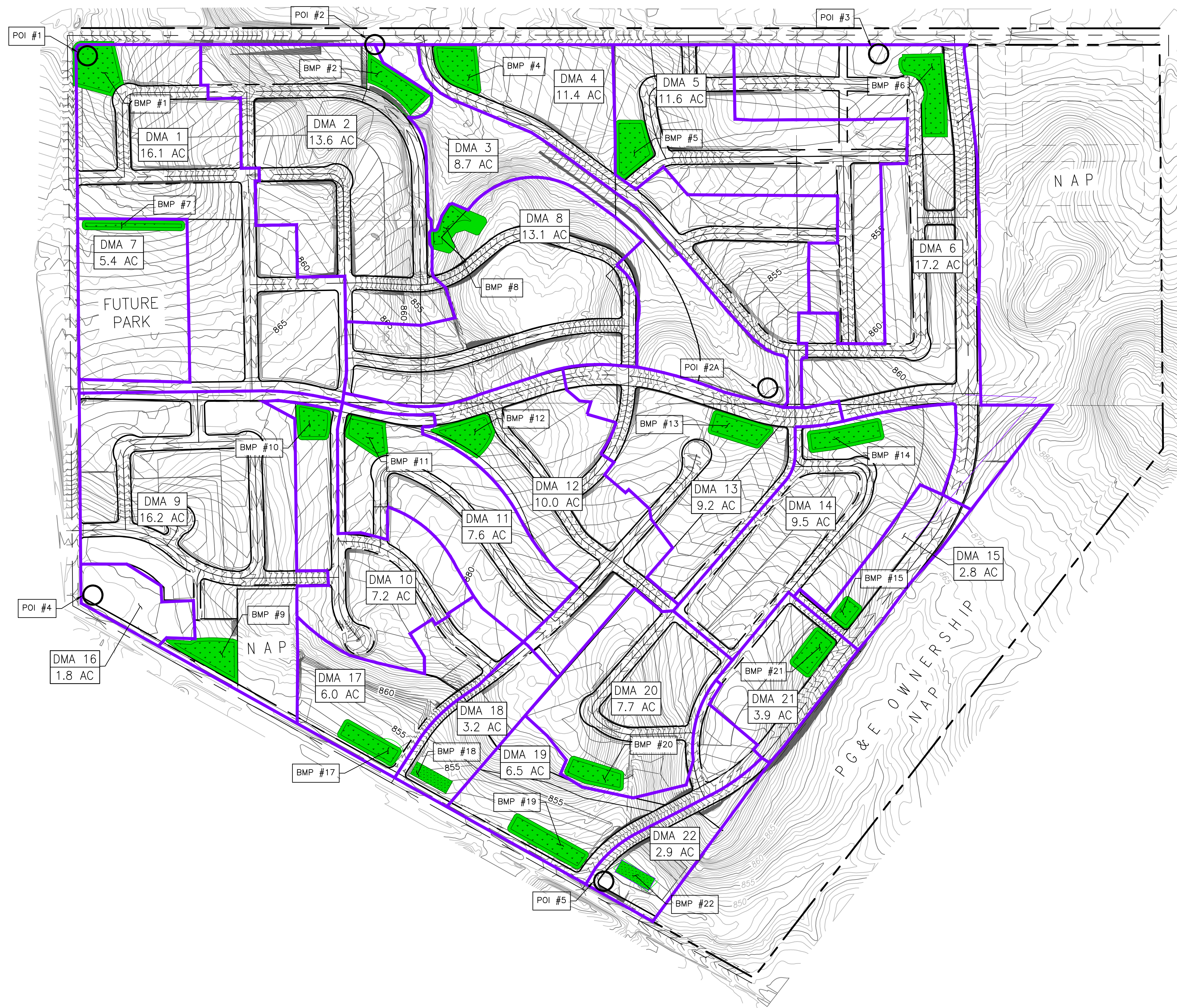
CLIENT: Harrod Etal
PROJECT: Beechwood Subdivision
LOCATION: Beechwood Drive / Meadowlark Road, Paso Robles
NUMBER: 16-7404

DATE(S) DRILLED: 2/24/2016

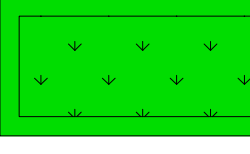
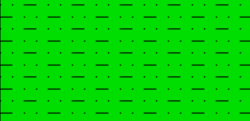
FIELD DATA			LABORATORY DATA							CLASS.		DRILLING METHOD(S):	
DEPTH (FT)	SAMPLES	N: BLOWS/FT P: TONS/SQ FT T: TONS/SQ FT PERCENT RECOVERY/ ROCK QUALITY DESIGNATION	MOISTURE CONTENT (%)	DRY DENSITY POUNDS/CU.FT	RELATIVE COMPACTION (%)	ATTERBERG LIMITS			EXPANSION INDEX	MINUS NO. 200 SIEVE (%)	USCS	SOIL SYMBOL	SOIL TYPE
						LL	PL	PI					
						LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX					
GROUNDWATER INFORMATION: No ground water encountered at time of drilling.													
SURFACE ELEVATION:													
DESCRIPTION OF STRATUM													
1													Brown clayey SAND, medium dense, humid
2													Brown sandy CLAY, stiff, damp
3													
4													Light brown silty SAND, hard, damp
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													Boring was terminated at 15' below grade.
N - STANDARD PENETRATION TEST RESISTANCE P - POCKET PENETROMETER RESISTANCE T - POCKET TORVANE SHEAR STRENGTH													REMARKS: Boring was backfilled with auger clippings.

LOG OF BORING 16-7404 INFIL.GPJ MIDCOAST.GDT 5/30/16

MAP POCKET 1
Stormwater Control Plan (SWCP) Exhibit for Beechwood



LEGEND

DMA BOUNDARY			
DMA ID & AREA	<table border="1"><tr><td>DMA 1</td></tr><tr><td>16.1 AC</td></tr></table>	DMA 1	16.1 AC
DMA 1			
16.1 AC			
PROPOSED BIORETENTION BMP			
PROPOSED UNDERGROUND STORMWATER BMP			

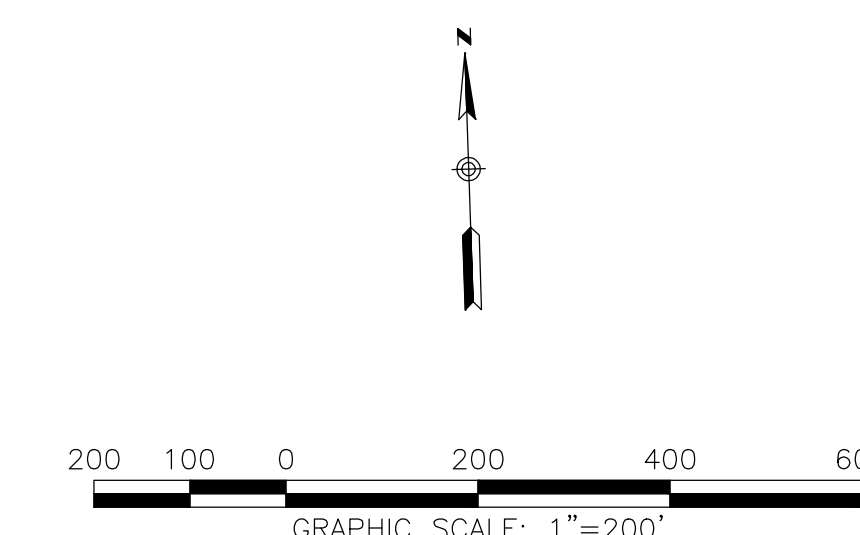
NOTES

1. GROUND WATER DEPTH WAS FOUND TO BE 15 FEET BELOW EXISTING GRADE PER THE GEOTECHNICAL ENGINEERING REPORT FOR THIS PROJECT.
2. FOR PRELIMINARY ANALYSIS, THE SITE WAS ASSUMED TO BE 80% IMPERVIOUS.
3. PROPOSED BIORETENTION BMPs ALSO PROVIDE INFILTRATION AND DETENTION FOR COMPLIANCE WITH PERFORMANCE REQUIREMENTS 2, 3, AND 4.
4. DMA 3 IS A COMPLETELY PERVIOUS SELF-MITIGATING AREA, THEREFORE IT DOES NOT CONTAIN A BIORETENTION BMP.

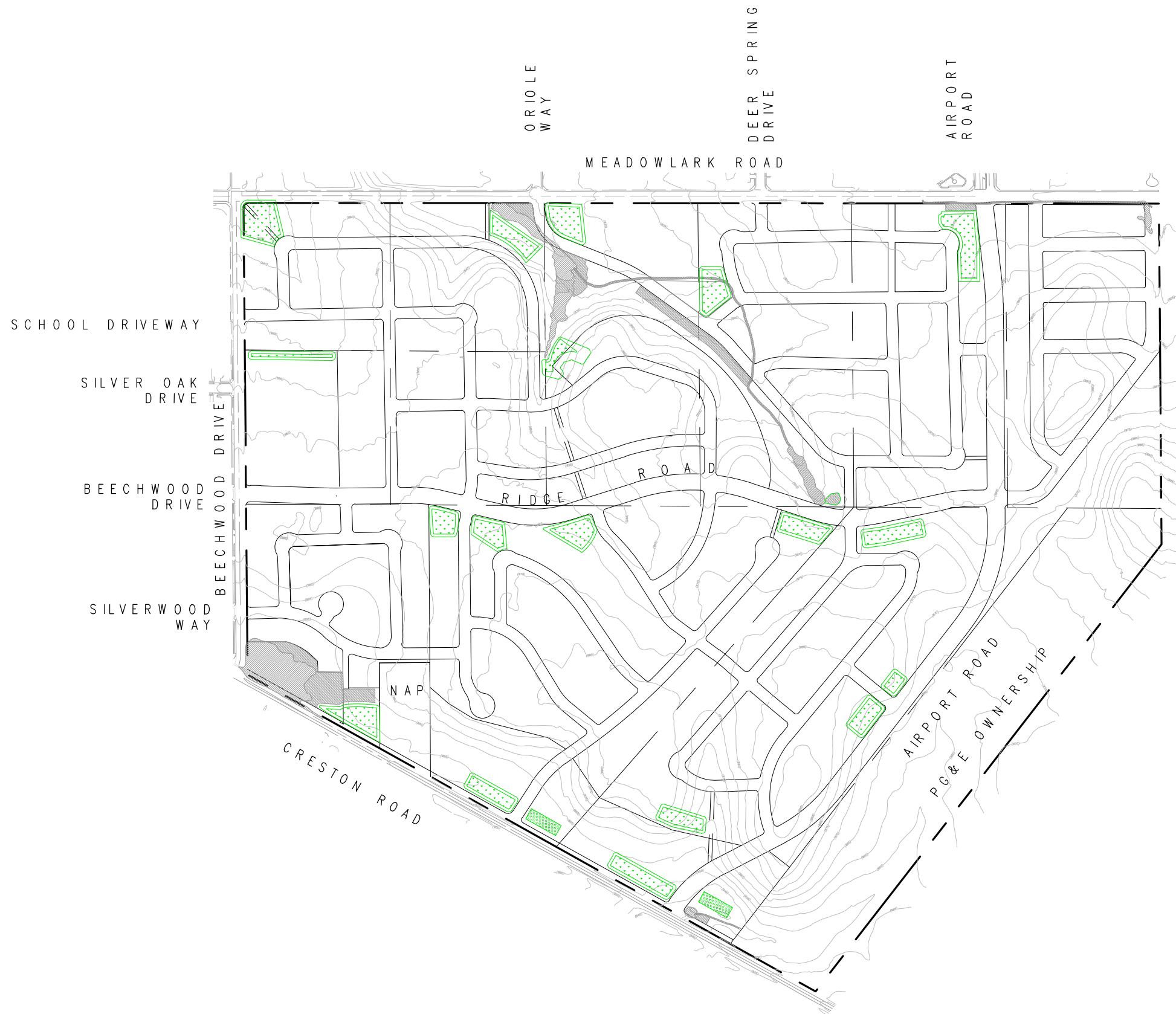
STORMWATER CONTROL PLAN (SWCP) EXHIBIT FOR BEECHWOOD

DATE: 5/31/2019
REVISED:
SHEET 1 OF 1

J-17671



MAP POCKET 2
Stormwater Basin Plan Showing Wetlands



LEGEND

PROPOSED WATER QUALITY/DETENTION BASIN	
POTENTIAL FEDERAL AND STATE WETLANDS/NATURAL CHANNEL	
EXISTING FEDERAL WETLANDS/NATURAL CHANNEL	
EXISTING STATE WETLANDS/NATURAL CHANNEL	