4.9 HYDROLOGY AND WATER QUALITY

This section describes the existing hydrological setting for the project site, including runoff, storm drainage, and flood control. Regulations and policies affecting local hydrology and water quality are discussed, and impacts that may result from project implementation, including those related to soil erosion, water quality, and groundwater, are identified.

Comments from Central Valley RWQCB (RWQCB) providing an overview of regulatory requirements related to quality of surface and groundwater were received in response to the Notice of Preparation for the proposed project.

4.9.1 Regulatory Setting

FEDERAL PLANS, POLICIES, AND REGULATIONS

Clean Water Act (Public Law 92-500)

Section 404

The Clean Water Act (CWA) consists of the Federal Water Pollution Control Act of 1972 and subsequent amendments. The CWA provides for the restoration and maintenance of the physical, chemical, and biological integrity of the nation's waters. Section 404 of the act prohibits the discharge of fill material into waters of the United States, including wetlands, except as permitted under separate regulations by the U.S. Army Corps of Engineers and U.S. Environmental Protection Agency (EPA). Potential affects related to wetlands are discussed in Section 4.4, "Biological Resources."

Section 401

Under CWA Section 401, applicants for a federal license or permit to conduct activities that may result in the discharge of a pollutant into waters of the United States must obtain certification for the discharge. The certification must be obtained from the state in which the discharge would originate or, if appropriate, from the interstate water pollution control agency with jurisdiction over the affected waters at the point where the discharge would originate. Therefore, all projects that have a federal component and may affect state water quality (including projects that require federal agency approval, such as issuance of a Section 404 permit) must also comply with CWA Section 401. Water quality certification requires evaluation of potential impacts in light of water quality standards and CWA Section 404 criteria governing discharge of dredged and fill materials into waters of the United States. The federal government delegates water pollution control authority under CWA Section 401 to the states (and in California, ultimately to the regional water quality control boards [RWQCBs]).

Section 402

Section 402 of the CWA establishes the National Pollutant Discharge Elimination System (NPDES) permit program to regulate discharges of pollutants into waters of the United States. An NPDES permit sets specific discharge limits for point sources discharging pollutants into waters of the United States and establishes monitoring and reporting requirements, as well as special conditions. Two types of nonpoint source discharge are controlled by the NPDES program: discharges caused by general construction activities and the general quality of stormwater in municipal stormwater systems. The goal of the NPDES nonpoint source regulations is to improve the quality of stormwater discharged to receiving waters to the maximum extent practicable. The RWQCBs in California are responsible for implementing the NPDES permit system (see the discussion of state regulations below).

Federal Emergency Management Agency

In 1968, Congress created the National Flood Insurance Program in response to the rising cost of taxpayer funded disaster relief for flood victims and the increasing amount of damage caused by floods. The Federal Emergency Management Agency (FEMA) administers the National Flood Insurance Program to provide subsidized flood

insurance to communities that comply with FEMA regulations to limit development in floodplains. FEMA also issues flood insurance rate maps that identify which land areas are subject to flooding. These maps provide flood information and identify flood hazard zones in the community. FEMA has established a minimum level of flood protection for new development as the 1-in-100 Annual Exceedance Probability (i.e., 100-year flood event).

Federal Antidegradation Policy

The federal antidegradation policy, established in 1968, is designed to protect existing uses and water quality and national water resources. The federal policy directs states to adopt a statewide policy that includes the following primary provisions:

- existing in-stream uses and the water quality necessary to protect those uses shall be maintained and protected;
- where existing water quality is better than necessary to support fishing and swimming conditions, that quality shall be maintained and protected unless the state finds that allowing lower water quality is necessary for important local economic or social development; and
- where high-quality waters constitute an outstanding national resource, such as waters of national and state parks, wildlife refuges, and waters of exceptional recreational or ecological significance, that water quality shall be maintained and protected.

Water Quality Criteria/Standards

Pursuant to federal law, EPA has published water quality regulations under Title 40 of the Code of Federal Regulations (CFR). Section 303 of the CWA requires states to adopt water quality standards for all surface waters of the United States. As defined by the act, water quality standards consist of designated beneficial uses of the water body in question and criteria that protect the designated uses. Section 304(a) requires EPA to publish advisory water quality criteria that accurately reflect the latest scientific knowledge on the kind and extent of all effects on health and welfare that may be expected from the presence of pollutants in water. Where multiple uses exist, water quality standards must protect the most sensitive use. As described in the discussion of state regulations below, State Water Resources Control Board (SWRCB) and its nine RWQCBs have designated authority in California to identify beneficial uses and adopt applicable water quality objectives.

National Toxics Rule and California Toxics Rule

In 1992, EPA issued the National Toxics Rule (NTR) (40 CFR 131.36) under the CWA to establish numeric criteria for priority toxic pollutants in 14 states and jurisdictions, including California, to protect human health and aquatic life. The NTR established water quality standards for 42 pollutants for which water quality criteria exist under CWA Section 304(a) but for which the respective states had not adopted adequate numeric criteria. EPA issued the California Toxics Rule (CTR) in May 2000. The CTR establishes numeric water quality criteria for 130 priority pollutants for which EPA has issued Section 304(a) numeric criteria that were not included in the NTR.

STATE PLANS, POLICIES, AND REGULATIONS

State Water Resources Control Board

In California, the SWRCB has broad authority over water quality control issues for the state. The SWRCB is responsible for developing statewide water quality policy and exercises the powers delegated to the state by the federal government under the CWA. Other state agencies with jurisdiction over water quality regulation in California include the California Department of Health Services (DHS) (for drinking water regulations), the California Department of Pesticide Regulation, the California Department of Fish and Wildlife, and the Office of Environmental Health and Hazard Assessment. Regional authority for planning, permitting, and enforcement is delegated to the nine regional water boards. The regional boards are required to formulate and adopt water quality control plans for all areas in the region and establish water quality objectives in the plans. The Central Valley RWQCB is responsible for water resources in the project vicinity.

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act of 1969 (Porter-Cologne Act) is California's statutory authority for the protection of water quality. The act sets forth the obligations of the SWRCB and RWQCBs under the CWA to adopt and periodically update water quality control plans, or basin plans. Basin plans are plans in which beneficial uses, water quality objectives, and implementation programs are established for each of the nine regions in California. The Porter-Cologne Act also requires waste dischargers to notify the RWQCBs of such activities by filing Reports of Waste Discharge and authorizes the SWRCB and RWQCBs to issue and enforce waste discharge requirements, NPDES permits, Section 401 water quality certifications, or other approvals.

NPDES Permits

The SWRCB and Central Valley RWQCB have required specific NPDES permits for a variety of activities that have potential to discharge pollutants to waters of the state and adversely affect water quality. To receive an NPDES permit a Notice of Intent to discharge must be submitted to the Central Valley RWQCB and design and operational best management practices (BMPs) must be implemented to reduce the level of contaminated runoff. BMPs can include the development and implementation of regulatory measures (drainage facility design in accordance with local authority requirements); educational measures (public workshops), public policy measures (labeling of storm drain inlets), and structural measures (filter strips, grass swales, and retention basins). All NPDES permits also have inspection, monitoring, and reporting requirements.

General Permit for Stormwater Discharges Associated with Construction Activity

The SWRCB adopted the statewide NPDES General Construction Permit in August 1999. The state requires that projects disturbing more than 1 acre of land during construction file a Notice of Intent with the RWQCB to be covered under this permit. Construction activities subject to the General Construction Permit include clearing, grading, stockpiling, and excavation. Dischargers are required to eliminate or reduce non-stormwater discharges to storm sewer systems and other waters. A stormwater pollution prevention plan (SWPPP) must be developed and implemented for each site covered by the permit. The SWPPP must include BMPs designed to prevent construction pollutants from contacting stormwater and keep products of erosion from moving offsite into receiving waters throughout the construction and life of the project; the BMPs must address source control and, if necessary, pollutant control.

The Recology Hay Road (RHR) Landfill has a SWPPP that was review and approved by the RWQCB for the site. The SWPPP was prepared consistent with the NPDES General Permit for Storm Water Discharges Associated with Industrial Activities, NPDES No. CAS000001, California State Water Resources Control Board Water Quality Order No. 2016-0056-DWQ.

State Nondegradation Policy

In 1968, the SWRCB adopted a nondegradation policy aimed at maintaining high quality for waters in California. The nondegradation policy states that the disposal of wastes into state waters shall be regulated to achieve the highest water quality consistent with maximum benefit to the people of the state and to promote the peace, health, safety, and welfare of the people of the state. The policy provides as follows:

a) Where the existing quality of water is better than required under existing water quality control plans, such quality would be maintained until it has been demonstrated that any change would be consistent with maximum benefit to the people of the state and would not unreasonably affect present and anticipated beneficial uses of such water.

b) Any activity which produces waste or increases the volume or concentration of waste and which discharges to existing high-quality waters would be required to meet waste discharge requirements.

Safe Drinking Water Act

As mandated by the Safe Drinking Water Act (Public Law 93-523), passed in 1974, EPA regulates contaminants of concern to domestic water supply. Such contaminants are defined as those that pose a public health threat or that alter the aesthetic acceptability of the water. These types of contaminants are regulated by EPA primary and secondary maximum contaminant levels (MCLs). MCLs and the process for setting these standards are reviewed

triennially. Amendments to the Safe Drinking Water Act enacted in 1986 established an accelerated schedule for setting drinking water MCLs. EPA has delegated to the DHS the responsibility for California's drinking water program. DHS is accountable to EPA for program implementation and for adoption of standards and regulations that are at least as stringent as those developed by EPA. Title 22 of the California Administrative Code (Article 16, Section 64449) defines secondary drinking water standards, which are established primarily for reasons of consumer acceptance (i.e., taste) rather than for health issues.

Sustainable Groundwater Management Act

On September 16, 2014, Governor Jerry Brown signed into law a three-bill legislative package, composed of AB 1739 (Dickinson), SB 1168 (Pavley), and SB 1319 (Pavley), collectively known as the Sustainable Groundwater Management Act (SGMA). SGMA requires medium- and high-priority groundwater basins in the state to be managed by local agencies that have formed a Groundwater Sustainability Agency (GSA) by June 30, 2017. Once formed, a GSA must develop and implement a Groundwater Sustainability Plan (GSP) by January 31, 2022 to guide the sustainable management of its groundwater basin. The GSA then has 20 years following this date to achieve its sustainability goals. In Solano County, the state has designated the Solano Subbasin as medium-priority, and thus subject to SGMA. The project site is within the boundaries of the Solano GSA, an 11-members joint powers authority formed in 2017. Other GSAs within the Solano Subbasin include the Solano Irrigation District GSA, City of Vacaville GSA, Northern Delta GSA, and Sacramento County GSA. Together with the Solano GSA, these agencies are known as the Solano Collaborative. While each agency is responsible for its own public outreach and stakeholder communications, the group will work collaboratively to develop the GSP, which will be completed by January 31, 2022.

California Code of Regulations

14 California Code of Regulations Section 17407

Title 14 of the California Code of Regulations (CCR), Article 6.2 of Chapter 3 contains regulations of the California Integrated Waste Management Board pertaining to drainage from solid waste facilities. Section 17407 describes operating standards including drainage controls that must be implemented at solid waste facilities.

27 California Code of Regulations Section 20340

Title 27 of the CCR, Division 2, Solid Waste, provides criteria for all waste management units, facilities, and disposal sites. Section 20340 of Chapter 3 addresses Leachate Collection and Removal System (LCRS) requirements. LCRSs are required for Class II landfills and surface impoundments, and for Class III landfills that have a liner or that accept sewage or water treatment sludge. The LCRS shall be installed directly above underlying containment features for landfills and waste piles, and installed between the liners for surface impoundments. The LCRS shall consist of a permeable subdrain layer that covers the bottom of the unit and extends as far up the sides as possible (i.e., blanket type). The LCRS shall be of sufficient strength and thickness to prevent collapse under the pressures exerted by overlying wastes, waste cover materials, and by any equipment used at the unit.

California Water Code

The California Water Code is enforced by the California Department of Water Resources (DWR). The mission of DWR is "to manage the water resources of California in cooperation with other agencies, to benefit the State's people, and to protect, restore, and enhance the natural and human environments." DWR is responsible for promoting California's general welfare by ensuring beneficial water use and development statewide through implementation of the Water Code. The California Water Code includes provisions for water supply assessments; these are included in Water Code Section 10910-10915 and CEQA Guidelines Section 15155.

REGIONAL AND LOCAL PLANS, POLICIES, REGULATIONS AND ORDINANCES

Solano County General Plan

The Solano County General Plan contains the following goals and policies that are relevant to the analysis of potential hydrology and water quality impacts associated with the project:

- **Resource Policy 64:** Identify, promote, and seek funding for the evaluation and remediation of water resources or water quality problems through a watershed management approach. Work with the regional water quality control board, watershed-focused groups, and stakeholders in the collection, evaluation, and use of watershed-specific water resources information.
- **Resource Policy 65:** Require the protection of natural water courses.
- **Resource Policy 66:** Together with the Solano County Water Agency, monitor and manage the county's groundwater supplies.
- **Resource Policy 67:** Encourage new groundwater recharge opportunities.
- **Resource Policy 68:** Protect existing open spaces, natural habitat, floodplains, and wetland areas that serve as groundwater recharge areas.
- **Resource Policy 69:** Preserve and maintain watershed areas characterized by slope instability, undevelopable steep slopes, high soil erosion potential, and extreme fire hazards in agricultural use. Watershed areas lacking water and public services should also be kept in agricultural use.
- **Resource Policy 70:** Protect land surrounding valuable water sources, evaluate watersheds, and preserve open space lands to protect and improve groundwater quality, reduce polluted surface runoff, and minimize erosion.
- **Resource Policy 71:** Ensure that land use activities and development occur in a manner that minimizes the impact of earth disturbance, erosion, and surface runoff pollutants on water quality.
- **Resource Policy 72:** Preserve riparian vegetation along county waterways to maintain water quality.
- **Resource Policy 73:** Use watershed planning approaches to resolve water quality problems. Use a comprehensive stormwater management program to limit the quantity and increase the water quality of runoff flowing to the county's streams and rivers.
- **Resource Policy 74:** Identify naturally occurring and human-caused contaminants in groundwater in new development projects and develop methods to limit and control contaminants. Work with RWQCB to educate the public on evaluating the quality of groundwater.
- **Resource Policy 75:** Require and provide incentives for site plan elements (such as permeable pavement, swales, and filter strips) that limit runoff and increase infiltration and groundwater recharge.
- **Resource Policy 76:** Promote sustainable management and efficient use of agricultural water resources.

4.9.2 Environmental Setting

CLIMATE

The project site is located in a warm and temperate (Mediterranean) climate characterized by a distinctive seasonal precipitation regime. Summers are dry with little or no precipitation from June to September. The average daily-high temperature during summer months is 95°F and the average daily-low temperature is 53°F. The mean annual precipitation in the project vicinity for the period between 1947 and 2016, was approximately 17 inches. Most precipitation occurred from November through April. During the period of record, annual precipitation has varied from 9.7 inches (1953) to 25 inches (1970), with a one-day high of 3.2 inches on January 21, 1967. The average daily-high temperature during the winter months is 66°F and the average daily-low temperatures is 37°F (Western Climate Center 2012).

HYDROLOGY

Solano County contains two major drainage provinces: San Francisco Bay Province and Sacramento River Province. The project site is located within the Sacramento River Province. This area encompasses watersheds in the northern portion of Solano County that drain into the Sacramento Delta, including the Lower Putah Creek, Cache Slough, Ulatis Creek, Wooden Valley Creek-Frontal Suisun Bay Estuaried watersheds. The project site is located within the Ulatis Creek Watershed (as shown in Figure 4.9-1). The Ulatis Creek Flood Control Channel is the main drainage in this watershed, but the watershed also includes portions of the New Alamo Creek Flood Control Channel, Horse Creek, Gibson Canyon Creek, Sweany Creek, and McCune Creek. These creeks drain to Cache Slough, which outlets into the Sacramento River. The existing land use in the Ulatis Creek Watershed is largely agricultural; however, the watershed also contains the entire extent of the City of Vacaville. Storm runoff and irrigation tailwater drain through this creek system in an east- southeasterly direction, from the mountains of the Coast Range in the western portion of the watershed, towards the Sacramento River Delta.

Surface water drainage from the project site is conveyed by a series of manmade drainage structures: drainage channels and down drains on the disposal modules, drainage channels, and culverts conveying water away from the disposal modules, sedimentation basins, and the bird sanctuary pond. The Alamo Creek Flood Control Channel (A-1 Channel) runs along Hay Road north of the project site, and along SR-113, east of the project site. An additional drainage channel runs along the northern boundary of the project site and flows into the bird sanctuary pond northeast of the project site. A hydrological flow analysis of the project site concluded that drainage within the project site flows east- southeasterly towards the perimeter channel along the eastern boundary of the triangle, consistent with drainage of the overall watershed (ESA 2017).

A major hydrological feature within the region and the project site is vernal pool systems, including predominately northern claypan vernal pools and associated vernal pool-grassland matrix. Vernal pool habitat is found on level or gently undulating land with pools that are generally small, seasonal wetlands that form in shallow depressions. These depressions fill with rainwater and runoff from adjacent areas in the winter, and typically remain inundated throughout the spring to early summer. Vernal pools can vary in size from a few square meters to several hectares, and the larger pools are typically called playa pools. The project site contains vernal pool-grassland matrix habitat characterized by many small pools with relatively short hydroperiods, and a portion of a large, human-made playa pool. These sensitive habitats are described in more detail in Section 4.4, "Biological Resources."

Groundwater Hydrology

Regionally, the Sacramento Valley is a large, north-south trending basin filled with deep marine sediments overlain by shallow freshwater sediments that were eroded from the adjacent ranges to the west, north, and east. The Sacramento Valley Groundwater Basin includes the entire Sacramento Valley from Tehama County south to Solano County, including the project site, which is in the Yolo Subbasin (DWR 2013). The Yolo Subbasin is bounded on the east by the Sacramento River, on the west by the Coast Range, on the north by Cache Creek, and on the south by Putah Creek.

Groundwater in the Yolo Subbasin is generally classified as occurring in sedimentary continental deposits, including younger alluvium, older alluvium, and the Tehama Formation (DWR 2004). Groundwater within the older alluvium and Tehama formation is recharged primarily by percolation of rainfall and surface water in the region. The water table throughout the region is characterized by permeable units separated by fine-grain low-permeability strata; however, wells seasonally recover indicating that these permeable units have significant hydrological interconnection (Einarson 1995). Depth to groundwater in the site was reported at about 10 feet in 1950, and water wells in the vicinity of the project site have ranged from approximately 20 to 300 feet deep (Einarson 1995).

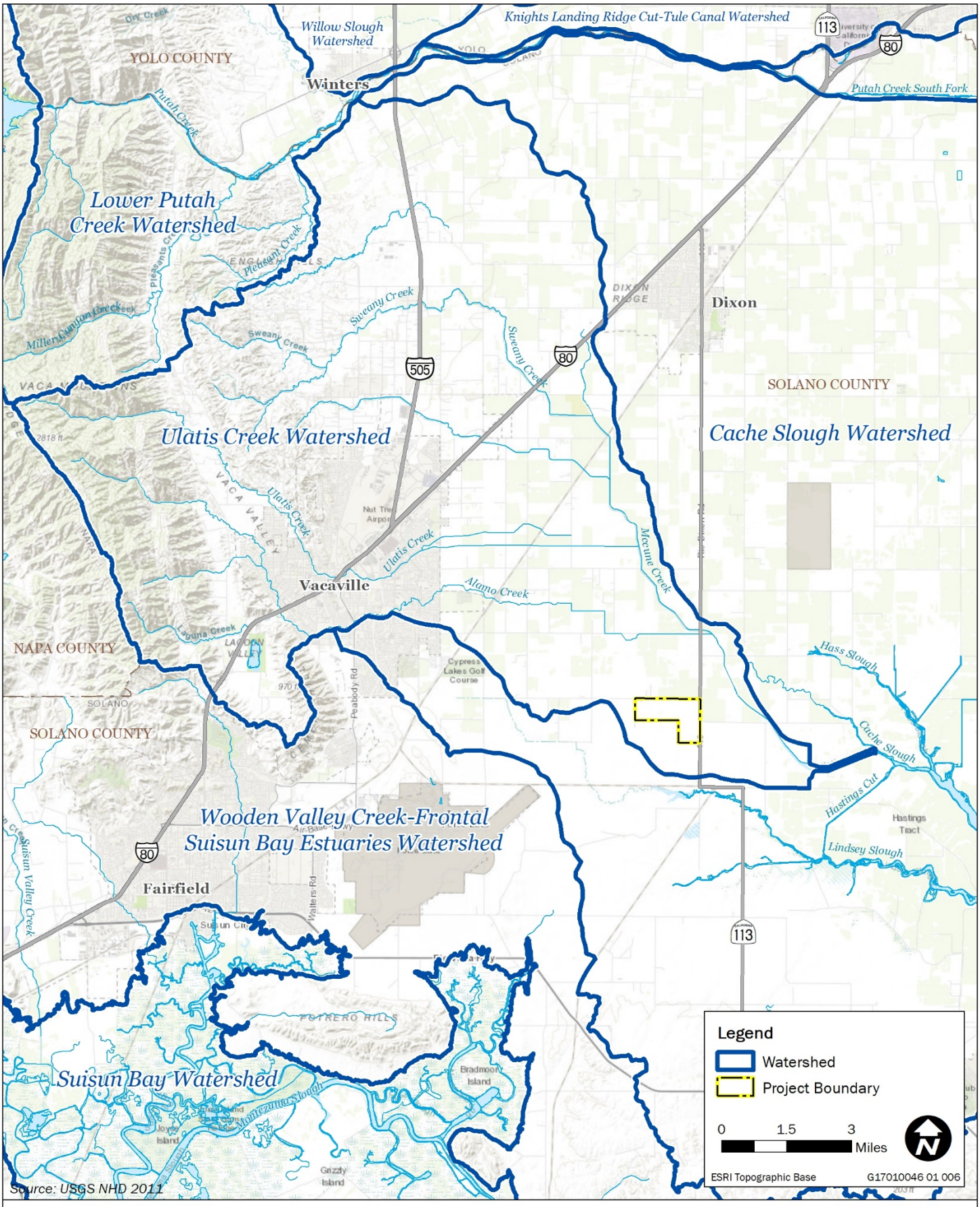

Figure 4.9-1 Watershed

The depth to groundwater measured in site groundwater monitoring wells varies across most of the site from about 5 to 36 feet below ground surface (i.e., elevation 2 to 22 feet NGVD 29). Currently, the landfill conducts dewatering activities at the existing borrow pit, in order to extract soil material for landfill cover within the disposal modules. Dewatering of the soil borrow pit is completed by pumping water from the south end of the pit to a drainage swale that drains along the southern perimeter of the permitted landfill footprint to the Bird Sanctuary Pond. Pumping is completed as necessary to manage the water levels in the soil borrow pit (Golder Associates: 2018 5-10). Dewatering operations are conducted consistent with Regional Board Order No. R5-2013-0073-01, NPDES No. CAG995002, Waste Discharge Requirements for Limited Threat Discharge of Treated/Untreated Groundwater from Cleanup Sites, Wastewater from Superchlorination Projects, and Other Limited Threat Wastewaters to Surface Water (Golder Associates 2018: 3-9). The extracted groundwater is then either redistributed into an unused part of the borrow pit or used for dust control purposes elsewhere within the landfill disposal area. Dewatering of the borrow pit, as part of existing landfill operations, has altered the movement of shallow groundwater beneath the western half of the site, where the groundwater flow direction has been changed to flow toward the west to the borrow pit, rather than the natural southeasterly flow direction. Groundwater elevations also vary seasonally about 1 to 5 feet and in response to water level changes in surface recharge areas (Golder Associates 2018: 3-7).

Floodplains

The 100-year flood refers to the flood resulting from a storm event that has a probability of occurring once every 100 years, or a 1 percent chance of occurring in any given year. Areas mapped in the 100-year floodplain area are subject to inundation during a 100-year storm event. Approximately 80 percent of the project site, including the entirety of the Triangle, is within the 100-year floodplain (refer to Figure 4.9-2). No portion of the project site is within the 200-year floodplain.

WATER QUALITY

Water quality refers to the chemical and physical properties of water, which affects the uses and users of that water. Ulatis Creek, which is located approximately 1.5 miles east of the project site, has been classified by the SWRCB as an "impaired water" due to levels of diazinon and chlorpyrifos, which are organophosphorus insecticides originating from agricultural and urban runoff (SWRCB 2016). It is likely that other surface waters on the project site may also contain these pollutants due to the extensive agricultural use surrounding the project site. The Former Alamo Creek and A-1 Channel, which flowed across the eastern portion of the landfill and contained mostly agricultural drainage water, is known to have elevated concentrations of nitrate. Agricultural drainage water may have been a source of nitrates along the former channel alignment and may be a current source of nitrates along the current alignment.

Leachate is formed in landfills by percolation of water into and through the refuse mass. Because this liquid includes dissolved and insoluble chemicals, leachate is collected and removed to prevent localized degradation of water quality. The RHR Landfill has a liner system and LCRS that has been approved by the Central Valley RWQCB. These systems are described in more detail in Section 3, "Project Description."

Drainage ditches, berms, culverts and down drains provide surface water control at the project site and are sized to accommodate various design storm events, as required by Title 27, Section 20365 (Golder 2018: 5-9).

The landfill's water quality monitoring program is designed to meet regulatory requirements as specified in Title 27, Section 20415 and the facility's Waste Discharge Requirements (WDRs) under Regional Board Order No. R5-2016-0056 (Golder Associates 2018: 6-2). Dewatering operations at the borrow pit are conducted consistent with Regional Board Order No. R5-2013-0073-01, and NPDES No. CAG995002, Waste Discharge Requirements for Limited Threat Discharge of Treated/Untreated Groundwater from Cleanup Sites, Wastewater from Superchlorination Projects, and Other Limited Threat Wastewaters to Surface Water.

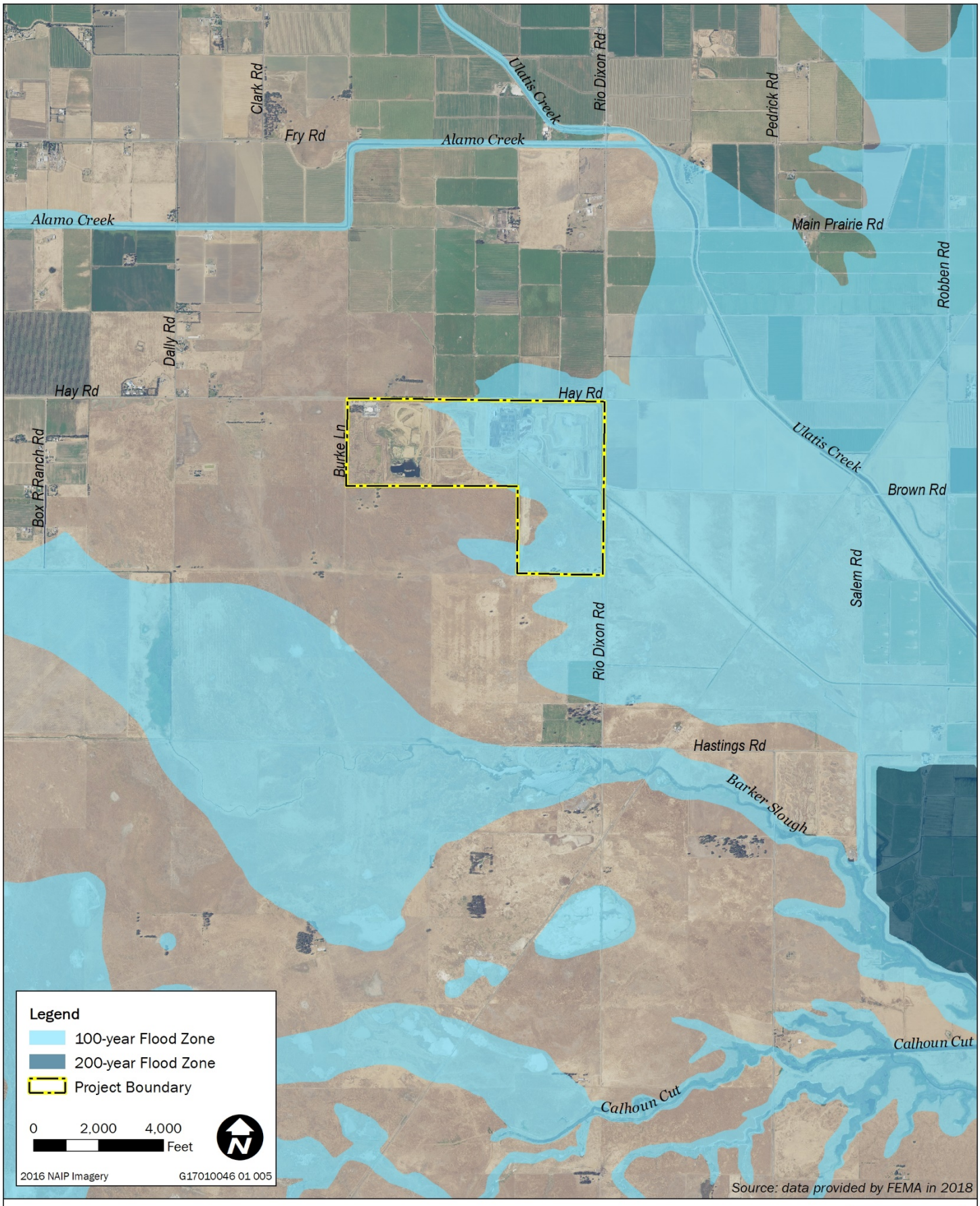

Figure 4.9-2 Flood Hazards

As noted above, State and federal regulations require landfills to implement a water quality monitoring program to enable early detection of a release from the landfill that could affect groundwater quality. Title 27, Section 20385 defines three components of the monitoring program: (1) detection monitoring; (2) evaluation monitoring; and (3) corrective action. Groundwater monitoring has been conducted at the site since 1986 and Recology is currently conducting required detection, evaluation monitoring, and corrective action monitoring (Golder 2018:6-1).

The RHR Landfill groundwater monitoring system meets the requirements of Title 27. Monitoring Plans are prepared for each disposal module and submitted to the Regional Board for review and approval prior to operation of a disposal module. The monitoring plans are prepared in compliance with Title 27 and propose groundwater monitoring wells at the points of compliance that allow for the detection of a release from the landfill units. Where possible, detection groundwater monitoring wells are located directly downgradient from individual disposal module leachate sumps. The leachate sumps are targeted specifically for monitoring because these are the locations where the greatest thickness of leachate can accumulate and the area of the disposal module that is closest to groundwater. Based on the information provided above, including Title 27 regulations, past Regional Board involvement and approval of the existing monitoring network, the local hydrogeologic characteristics and basic hydrogeologic principles, Recology is monitoring the uppermost aquifer, as defined in Title 27 (Golder 2018:6-1). Changes to the groundwater monitoring system have been made gradually over time as the landfill has been developed. These changes have been documented and approved, when necessary, through correspondence with the RWQCB, as well as through annual monitoring reports submitted to the RWQCB.

An evaluation-monitoring program (EMP) may be required, pursuant to Title 27, Section 20425 to evaluate evidence of release if detection monitoring and/or verification procedures indicate evidence of a release. Recology notifies and submits a semi-annual and annual monitoring report to the RWQCB and local enforcement agency (LEA) summarizing sampling, monitoring, and corrective actions taken should a release occur. Currently, the wells in the EMP are various eastern area wells for manganese (Golder 2018:6-5).

A corrective action program to remediate impacts from a release of wastes from the landfill may be required, pursuant to Title 27, Section 20430 should results of any wells in the EMP warrant corrective action.

There are two disposal modules in corrective action for volatile organic compounds in pan lysimeters and nitrate in pan lysimeters and two areas with nitrate-impacted groundwater that are currently operating under a corrective action monitoring program (CAP) (Golder 2018:6-5). Water detected in the corrective action pan lysimeters (and other pan lysimeters, if present) is pumped into the adjacent, overlying leachate sump. To eliminate the possibility of potentially compromising the sumps' capacity by discharging and temporarily storing pan lysimeter liquid, the pan lysimeter liquids are immediately pumped from the sumps by manually over-riding the liquid level controls, thereby maintaining the capacity of the sumps to collect leachate. The volume of pan lysimeter liquids discharged into and pumped out of the LCRS sumps is recorded to confirm that the volumes are comparable. In addition, the liquid level in the pan lysimeter is checked after pumping and recorded to aid in identifying future discharges into the pan lysimeter. The pan lysimeter liquids are managed as leachate and are pumped directly to the leachate storage tank that is associated with that specific disposal module (Golder 2018:6-5).

The two areas of the landfill that are under a corrective action monitoring program for nitrate/nitrite as nitrogen detected in groundwater at concentrations greater than the concentration limit are in the western part of the landfill. These areas are currently undergoing remediation under the application of General Order R5- 2008-0149-056 "General Waste Discharge Requirements for In-situ Groundwater Remediation at Sites with Volatile Organic Compounds, Nitrogen Compounds, Perchlorate, Pesticides, Semi-volatile Organic Compounds and/or Petroleum Compounds". The progress of corrective action is monitored under Monitoring and Reporting Program No. R5-2008-0149-056. Six new groundwater monitoring wells were installed to provide treatment zone, transition zone, and compliance monitoring wells for the nitrate remediation under General Order R5-2008-0149-056. The groundwater remediation involved the injection of sodium lactate into the groundwater to reduce nitrate levels. The injection process was completed between March 17, 2015 and May 22, 2015, and the corrective action monitoring program was completed and approved by the RWQCB (Golder 2018:6-5).

WATER USE

There are 12 known water wells existing within 1 mile of the landfill. Groundwater in the area is primarily used for farm stock watering (Golder Associates 2018: 4-1). Use of water onsite is limited to dust control and washing/restroom uses at the RHR office. The RHR Landfill is not connected to a municipal water system and does not use potable water. The site maintains one 10,000-gallon water tank that is supplied by dewatering of the borrow pit and supplies RHR's two-4,000-gallon water trucks, which are used for dust control on all onsite roadways. The RHR office is supplied by non-potable well water, and employees are provided with bottled water for consumption. Water used for dust control is subsequently discharged to the Bird Sanctuary Pond, and then to the A-1 Channel (Golder Associates, 2018: 7-12, 7-16). In 2017, approximately 223 million gallons of groundwater were dewatered from the borrow pit (Recology Hay Road 2017).

4.9.3 Environmental Impacts and Mitigation Measures

SIGNIFICANCE CRITERIA

Based on Appendix G of the State CEQA Guidelines, the project would result in a potentially new significant impact, or substantial increase in a previously identified significant impact, related to hydrology and water quality if it would:

- violate any water quality standards or waste discharge requirements; or otherwise substantially degrade surface or groundwater quality;
- substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the project may impede sustainable groundwater management of the basin;
- substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river or through the addition of impervious surfaces, in a manner which would:
  - result in substantial erosion or siltation on- or offsite;
  - Substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite;
  - Create or contribute runoff water which would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff; or
- In flood hazard, tsunami, or seiche zones, risk release of pollutants due to project inundation; or
- Conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan.

METHODOLOGY

Evaluation of potential hydrologic and water quality impacts was based on a review of existing information from previously completed documents that address water resources in the project vicinity. The information obtained from these sources was reviewed and summarized to establish existing conditions and to identify potential environmental effects, based on the standards of significance presented in this chapter. In determining the level of significance, the analysis assumes that the proposed project would comply with relevant federal, State, and local ordinances and regulations.

ISSUES NOT DISCUSSED FURTHER

Because of the distance from the nearest open waterbody, the Pacific Ocean (more than 62 miles west of the project site), the proposed project would not be affected by inundation as a result of seiche or tsunami. In addition, the project site is relatively flat, with no steep areas that would have the potential to generate mudflows during operation. Therefore, these issues are not addressed further in this Subsequent Environmental Impact Report (SEIR).

PROJECT IMPACTS AND MITIGATION MEASURES

Impact 4.9-1: Violation of Water Quality Standards or Waste Discharge Requirements Related to Construction Activities

Project construction activities could result in soil erosion, sedimentation, and discharge of pollutants in nearby surface water bodies and groundwater, resulting in reduced water quality. The project applicant will control onsite stormwater and protect water quality through implementation of a SWPPP and associated BMPs, as required by federal and State regulations and the RHR Recyclable Material Bale Management Operations Plan approved by the County in April 2018. Therefore, this impact would be **less than significant**.

The landfill currently operates under WDR Order No. R5-2016-0056 issued by the Central Valley RWQCB. The WDR's require that the landfill comply with the requirements of a SWPPP for the site. However, a separate SWPPP would be required to address potential construction-related soil disturbance impacts. Project construction activities would involve ground-disturbance which could result in soil erosion and sedimentation of stormwater drainage systems. The construction process could also result in accidental release of other pollutants to surface waters, including oil and gas related to heavy equipment operation.

As part of project design and implementation, the project applicant would retain a California registered civil engineer to prepare a SWPPP that would include site-specific BMPs and any other necessary site-specific WDRs or waivers under the Porter-Cologne Act. The following identifies several BMPs that may be incorporated into the SWPPP for project implementation:

- preserve existing vegetation where possible;
- roughen surface of final grades to prevent erosion, decrease run-off, increase infiltration, and aid in vegetation establishment;
- establish riparian buffers or filter strips along the perimeter of the disturbed area to intercept pollutants prior to offsite discharge;
- place fiber rolls around onsite drain inlets to prevent sediment and construction-related debris from entering inlets;
- place fiber rolls along down-gradient disturbed areas of the site to reduce runoff flow velocities and prevent sediment from leaving the site;
- place silt fences down-gradient of disturbed areas to slow down runoff and retain sediment;
- stabilize the construction entrance to reduce the tracking of mud and dirt onto public roads by construction vehicles;
- stage excavated and stored construction materials and soil stockpiles in stable areas and cover materials to prevent erosion; and
- stabilize temporary construction entrances to limit transport/introduction of invasive species and control fugitive dust emissions.
- pollutants likely to be used during construction activities or that could be present in stormwater and non-stormwater discharges, as well as any other type of materials included in equipment operation;
- personnel training requirements and procedures that would be used to ensure that all workers are aware of the applicable regulations regarding the permit requirements.
- site inspection and maintenance responsibilities;
- spill prevention measures, including those mentioned above;

- a monitoring program to be implemented and carried out by the project applicant, which would include site inspections during dry and wet weather conditions to ensure personnel are following SWPPP conditions. A sampling analysis plan would also be included, as per the General Construction Permit; and
- appropriate supervisory personnel who would be responsible for carrying out the implementation of the SWPPP.

In addition, the RHR Recyclable Material Bale Management Operations Plan was approved by the County in April 2018 and requires RHR to implement best management practices (BMPs) related to stormwater control prior to storage of recyclable bales onsite. These BMPs are listed in Chapter 3, Section 3.7.4 of this SEIR, Because the project applicant would implement adequate measures to control onsite stormwater and protect water quality during construction as part of proposed project implementation, pursuant to regulatory requirements, the proposed project would not violate any water-quality standards or waste-discharge requirements, or otherwise result in short-term degradation of water quality. This impact would be **less than significant**.

Mitigation Measures

No mitigation is required.

Impact 4.9-2: Violation of Water Quality Standards or Waste Discharge Requirements Related to Operation

Project operation could result in soil erosion, sedimentation, and discharge of pollutants in nearby surface water bodies and groundwater, resulting in reduced water quality. The new disposal expansion area would be constructed to isolate any runoff and/or materials onsite, including a composite liner system to collect and remove leachate from the landfill, to prevent pollutant discharge to groundwater. This liner, as well as compliance with federal and State regulations regarding water quality, would ensure that this impact would be **less than significant**.

The landfill currently operates under WDR Order No. R5-2016-0056 issued by the Central Valley RWQCB. The WDR's require that the landfill comply with the requirements of a SWPPP for the site. The new disposal expansion area would be constructed with a composite liner system that includes a leachate collection and removal system that efficiently collects and removes leachate from the landfill. Installation of the liner requires implementation of a base liner Construction Quality Assurance program, which documents that inspections have been conducted such that environmental controls and protection provided by the composite liner has been constructed to design specifications. Recology constructed a French drain system in Summer of 2016 in compliance with RWQCB directives to maintain groundwater separation. Engineered controls implemented at the site are designed to prevent any impact of the Recology operations on groundwater.

Because the disposal expansion area would include a composite liner system designed to protect groundwater from pollutants associated with operation of the landfill and Recology would adhere to WDRs as required by the RWQCB, operation of the proposed project would not violate any water-quality standards or waste-discharge requirements, or otherwise result in degradation of water quality. This impact would be **less than significant**.

Mitigation Measures

No mitigation is required.

Impact 4.9-3: Deplete Groundwater Supplies or Interfere Substantially with Groundwater Recharge

With proposed expansion of the landfill, project implementation would require extended water use onsite related to dust control for the extended life of the landfill, and the current source of onsite water, the borrow pit, would be deepened and widened as part of the project. The project would not require groundwater supplies in excess of current demands. The change in the acreage of impervious surfaces would be negligible. Therefore, this impact would be **less than significant**.

Water use at the RHR Landfill is limited to dust control for landfill operations and washing and restroom uses at the RHR Landfill office. Water for dust control is supplied by dewatering of the borrow pit, and water for RHR Landfill wash/restroom uses is supplied by non-potable well water. Project implementation would not result in a change in the volume of water use onsite, as no additional employees are proposed and the roadways are watered for dust control regardless of the intensity of operations as required by the Yolo-Solano Air Quality Management District. The RHR Landfill would continue to use water from borrow pit dewatering for dust control during project construction and during operations following project implementation. As existing disposal modules are completed, they would be seeded with groundcover and no longer require watering for dust control purposes, which is only required in active disposal areas. As new disposal modules are opened, they would use the water no longer needed for completed modules, thus resulting in no increase in daily water demand. Also, operational water demands are offset by the beneficial reuse of leachate and compost process water for dust control purposes. Additionally, no changes are proposed to the rate of well draw as there would be no changes to the number of RHR employees. Consequently, project implementation would not require groundwater supplies in excess of current demands.

Project implementation would not result in an increased daily demand for water; however, it would result in additional impervious surfaces (as a result of the proposed liner within the Triangle) that could limit groundwater recharge. Groundwater aquifers beneath the site are recharged by infiltration of precipitation and irrigation watering, subsurface flows from Ulatis and Alamo Creeks, and subsurface flow from the coastal hills to the west of the project site. Groundwater supplies within Solano County have been relatively stable since historical groundwater overdraft was corrected with construction of Monticello Dam in the late 1950s and subsequent delivery of surface water from the Solano Project (SCWA 2019). At least 16 acres and up to 24 acres of undeveloped land would be converted to impervious surfaces, which would be a small change in the context of regional groundwater recharge potential. Additionally, the project site and vicinity have been identified as having poor recharge capacity due to factors such as deep percolation, topography, chemical limitations, and soil surface condition (UC Davis 2018). This impact would be **less than significant**.

Mitigation Measures

No mitigation is required.

Impact 4.9-4: Changes to Drainage Patterns or Stormwater Runoff that Would Create Flooding or Exceed the Capacity of Existing or Planned Storm Drains

Project implementation would result in a negligible increase in impervious surfaces across the site. With implementation of the project, the RHR Landfill's existing surface water management system would be extended and expanded to include the landfill expansion area. As required by existing WDRs issued by the Central Valley RWQCB, the surface water management system would be designed to handle a minimum 100-year, 24 hour storm event such that any additional runoff generated onsite would be retained at the landfill property and no offsite flooding or potential capacity exceedances of existing or planned storm drains would occur. Therefore, this impact would be **less than significant**.

The volume and rate of stormwater runoff generated from an area is affected by development through conversion of vegetated or pervious surfaces to impervious surfaces and by the development of drainage systems that connect these impervious surfaces to streams or other water bodies. In this way, development can increase the rate of runoff and eliminate storage and infiltration that would naturally occur along drainage paths. As water runs off the land surface, it collects and carries materials and sediment, which can be potentially harmful to downstream receiving waters. Additionally, runoff from impervious surfaces can become concentrated, overwhelming existing storm drain systems, causing erosion and increasing sediment transport, downstream deposition, and flooding in lower watershed areas.

Project implementation would include conversion of at least 16 acres of pervious surfaces to impervious surfaces. As discussed in Impact 4.9-2, landfill expansion would require installation of a composite liner system to collect and remove leachate from the landfill to prevent pollutant discharge to groundwater. While this conversion could result in

changes to drainage patterns or stormwater runoff, the RHR Landfill's existing surface water management system is designed to handle a minimum 100-year, 24-hour storm event and would be expanded to include the Triangle in a manner consistent with the applicable WDRs. The existing drainage ditch within the project site would be filled, and a new ditch would be constructed along the southern boundary of the Triangle, where it would connect to the landfill's existing perimeter ditches to both the east and west. Stormwater is collected on the disposal modules in drainage ditches, diversion berms and down drains where it is then conveyed away from exposed refuse and into two interior drainage channels that drain the northern and southern portions of the site. During the rainy season, Recology is required to inspect the drainage controls to verify that they are properly working. Areas of ponding identified within the landfill will be regraded to provide positive drainage as soon as weather conditions permit. As required in WDR R5-2016-0056, MRP Section A.7.b, the site inspects the precipitation, diversion, and drainage facilities within 7 days following major storm events. The additional impervious surfaces of the project would not reduce the capacity of the existing surface water management system. This impact would be **less than significant**.

Mitigation Measures

No mitigation is required.

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