3.10 HYDROLOGY AND WATER QUALITY

This section describes the baseline conditions relating to surface water and groundwater hydrology and water quality for the Yolo County Central Landfill (YCCL) as well as the applicable water resources related federal, State, and local laws, ordinances, and regulations relevant to the Project. The physical setting and baseline conditions provide the basis for the analysis of surface water and groundwater hydrology and water quality impacts, which includes consideration of whether the Project would violate water quality standards or waste discharge requirements, alter existing drainage patterns of the site or area, contribute to or create polluted runoff, degrade surface and groundwater quality, or increase flood risks on- and off-site.

3.10.1 SETTING

Regional Setting

The Project site is located on the valley floor near the southern end of the Sacramento Valley. The Project site and the region slope slightly from west to east, toward the Sacramento River. The Sacramento Valley, which forms the northern half of California's Central Valley, is bounded by the Sierra Nevada to the east and, in the Project vicinity, the Dunnigan Hills, English Hills, and Coast Ranges to the west. The Project site is located in the Lower Sacramento River watershed, and in the Lower Putah Creek Hydrologic Area of the Putah-Cache Hydrologic Unit in the Sacramento Hydrologic Basin Planning Area (U.S. EPA, 2021). The Lower Putah Creek Hydrologic Area is approximately 225,301 acres and is bound by Putah Creek to the south and Cache Creek to the north. Water resources in this region include rivers, streams, sloughs, marshes, wetlands, channels, harbors, and underground aquifers. The topography in the vicinity of the Project is generally flat and is drained by the Sacramento River and the Yolo Bypass.

Climate

The region is characterized by hot, dry summer days, occasionally tempered by westerly breezes from the Sacramento-San Joaquin Delta, and somewhat cooler nights, and moderately cool and moist winters. Summers can be hot at times with weekly periods of 100-degree Fahrenheit temperatures, greatly increasing irrigation requirements in the area as well as evaporation rates. The Project site receives an average of 19.76 inches of precipitation per year. About 96 percent of annual precipitation occurs between the months of October and April. The 100-year wet season precipitation for the facility is 31.1 inches and the 100–year, 24-hour precipitation event is 5.1 inches (RWQCB, 2016; Yolo County, 2018).

Surface Water Hydrology

The Project site is located within the Tule Canal-Toe Drain watershed within the Lower Putah Creek Hydrologic Area. The Dry Slough and the Willow Slough watersheds are located to the west and north of the Project site and contribute flows to the Willow Slough Bypass channel. The Putah Creek-South Fork Putah Creek watershed is located to the south of the Tule Canal-Toe Drain watershed.

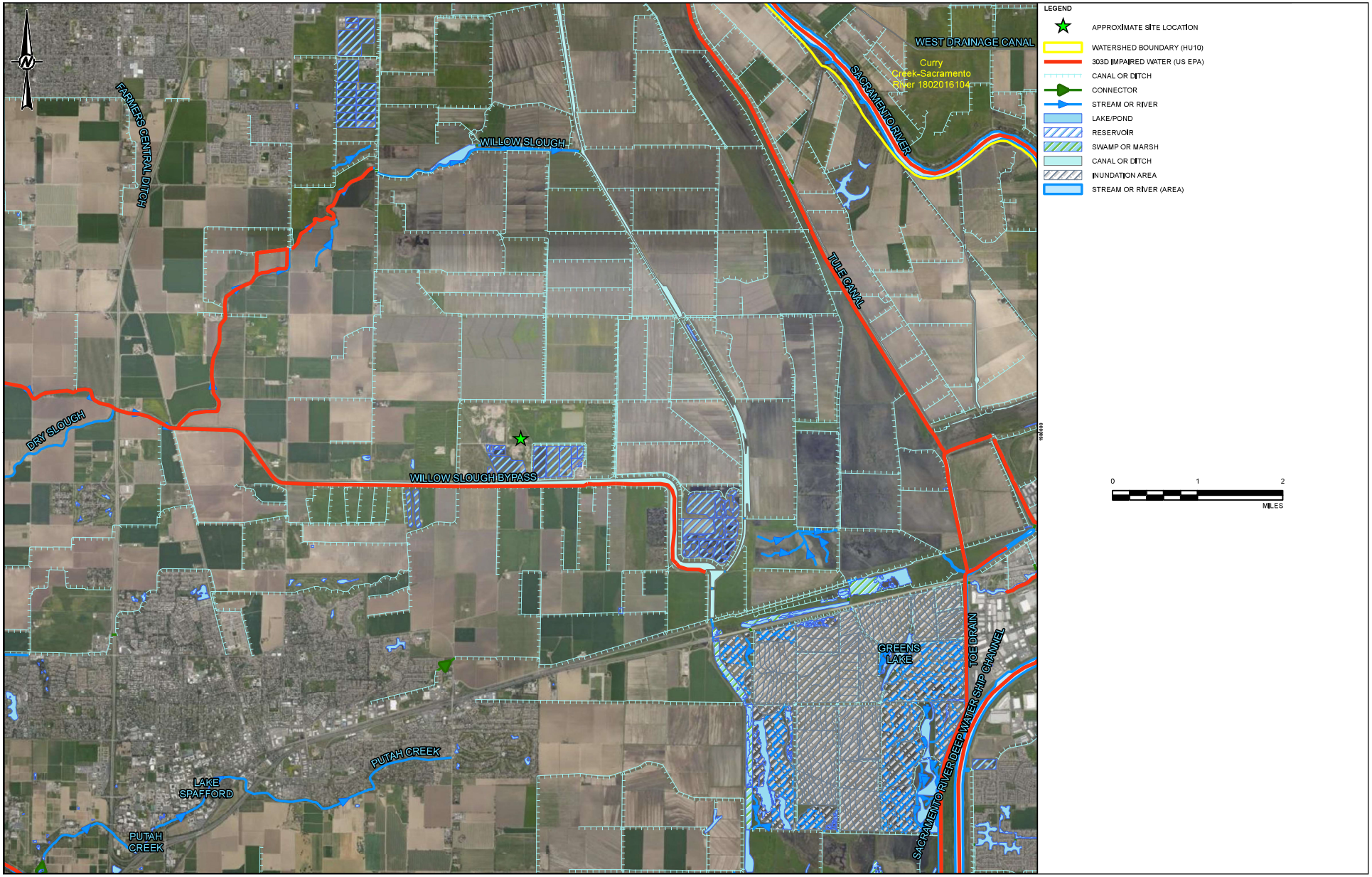
Major surface waters relevant to the Project site include Willow Slough Bypass on the southern property boundary, Willow Slough about two miles to the north, Putah Creek approximately four miles to the south, Cache Creek approximately six miles to the north, and the Yolo Bypass (an overflow conveyance of the Sacramento River) three miles to the east (**Figure 3.10-1**) (RWQCB, 2016). Willow Slough Bypass drains the southern portion of the Project site and an unnamed canal drains the northern part of the Project site (RWQCB, 2016). The Willow Slough Bypass and the unnamed canal empty into the Yolo Bypass to the east. These tributaries flow to the Sacramento River, which is located approximately six miles east of the Project site and drains to the Sacramento San Joaquin Delta. Willow Slough Bypass is a leveed channel that drains approximately 200 square miles and receives flows from Willow, Cottonwood, Chickahominy, and Dry Sloughs south of Cache Creek. Areas of heavy irrigation and/or seasonal ponding of water in the immediate area of the site are the irrigated rice and alfalfa fields to the north, and the holding ponds of the City of Davis Wastewater Treatment Plant (WWTP) to the east and southeast (Yolo County, 2018). Seasonal wetlands within large depressions as well as linear topographic depressions are located on adjacent lands as a result of topsoil scraping for borrow soil (see Section 3.4, Biological Resources for detailed discussion).

Land use within one mile of the landfill is predominantly agricultural (Yolo County, 2018). Adjacent land uses include the City of Davis WWTP and associated ponds immediately south and east, Willow Slough Bypass Channel and County Road 28H along the southern boundary of the Project site west of the WWTP,[1] the City of Davis overland flow treatment fields to the east, and croplands to the north. The property immediately west of the YCCL and on the opposite side of County Road 104 was purchased by the County in 2014 for use as a soil borrow site for YCCL (Yolo County, 2018).

Site Drainage

The 725-acre YCCL is generally flat with a natural grade of approximately one foot of fall from north to south and six feet of fall from west to east (RWQCB, 2016). The natural elevation of the site is approximately 21 to 25 feet above mean sea level (MSL) (Yolo County, 2018). Run-on from adjacent property on the north is prevented by an agricultural ditch along the northern site perimeter. Run-on from the west is prevented by a roadside ditch along County Road 104. No run-on occurs from the east because the surrounding topography results in an overall drainage pattern from west to east. There is some run-on from County Road 28H along the southern landfill boundary. Drainage ditches also exist along the eastern landfill boundaries adjacent to the City of Davis WWTP (Yolo County, 2018). Additionally, the In-Vessel Digester and Food De-Packaging area is bermed to reduce run-on from adjacent areas.

[1] Willow Slough Bypass Channel and County Road 28H are actually within the boundary of the YCCL site west of the WTP but could be considered "adjacent uses" relative to the active landfill site.



Source: Golder, 2020

Figure 3.10-1
Water Resources Map

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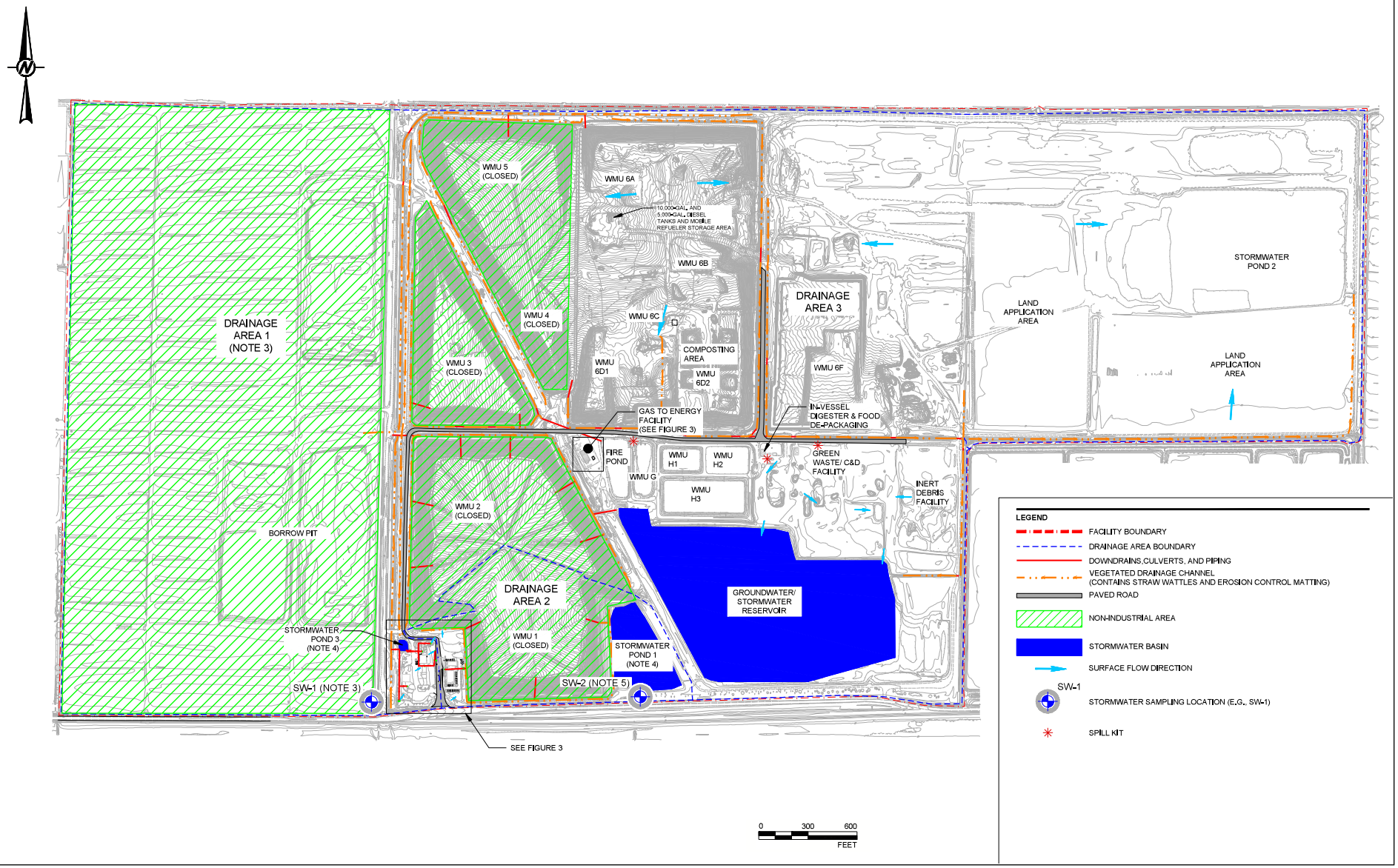
As an active industrial site, stormwater is managed via the site's stormwater control system and stormwater collected and retained on site is managed and re-used such that it is not discharged off-site, although off-site discharge can occur, as described below. Rainfall that has not contacted waste (i.e., has only been in contact with an unfilled or covered section of a WMU or module, or that falls on other areas of the Project site) is managed as stormwater. There are no connections from drains of industrial process water or domestic wastewater to the stormwater conveyance system present at the facility and based on historical inspections and observations, no unauthorized non-stormwater discharges are present at the facility (Golder, 2021). Rainfall that has been in contact with refuse is managed as leachate. YCCL has four Class II surface impoundments for managing leachate and Class II liquid wastes, as discussed under "Leachate Management," below.

Stormwater runoff control and surface water drainage facilities at the Project site include drainage ditches, culverts, down-drain pipes and perimeter ditches at all waste management units (WMUs). Drainage ditches with flow velocities of 5 feet per second (fps) or less are lined with grass or erosion control matting. Drainage ditches with greater than 5-fps flow velocities are lined with concrete or equivalent protective material for protection against erosion. Pipe down-drains on landfill side slopes are provided to convey flow to perimeter drainage facilities. Cross-drains on landfill benches and access roads are constructed of metal, plastic or concrete pipe with minimum pipe cover for vehicular traffic (Yolo County, 2018). The stormwater control system is sized to accommodate the 100-year, 24-hour storm event (Golder, 2021). Three drainage ditches occur in the area proposed for the stormwater treatment system (**Figure 3.10-2**). Two of the ditches run parallel east to west and converge with an additional ditch orientated north to south. These artificial ditches are used for the YCCL's existing water treatment operations.

Stormwater runoff at YCCL generally flows from one of three drainage areas towards the perimeter drainage channels around each WMU and then into one of three stormwater ponds or to the 49-acre groundwater/stormwater reservoir (**Figure 3.10-2**) (Yolo County, 2018). Drainage area 1 includes the borrow pit and the surrounding area to the west and north of the borrow pit. If the borrow pit were to overflow (i.e., exceed retention capacity), stormwater would be discharged via the pump station to Willow Slough Bypass at an existing stormwater outfall (labeled SW-1 on **Figure 3.10-2**). Drainage area 2 includes the western and central areas of the facility and runoff is generally conveyed to vegetated drainage channels around the perimeter of the landfill modules and then to Stormwater Pond 1 and Stormwater Pond 3. Stormwater Pond 1 and Stormwater Pond 3 are typically managed such that when these ponds are full, stormwater is pumped to the groundwater/stormwater reservoir (Golder, 2021). However, if there is insufficient storage capacity in the groundwater/stormwater reservoir, Stormwater Pond 1 can discharge by gravity flow directly to Willow Slough Bypass via a gate valve connected to a 24-inch concrete culvert outlet located at the southern margin of the pond (labeled SW-2 on **Figure 3.10-2**). The gate valve is kept closed during normal operation. Drainage area 3, comprising the eastern portion of the facility, generally sheet flows east to Stormwater Pond 2 on the northeast corner of the facility. If Stormwater Pond 2 were to fill completely, it would backflow through the stormwater drainage channels to the groundwater/stormwater reservoir.



Source: Golder, 2020

Figure 3.10-2
SWPPP Overview Site Map

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Under Waste Discharge Requirement (WDR) Order No. 98-197, treated groundwater was formerly discharged to an off-site agricultural ditch, which flows into the Yolo Bypass. This WDR also served as the National Pollutant Discharge Elimination System (NPDES) permit number CA0083119, which allowed the discharge of the effluent to the off-site ditch.

As of November 30, 2001, discharge to the ditch was discontinued in order to comply with the Cease and Desist Order (CDO) No. 98-198, which required the effluent to be treated for boron and selenium prior to off-site discharge. On June 7, 2002, the RWQCB rescinded the CDO No. 98-198 (and the WDR Order No. 98-197/NPDES Permit) for the air stripper treatment system (AST) since effluent will no longer be discharged to off-site waters. The effluent is instead now managed on site by the groundwater disposal system (GDS) under WDR R5-2002-078. Phytoremediation is used to reduce the boron and selenium levels from the AST effluent. The *Report of Waste Discharge, Groundwater Disposal System* (Geomatrix, September 2001) provides details for the GDS design. In summary, the GDS is made up of a water storage reservoir (reservoir) and a land application area (LAA). The treated AST effluent is piped to the reservoir or the water storage pond. The reservoir stores treated effluent from the air stripper during portions of the year where the quantity of collected groundwater exceeds the amount that can be used for on-site construction or for use in the LAA. Water from the reservoir is piped to the LAA, which consists of two parcels of land (approximately 45 acres each). The LAA is used for phytoremediation of the treated effluent from the AST. A known boron and selenium accumulator plant species is planted in one parcel while the other parcel remains fallow.

In October 2012, the YCCL's surface water drainage facilities were modified to eliminate stormwater discharge. A Notice of Termination under the General Industrial Storm Water Permit was filed with the California Regional Water Quality Control Board (RWQCB), effective November 1, 2012, and a Notice of Non-Applicability was filed related to the updated General Industrial Storm Water NPDES Permit in July 2015 (Yolo County, 2018). Due to the modifications to the drainage system, the groundwater/stormwater reservoir does not discharge offsite; the facility is permitted to discharge to land under WDR R5-2002-078 (see Regulatory Setting, below). Additionally, the facility uses groundwater extraction system water on-site for dust control on access roads. Dust control water is not sprayed during wet weather and has not observed any runoff to stormwater drainage channels.

Surface Water Quality

The quality of surface water is primarily a function of land uses in the Project area. Local land uses influence the quality of surface waters through point source discharges (i.e., discrete discharges from discharge pipes) and nonpoint source discharges (e.g., direct storm runoff from slopes). Surface water runoff is generated by precipitation that cannot be absorbed into the ground in the period following a storm. Pollutants and sediments are transported in watersheds by stormwater runoff that reaches streams, rivers, and storm drains. As described above, stormwater runoff from the landfill slopes and drainage ditches is conveyed into the landfill stormwater control system and ultimately into the groundwater/stormwater reservoir, following which it is discharged to land consistent with the landfill's WDRs. The amount of surface water runoff is a factor of precipitation, ground saturation, and available permeable or pervious ground surfaces. Permeability is a measure of how quickly water can penetrate a surface area.

Section 303(d) of the Clean Water Act (see Regulatory Setting) requires states, territories and authorized tribes to develop lists of impaired waters – waters that do not meet water quality standards even after point sources of pollution have been outfitted with the minimum required levels of pollution control technology. There are seventeen 303(d) impaired waterbodies in the Lower Putah Creek Hydrologic Area, including major rivers, creeks, and tributaries. Two of the impairments are located along Cache Creek, two are located along Putah Creek, three are located along the Sacramento River, and ten are located along the Delta Waterways. These water bodies are impaired by a variety of contaminants including mercury, chlorpyrifos, DDT, diazinon, total dissolved solids, exotic species, Group A pesticides, and unknown toxicities. Such constituents originate from a variety of sources, but generally include agricultural activities, resource extraction, urban runoff/storm sewers, and unknown sources (City of Davis, 2016).

Willow Slough Bypass is the most relevant surface water to the Project site as, although stormwater is typically retained onsite, in the event that a discharge occurs (such as that proposed under the Project), the discharge would flow to Willow Slough Bypass. Willow Slough Bypass is listed as an impaired water body (**Figure 3.10-1**) for boron, E. Coli, and fecal coliform (SWRCB, 2010). Both surface water and groundwater in Yolo County have relatively high concentrations of boron (Yolo County, 2009). As a result, the water is not considered optimal for irrigation, and water softening is considered desirable for domestic purposes.

The law requires jurisdictions to establish priority rankings for 303(d) listed waters and develop action plans, known as Total Maximum Daily Loads (TMDLs), to improve water quality. The TMDL is a tool that establishes the allowable loadings or other quantifiable parameters for a waterbody and thereby the basis for the States to establish water quality-based controls. The purpose of TMDLs is to ensure that beneficial uses are restored and that water quality objectives are achieved. The Central Valley Regional Water Quality Control Board (RWQCB) has assigned high priority to developing TMDLs to address the diazinon impairment, medium priority for mercury, and low priority to developing TMDLs for the unknown toxicity, for the Sacramento River (RWQCB, 2010). The TMDL for diazinon was adopted in 2003 and the *Water Quality Control Plan for the Sacramento River and San Joaquin River Basins* (Basin Plan, discussed in Regulatory Setting, below) was amended to incorporate the TMDL (RWQCB, 2018). Because the Project site does not directly discharge into any of the regionally identified 303(d) listed impaired waterbodies (Golder, 2021) the TMDLs do not apply to the Project site. Additionally, diazinon is a pesticide used in agricultural operations and is not used at the YCCL site and the TMDL for diazinon does not affect operations at the Project site.

Beneficial Uses

The Basin Plan designates beneficial uses, establishes water quality objectives, and contains implementation plans and policies for all waters within the jurisdictional area covered by the Basin Plan. The Basin Plan does not specifically identify beneficial uses for the Willow Slough Bypass. However, the Yolo Bypass has beneficial uses identified (RWQCB, 2018). The Willow Sough Bypass is part of the Yolo Bypass flood protection structure, and therefore, the beneficial uses for the Yolo Bypass listed in the Basin Plan apply to the Willow Slough Bypass. The designated beneficial uses for the Yolo Bypass are agricultural supply, including irrigation and stock watering (AGR); water contact recreation (REC-1); non-contact water recreation (REC-2); warm freshwater

habitat (WARM); migration of aquatic organisms, warm and cold (MIGR); spawning, reproduction, and/or early development, warm (SPWN); and wildlife habitat (WILD). Yolo Bypass is also designated as having a potential beneficial use for cold freshwater habitat (COLD).

Water Quality Monitoring and Reporting

Current operation of the YCCL is governed by WDR Order No. R5-2016-0094, issued by the RWQCB, on December 14, 2016, and by CDO No. R5-2011-0076. The CDO is primarily related to updating the filling and closure schedule for the existing unlined waste management units. All activities and requirements related to the CDO have been completed and the CDO will be officially rescinded following RWQCB review. Additionally, a GDS is operated at the YCCL under WDR Order No. R5-2002-0078 issued on May 3, 2002 by the RWQCB.

Consistent with the landfill's WDR Order No. R5-2016-0094 (RWQCB, 2016), a Monitoring and Reporting Program (MRP; Order No. R5-2016-0094) is ongoing which requires quarterly groundwater level measurements and semi-annual sampling and analysis of groundwater, the unsaturated zone, leak detection sumps, and leachate (RWQCB, 2007). Semi-annually, the County prepares and submits to the RWQCB and Local Enforcement Agency (LEA) a water quality monitoring report for the YCCL and GDS to comply with WDRs and California Code of Regulations (CCR) Title 27 regulations. The monitoring reports are required to either state that no water quality compliance violations occurred during the reporting period or to identify any violations found since the last report was submitted, and if the violations were corrected as well as a description of the actions taken or planned for correcting those violations.

The landfill MRP specifies Water Quality Protection Standards (WQPS) for all water quality parameters and constituents monitored, including a list of specific Constituents of Concern (COCs) required under Title 27. If a WQPS is exceeded (i.e., a release is discovered), the impacted monitoring point becomes subject to corrective action implementation and reporting. Surface water monitoring is conducted from each drainage area at all discharge locations[2] from two Qualifying Storm Events[3] (QSEs) occurring within the first half of the reporting year (July 1 through December 31) and two QSEs occurring within the second half of the reporting year (January 1 through June 30). As described above, surface water at YCCL drains to one of three stormwater ponds, or the water storage reservoir. There is no off-site discharge of surface water. There has been no evidence of release from the WMU to surface water since the current WDRs were approved and based on reporting under the MRP, YCCL has been in compliance with the provisions and prohibitions of WDRs for the prior reporting period.

Flooding

The 100-Year floodplain denotes an area that has a one percent chance of being inundated during any 12-month period. Floodplain zones (Special Flood Hazard Areas [SFHA]) are determined by the Federal Emergency Management Agency (FEMA) and used to create Flood Insurance Rate

[2] Exceptions include: (1) when the facility qualifies for Representative Sampling Reduction, and (2) when stormwater is stored or contained.

[3] The General Permit describes a QSE as when stormwater discharge occurs from at least one drainage area when the discharge is preceded by at least 48 hours with no discharges from any of the drainage areas.

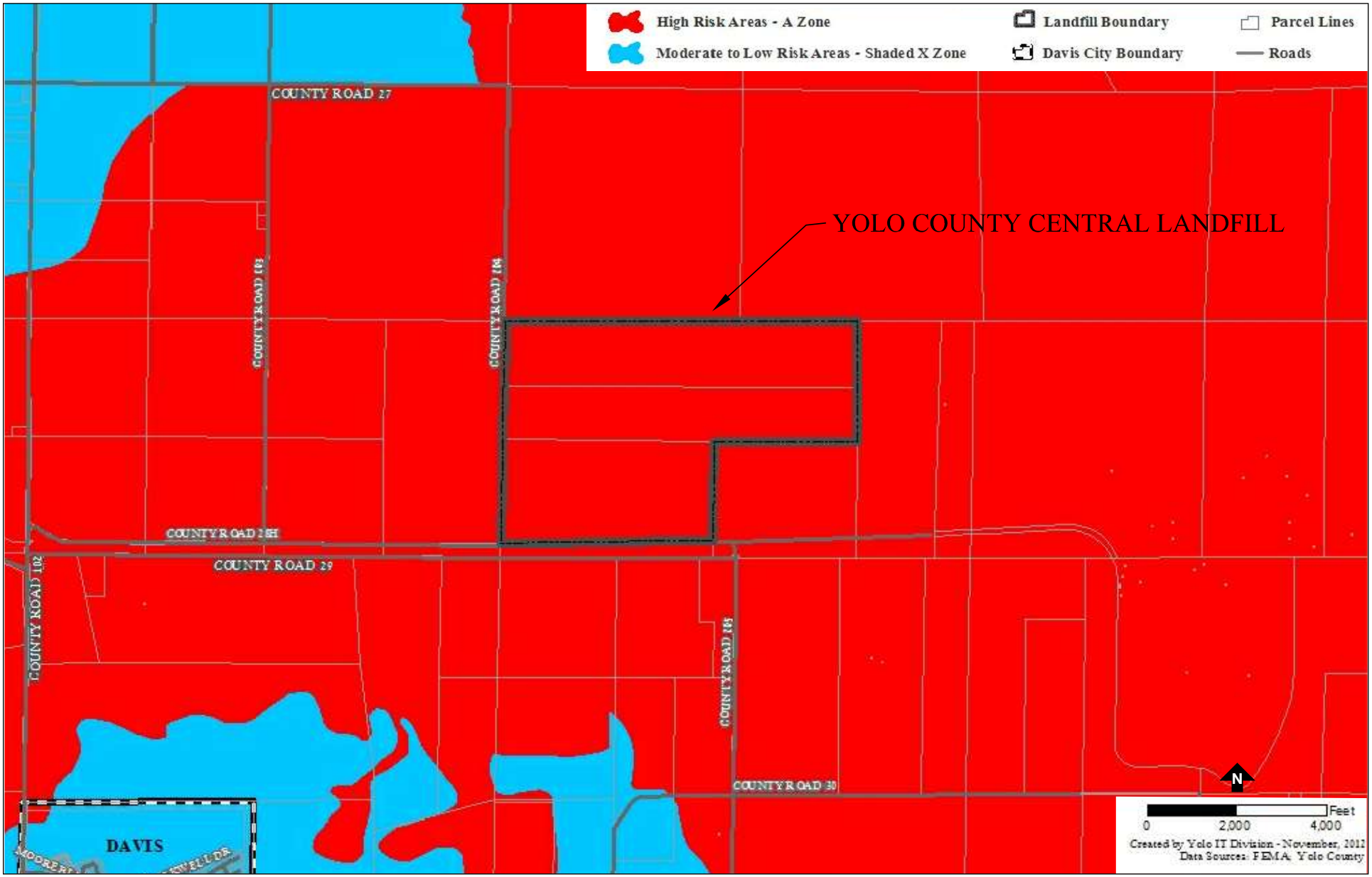
Maps (FIRMs). These tools assist communities in mitigating flood hazards through land use planning. FEMA also outlines specific regulations, intended to be adopted by the local jurisdictions, for any construction, whether residential, commercial, or industrial within 100-year floodplains.

On the latest FIRM for the Project site (FEMA, 2010), the Project site is identified in the 100-year flood zone (Zone A) (**Figure 3.10-3**) as a result of the decertification of the Willow Slough Bypass levee. Willow Slough Bypass is a part of the Yolo Bypass flood protection structure within the Sacramento River Watershed. WDR Order R5-2016-0094 requires YCCL to determine the required height to protect the WMUs from flooding events with a 100-year return period and demonstrate that WMUs are designed, constructed, and operated to prevent inundation or washout from this flood event. In compliance with WDRs, each WMU is protected from inundation by flood waters by perimeter soil levees around each cell at 33 feet MSL (Yolo County, 2018).

Leachate Management

YCCL generates approximately 6 million gallons of leachate per year which is collected and conveyed via the leachate collection and removal system (LCRS) to YCCL's Class II surface impoundments (Yolo County, 2004). The leachate and condensate collected in these ponds is disposed of through evaporation, as supplemental liquid injected into the bioreactors, or to the City of Davis WWTP, under an industrial discharge permit (YCCL, 2018). WMUs 1 through 4, which were constructed prior to adoption of current Subtitle D liner requirements, are underlain by native clay and were constructed on compacted subgrade that is graded to promote leachate runoff to a perimeter collection trench. From the perimeter trench the leachate is conveyed by a trunk line to Pump Station No. 1. WMU 5 is constructed on a two-foot compacted clay liner and has a dendritic LCRS consisting of lateral trenches containing gravel and perforated pipe that drain via longitudinal trenches and a trunk line to Pump Station No. 1. WMU 6 is comprised of multiple sub-modules that drain via longitudinal trenches to a perimeter trunk line and is conveyed to Pump Station No. 2 or Pump Station No. 4 (depending on the sub-module). Additionally, excess leachate from the Compost Facility is directed to Pump Station No. 3. The pump stations direct the leachate to YCCL's Class II surface impoundment. In addition to leachate collected in the landfill's LCRS, the Class II surface impoundments also receive gas condensate from the landfill gas (LFG) system, cooling water from the on-site LFG power plant, and any contact water (e.g., surface runoff that has contacted refuse at the working face) as well as non-hazardous liquid waste from the facility's trucked waste program.

The Class II surface impoundments consist of WMU G, which has a capacity of 1.5 million gallons, and WMU H, which is made up by two ponds, WMU H1 (3,418,000-gallon capacity) and WMU H3 (10,666,000-gallon capacity). WMU H1 and WMU H3 are hydraulically connected by overflow weirs and piping to form a single WMU. The largest of the WMU H ponds, WMU H3, is equipped with spray and drip facilities to enhance evaporation. Surface impoundments are used to store landfill leachate during the wet season and evaporate it during the dry season. The discharge of leachate or any other solid or liquid wastes to surface water drainage courses or groundwater is prohibited (Yolo County, 2004).



Source: Yolo County Community Services Department, 2018

Figure 3.10-3
FEMA Flood Zone Map

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The County assesses the leachate monitoring and control facilities weekly when meter readings for the leachate sumps and pump stations are taken. Monitoring indicates that no problems with the facilities were noted during the year and the minimum freeboard of two feet was continuously maintained.

Groundwater

Regional Hydrogeology

YCCL is in the Yolo Subbasin (subbasin) southwest of the Sacramento Valley Groundwater Basin. The subbasin is contained within Yolo County, 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. The basin is gently sloping from west to east with elevations ranging from approximately 400 feet at the base of the Coast Range to the west to nearly sea level in the eastern areas. In Yolo County, groundwater flow is generally southeasterly towards the Sacramento Valley axis (Yolo County, 2018).

The primary water-bearing formations comprising the subbasin are Pliocene aged [3 to 11 million years ago (mya)] to Holocene aged (0.01 to 3 mya) continental sedimentary deposits. Fresh water-bearing units include younger alluvium, older alluvium, and the Tehama Formation. The cumulative thickness of these units ranges from a few hundred feet near the Coast Range on the west to nearly 3,000 feet near the eastern margin of the basin. Younger alluvium includes flood basin deposits and recent stream channel deposits. The quality of groundwater produced from the basin deposits is often poor. The younger alluvium is permeable, and where saturated, yields significant quantities of water to wells. Older alluvium consists of silt, sand, and gravel deposited in alluvial fans during the Pliocene and Pleistocene. Permeability of the older alluvium is highly variable. Well yields range from 50 gallons per minute (gpm) in wells completed in the fine-grained units of the older alluvium to 4,000 gpm in wells completed in the ancestral Sacramento River stream channel deposits. The Tehama Formation ranges in thickness from 1,500 to 2,500 feet and consists of moderately compacted silt, clay, and lenses of sand and gravel, silt and gravel, and cemented conglomerate. Permeability of the Tehama Formation is variable, however, wells completed in the unit can yield up to several thousand gallons per minute (DWR, 2004).

Groundwater Conditions at the YCCL

The groundwater table beneath the YCCL is naturally high, typically fluctuating between 4 to 10 feet below ground surface (bgs) during winter and spring months and 5 to 15 feet bgs during summer and fall months depending on winter weather patterns (Yolo County, 2018). Seasonal crop irrigation, spray disposal, and wastewater reclamation activities at the YCCL and adjacent lands also contribute to the elevated water table. The natural gradient of the shallow groundwater is to the south and southeast but is reversed under the YCCL site extraction well pumping. A capillary rise of 3 feet above the water table has been reported and led to the requirement of an Engineering Alternative (EA) consisting of a capillary fringe break component (40-mil geomembrane liner) in recently completed and future WMUs to mitigate any capillary rise (Yolo County, 2018).

In January of 1989, the YCCL constructed a soil/bentonite slurry cutoff wall to retard the flow of groundwater flow onto the landfill site from the area to the north. The cutoff wall was constructed along portions of the northern and western boundaries of the site to a maximum depth of 44 feet and has a total length of approximately 3,680 feet, 2,880 feet along the north side, and 800 feet along the west. Sixteen groundwater extraction wells were installed south of the cutoff wall to lower the water table south and east of the slurry wall. The purpose was to depress the water table sufficiently to provide the required vertical separation between the top of the water table and base of the waste in WMU 5. Prior to placement of the slurry wall and dewatering system, the groundwater flow direction beneath the YCCL mimicked the regional southeast gradient. Under current dewatering conditions, the groundwater flow paths tend toward the extraction wells. A difference in hydraulic head has been observed on either side of the cutoff wall since groundwater extraction began (Yolo County, 2018).

Extracted groundwater, as well as stormwater, is routed to the 49-acre groundwater/stormwater reservoir with an estimated storage capacity of approximately 77 million gallons. The retained water is used to cultivate a rotating 45-acre Fawn Tall Fescue field at a rate of approximately 30 million gallons per year.

5-Foot Groundwater Separation: Investigative and Regulatory Background

YCCL is regulated under WDR Order R5-2016-0094, which requires it to maintain a 5-foot separation between the shallow groundwater surface and the bottom of the waste unit pursuant to RWQCB Title 27 of the CCR, Section 20240(c). WMUs 1 through 5 are municipal solid waste (MSW) units that were constructed prior to the requirements for a composite impermeable liner and thus, are required by the WDRs to maintain a 5-foot separation from groundwater.

On November 30, 2018, the RWQCB issued YCCL a NOV based on the First Semester 2018 Monitoring Report, which showed groundwater separation under WMUs 1 through 3 did not comply with the 5-foot separation. The RWQCB stated that groundwater separation was not maintained by the groundwater extraction system and groundwater was less than 5 feet from the bottom of WMUs 1 through 5. The RWQCB stated that separation must be maintained throughout the year beneath all the units (RWQCB, 2018a). On January 11, 2019, as required by the RWQCB, the YCCL submitted a Corrective Action Plan (CAP), which included a work plan to address the expansion of the groundwater extraction and treatment system, including extraction wells capable of capturing onsite flow from the west and maintaining the required groundwater separation from waste (Yolo County, 2019).

In February 2019, YCCL submitted a work plan to the RWQCB, which proposed four tasks to evaluate various methods to increase control of groundwater elevations and increase separation between high water table and the waste. The four tasks outlined in the work plan included: 1) collecting groundwater elevation data from shallow and deep monitoring wells along the west and central portion of the site, 2) updating the groundwater model with the additional collected data, 3) evaluating the effectiveness of groundwater control methods, and 4) completing an engineering feasibility report (EFS) and cost estimate (Yolo County, 2019a).

In July 2019, YCCL submitted the EFS and cost estimate to the RWQCB, which evaluated the use of groundwater extraction wells and a slurry wall with 272 acres of land for disposal and extraction wells without the expansion of the slurry wall and 291 acres of land available for land disposal. YCCL concluded that, under either scenario, it was economically infeasible to implement additional measures to achieve the required 5-feet of groundwater separation. YCCL recommended development of an EA to Title 27 Section 20240(c) for the existing landfill WMUs. The EA included: 1) continued monitoring of groundwater conditions throughout the older WMUs, 2) maintaining water storage elevation in the reservoir below 16 feet msl, 3) maintaining the water storage elevation in the borrow site below 15 feet msl, 3) installing additional deep groundwater monitoring wells to further evaluate the vertical hydraulic conditions around the landfill and 4) evaluating the use of these operational measures to propose an alternative to the 5-foot separation requirement (Yolo County, 2019b).

In early August 2019, the RWQCB responded to the YCCL and concluded that the EFS report did not include an implementation strategy to comply with the groundwater separation requirement in the WDRs, and thus, the YCCL remained out of compliance with the WDRs. RWQCB staff, YCCL personnel, and their consultants met with to discuss the findings of the EFS report and to determine a path forward to compliance. The RWQCB informed the YCCL that while the RWQCB staff cannot change the requirements approved in the WDRs, RWQCB staff was willing to work with the YCCL toward achieving compliance (RWQCB, 2019c).

On August 27, 2019, YCCL provided the RWQCB a schedule of recommended actions to request the development of an alternative compliance option to Title 27 Section 20240(c) for the existing landfill WMUs with noncompliant 5-foot separations. The proposed actions for development of alternative options included 1) continued monitoring of groundwater conditions throughout the older WMUs, 2) installation of additional deep groundwater monitoring wells to further evaluate the vertical hydraulic conditions around the landfill, 3) evaluating the technical and economic issues to closing WMU 1, 2, and 3, 4) evaluating the use of operational measures to determine an enhanced strategy for achieving the separation requirement, 5) evaluating the availability of contiguous property for previously identified options, and 6) preparing an amended EFS on the various alternatives, including timelines to install and updating the site Joint Technical Document (JTD) with schedule to achieve separation (Yolo County, 2019c).

On October 2, 2019, the RWQCB staff and the YCCL met again to discuss how to achieve compliance and what actions could be taken by YCCL to move the toward compliance with the WDRs. As a result of the meetings, YCCL agreed to conduct certain actions that would further the understanding of the underlying hydrology, including installing new wells and conducting aquifer tests (Yolo County, 2019d).

On October 14, 2019, the YCCL submitted a work plan for installation of 3 deep zone groundwater monitoring wells, abandonment and replacement of one existing deep zone groundwater monitoring well, abandonment and replacement of one existing groundwater monitoring well, installation of two new groundwater monitoring wells, and abandonment of two groundwater wells (Yolo County, 2019d).

On November 4, 2019, the RWQCB responded that the actions YCCL proposed to address groundwater separation and detection monitoring appeared appropriate and concurred with the approach the YCCL had outlined. From November 2019 to June 2020, YCCL implemented the workplan and on June 30, 2020 submitted an investigation report, which described the field work, provided completed boring logs and included laboratory results (RWQCB, 2019a).

On November 15, 2019, YCCL submitted a work plan to update the EFS, which included additional investigation of groundwater conditions and to outline the investigation, evaluation, construction, and decision steps needed to maintain groundwater separation control in the older, closed waste management units (Yolo County, 2019e). The tasks of the workplan included: 1) longer term groundwater elevation monitoring of the deeper and shallower zones 2) updating the groundwater model, 3) aquifer testing to refine groundwater model information and 4) installing up to 10 additional groundwater extraction wells. In addition to the groundwater investigations, aquifer testing, and model update, YCCL also proposed several other items to investigate and evaluate groundwater separation control YCCL completed the tasks outlined in the November 15 workplan and submitted the investigation report to RWQCB on June 30, 2020 (Yolo County, 2020).

On August 31, 2020, YCCL submitted the updated EFS for groundwater separation control, which provided results of the groundwater monitoring and testing, updates to the groundwater modeling and water balance, (as described below) and presented the status of other updated activities related to groundwater separation issues (Yolo County, 2020a). The YCCL proposes to implement a phased approach to the groundwater extraction that is required maintain to the 5-foot separation between the water table and the bottom of the waste unit. Phase 1 of this plan would involve installing and operating 10 additional extraction wells at a rate of about 10 gpm and phasing in additional extraction wells over subsequent years. The elevated boron and selenium concentration in the water require that the extracted groundwater be stored onsite.

On September 24, 2020, the YCCL submitted a work plan for the installation of the first 10 extraction wells as proposed under the first phase (Yolo County, 2020b). As of March 2021, 6 of the ten wells have been completed and are currently extracting groundwater.

Updated YCCL Facility Groundwater Model

The YCCL facility groundwater model was updated and recalibrated in August 2020 to estimate the number of groundwater wells and pumping rates needed to achieve a 5-foot separation between the water table and WMU. The model results determined that a maximum of 39 groundwater extractions wells would be needed (one less than the number estimated in the 2019 EFS) and that the groundwater extraction rate would need to be about 530 gpm, rather than the previously calculated 700-gpm. Phase 1 would involve installing the first 10 extraction wells along the western perimeter of WMUs 1 and 2. The model projected that during wet years, the Phase 1 wells would operate primarily from January 1 through April 30 and to a lesser degree, during a run-up period in the fall. However, in average or below average rainfall years (i.e., less than 18-inches of rain), the model projected that groundwater levels would remain at or below 5-feet from the bottom of the WMU throughout the year, thereby achieving compliance with the

Order. Operating the 10 extraction wells under Phase 1 would extract an estimated 26 million gallons of additional groundwater each year (Yolo County, 2020a).

Updated YCCL Facility Water Balance

The updated YCCL facility water balance reflects the changes to proposed site operations and is based on the results of the updated groundwater model and revised extraction volumes.

The YCCL manages a 49-acre groundwater/stormwater reservoir located east of WMUs 1 and 2, which has an estimated storage capacity of approximately 77 million gallons. The landfill currently directs both stormwater run-off and groundwater to this reservoir. Water from the reservoir is then used to cultivate a rotating 45-acre Fawn Tall Fescue field with a rate of approximately 30 million gallons annually.

The updated water balance evaluated the facility's ability to manage extracted groundwater with operation of 10 Phase 1 extraction wells and also at build out, after the 39 wells were operational. The build-out scenario assumes that WMU 6E, 6F, 6G and 6H are developed and operational. The water balance considered the extremely wet year (100-year return period) and the average year. Available storage capacity was evaluated with and without stormwater management, which includes rerouting stormwater from the WMUs to the borrow pit instead of the water storage reservoir. The water balance evaluation concluded that after Phase 1 extraction is underway, the YCCL facility should have adequate storage capacity to maintain the additional extracted groundwater in years with average and below average rainfall (less than 17.6 inches of rain. Under wet year conditions (36.7 inches of rain) YCCL would be required to route a substantial portion to the borrow pit (Yolo County, 2020a).

Under full build-out conditions (39 operational extraction wells), the YCCL would not have adequate storage capacity to retain all the extracted groundwater water within the landfill using existing on-site storage infrastructure. As discussed further in Section 3.10.2, below, prior to implementation of latter phases of the groundwater extraction program, it would be necessary for YCCL to evaluate and identify alternate storage infrastructure or discharge strategies to contain pumped groundwater onsite. Potential options to manage and dispose of the combined volumes of stormwater and groundwater include selling water to neighbors for field irrigation, purchasing additional land for land application or storage basins, and/or developing evaporation technology (Yolo County, 2020a).

Groundwater Quality, Treatment and Disposal

Samples of extracted groundwater have been collected and analyzed as part of YCCL's regular water quality monitoring program since 1988. Groundwater pumped from the 16 existing extraction wells contains naturally-occurring boron and selenium and several volatile organic compounds (VOCs) have been detected during past sampling events. Groundwater quality degradation has not been observed in groundwater extracted from WMU 1 and 2, but low concentrations of VOCs have been detected in two interior wells near WMU 3 and WMU 5. For this reason, extracted groundwater (150,000 to 200,000 gallons per day) is treated through an air stripper treatment system (AST), which has been in place since 1993. The YCCL reports that

VOC or other constituents have not been observed in wells on the perimeter of the landfill. The existing extraction system keeps groundwater flow towards the extraction wells, and not off-site.

Post treatment, all extracted groundwater is stored on site in the existing on-site storage pond. Under the former permit, (WDR Order No. 98-197) the treated groundwater from the AST was discharged to either the on-site water storage pond or an off-site agricultural ditch, which flows into the Yolo Bypass. However, as of November 30, 2001, discharge to the ditch was discontinued to comply with the CDO No. 98-198, which required the effluent to be treated to identify releases from the WMU. YCCL has used variable WQPS for monitoring for releases from the WMUs.

Regulatory Setting

The existing YCCL and the proposed Project are subject to numerous regulations regarding landfill siting, design, operation, groundwater and surface water quality monitoring, corrective action, and closure and post-closure requirements. Regulations specifically related to water resources include California Water Code Section 13273; CCR Title 27, Chapter 3, Criteria for All Waste Management Units, evident Facilities, and Disposal Sites; 40 Code of Federal Regulations (CFR) parts 257 and 258 (also known as Subtitle D of the Resource Conservation and Recovery Act [RCRA]); and the NPDES, authorized by the Clean Water Act and federally administered by the U.S. EPA. MSW landfills also are subject to state and federal regulations contained in SWRCB Resolution No. 93-62. Key regulations related to water resources and relevant to the Project are described in more detail below.

The EPA also administers the Project XL program, which gives a limited number of regulated entities the opportunity to develop their own pilot projects and alternative strategies to achieve environmental performance that is superior to what would be achieved through reasonable compliance with current and reasonably anticipated future regulations. The County established bioreactor operation in WMUs 6D2 through 7P under the recently adopted Research, Development, and Demonstration (RD&D) regulations (40CFR258.4) and subsequent incorporation by the State under SWRCB Resolution No. 93-62, as Amended on July 21, 2005 and inclusion in 27 CCR Sections 20070 and 21595 on September 29, 2005. The U.S. EPA approved California to issue RD&D permits on October 19, 2007.

Federal Regulations

Clean Water Act

Under the Clean Water Act (CWA) of 1977, the U.S. EPA seeks to restore and maintain the chemical, physical, and biological integrity of the nation's waters. The statute employs a variety of regulatory and non-regulatory tools to reduce direct pollutant discharges into waterways, finance municipal wastewater treatment facilities, and manage polluted runoff. The CWA authorizes the U.S. EPA to implement water quality regulations. The relevant sections of the CWA are summarized below.

CWA Section 303: Water Quality Standards and Implementation Plans

Section 303 of the CWA requires states to designate beneficial uses for water bodies or segments of water bodies and to establish water quality standards to protect those uses for all waters of the U.S. under Section 303(d) of the CWA, states, territories, and authorized tribes are required to develop lists of impaired waters. Impaired waters are waters that do not meet water quality standards established by the state, even after point sources of pollution have been equipped with the minimum required levels of pollution control technology. The law requires that these jurisdictions establish a priority ranking for listed waters and develop action plans to improve water quality. Inclusion of a water body on the Section 303(d) List of Impaired Water Bodies triggers development of a TMDL for that water body and a plan to control the associated pollutant/stressor on the list. The TMDL is the maximum amount of a pollutant/stressor that a waterbody can assimilate and still meet the water quality standards. Typically, a TMDL is the sum of the allowable loads of a single pollutant from all contributing point and nonpoint sources. In accordance with Section 303(d), the RWQCB has identified impaired water bodies within its jurisdiction, and the pollutant or stressor responsible for impairing the water quality. Detailed discussion of impaired water bodies relevant to the Project, including the pollutants that cause the impairments, and the potential sources of the pollutants are discussed under "Surface Water Quality", above.

CWA Section 401: Water Quality Certification

Section 401 of the CWA (33 U.S.C. §1341) requires any applicant for a federal license or permit to conduct any activity that may result in a discharge of a pollutant into navigable waters to obtain a certification from the State in which the discharge originates. The certification ensures that the discharge will comply with the applicable effluent limitations and water quality standards. The RWQCB is responsible for implementing section 401 of the CWA in California.

CWA Section 402: National Pollutant Discharge Elimination System

The NPDES permit program under section 402 of the CWA is one of the primary mechanisms for controlling water pollution through the regulation of sources that discharge pollutants into waters of the United States. The U.S. EPA has delegated authority of issuing NPDES permits in California to the SWRCB, which has nine regional boards. The Central Valley RWQCB regulates water quality in the Project area. The NPDES permit program is discussed in detail under State Regulations, below.

Section 404: Permits for Fill Placement in Waters of The United States (Including Wetlands)

Waters of the United States (including wetlands) are protected under Section 404 of the CWA. Any activity that involves a discharge of dredged or fill material into waters of the United States, including wetlands, is subject to regulation by the U.S. Army Corps of Engineers (USACE) (see Section 3.4, Biological Resources, for additional details).

California Toxics Rule, 40 CFR 131.38

On May 18, 2000, the U.S. EPA promulgated numeric water quality criteria for priority toxic pollutants and other provisions for water quality standards to be applied to waters within California. U.S. EPA promulgated this rule based on the Administrator's determination that the

numeric criteria are necessary in California to protect human health and the environment. The rule fills a gap in California water quality standards that was created in 1994 when a state court overturned the state's water quality control plans containing water quality criteria for priority toxic pollutants. Thus, the state of California has been without numeric water quality criteria for many priority toxic pollutants as required by the CWA, necessitating this action by U.S. EPA. These federal criteria are legally applicable in the state of California for inland surface waters, enclosed bays, and estuaries for all purposes and programs under the CWA. The U.S. EPA and the SWRCB have the authority to enforce these standards, which are incorporated into the NPDES permits that regulate existing discharges in the project area.

State Regulations

Porter-Cologne Water Quality Control Act

The Porter-Cologne Water Quality Control Act (Division 7 of the California Water Code) provides the basis for water quality regulation within California. This Act establishes the authority of the SWRCB and the nine RWQCBs. The SWRCB administers water rights, sets State policy for water pollution control, and implements various water quality functions throughout the State, while the RWQCBs conduct planning, permitting, and most enforcement activities.

The Porter-Cologne Water Quality Control Act requires the SWRCB and/or the RWQCBs to adopt statewide and/or regional water quality control plans, the purpose of which is to establish water quality objectives for specific water bodies. The RWQCB has prepared the *Water Quality Control Plan for the Sacramento River and San Joaquin River Basins* (Basin Plan) (RWQCB, 2018) that establishes water quality objectives and implementation programs to meet the stated objectives and to protect the beneficial uses of the water bodies (discussed under "Surface Water Quality", above). The act also authorizes the NPDES program under the CWA, which establishes effluent limitations and water quality requirements for discharges to waters of the state. Most of the implementation of SWRCB's responsibilities is delegated to the nine regional boards. Under the NPDES program, the Central Valley RWQCB has established permit requirements for stormwater runoff in the Project area (see below).

NPDES Waste Discharge Program

The federal CWA established the NPDES program to protect the water quality of receiving waters of the United States. Under the CWA, Section 402, discharging pollutants to receiving waters of the United States is prohibited unless the discharge is in compliance with an NPDES permit. Effluent limitations serve as the primary mechanism in NPDES permits for controlling discharges of pollutants to receiving waters both from construction activities and from discharges from operation of municipal or industrial facilities. When developing effluent limitations for an NPDES permit, a permit applicant must consider limits based on both the technology available to control the pollutants (i.e., technology-based effluent limits) and limits that are protective of the water quality standards of the receiving water (i.e., water quality-based effluent limits[4] if

[4] Water quality-based effluent limits specify the level of pollutant (or pollutant parameter), generally expressed as a concentration, that is allowable

technology-based limits are not sufficient to protect the water body.). For inland surface waters and enclosed bays and estuaries, the water-quality-based effluent limitations are based on criteria in the National Toxics Rule and the California Toxics Rule, and objectives and beneficial uses defined in the applicable Basin Plan. There are two types of NPDES permits: individual permits tailored to an individual facility and general permits that cover multiple facilities or activities within a specific category. The NPDES permits relevant to the Project are described below.

NPDES Construction General Permit

The State of California adopted a Construction General Permit on September 2, 2009 (Order No. 2009-0009-DWQ as amended by 2010-0014-DWQ and 2012-0006-DWQ) (General Construction NPDES Permit or CGP). The General Construction NPDES Permit regulates construction site stormwater management. Dischargers whose projects disturb one or more acres of soil, or whose projects disturb less than one acre but are part of a larger common plan of development that in total disturbs one or more acres, are required to obtain coverage under the general permit for discharges of stormwater associated with construction activity. The Project would be required to comply with the permit requirements to control stormwater discharges from the sites where Project elements are being constructed (such as the stormwater treatment system). Construction activity subject to this permit includes clearing, grading, and disturbances to the ground, such as stockpiling or excavation as would occur on the future off-site borrow area, as well as construction of buildings. Portions of the Project would fall under the Type 1 LUP category if the following conditions are met:

- Construction occurs on unpaved improved roads, including their shoulders or land adjacent to them;
- The areas disturbed during a single construction day are returned to their preconstruction condition, or to an equivalent condition (i.e., disturbed soils such as those from trench excavation are hauled away, backfilled into the trench, and/or placed in spoils piles and covered with plastic), at the end of that same day;
- Vegetated areas disturbed by construction activities are stabilized and revegetated at the end of the construction period; and
- When required, adequate temporary soil stabilization best management practices (BMPs) are installed and maintained until vegetation has reestablished to meet the permit's minimum cover requirements for final stabilization.

In the project area, the CGP is implemented and enforced by the RWQCB, which administers the stormwater permitting program. To obtain coverage under this permit, project operators must electronically file Permit Registration Documents, which include a Notice of Intent, a Stormwater Pollution Prevention Plan (SWPPP), and other compliance-related documents. An appropriate permit fee must also be mailed to SWRCB. The SWPPP identifies BMPs that must be implemented to reduce construction effects on receiving water quality based on potential pollutants. The BMPs identified are directed at implementing both sediment and erosion control measures and other measures to control potential chemical contaminants. In addition, the SWPPP is required to contain a visual monitoring program and a sediment monitoring plan if the site

discharges directly to a water body listed on the 303(d) list for sediment. Examples of typical construction BMPs include scheduling or limiting certain activities to dry periods, installing sediment barriers such as silt fence and fiber rolls, and maintaining equipment and vehicles used for construction. Non-stormwater management measures include installing specific discharge controls during certain activities, such as paving operations, vehicle and equipment washing and fueling. The SWPPP also includes descriptions of the BMPs to reduce pollutants in stormwater discharges after all construction phases have been completed at the site (post-construction BMPs). Dischargers are responsible for notifying the RWQCB of violations or incidents of non-compliance, as well as for submitting annual reports identifying deficiencies of the BMPs and how the deficiencies were corrected.

The CGP includes several new requirements (as compared to the previous CGP, 99-08-DWQ), including risk-level assessment[5] for construction sites, an active stormwater effluent monitoring and reporting program during construction (for Risk Level II and III sites), rain event action plans for certain higher risk sites[6], and numeric effluent limitations (NELs) for pH and turbidity as well as requirements for qualified professionals that prepare and implement the plan. The risk assessment and SWPPP must be prepared by a State-qualified SWPPP Developer and implementation of the SWPPP must be overseen by a State-qualified SWPPP Practitioner. Project construction activities would be consistent with the CGP; compliance is required by law and the provisions of the permit and BMPs for construction and post-construction phases have proven effective in protecting water quality at construction sites and downgradient receiving waters.

Landfill Discharge Requirements

In November 1990, as part of the Clean Water Act, the U.S. EPA published final regulations that establish application requirements for stormwater permits. The regulations require specific categories of industrial facilities which discharge stormwater to obtain coverage under the NPDES General Permit No. CAS000001 for Discharges of Storm Water Associated with Industrial Activities. The YCCL operates under the General Permit for Storm Water Discharges Associated with Industrial Activity Order 2014-0057-DWQ (Waste Discharge Identification Number [WDID] 5S57I029034). Included in these "industrial facilities" categories are landfills and recycling facilities. Facilities that discharge industrial municipal stormwater either directly to surface waters or indirectly through separate municipal storm sewers, must be covered by a permit. This includes the discharge of "sheet flow" through a drainage system or other conveyance. The permit also prohibits non-stormwater discharges into the industrial stormwater system and is intended to authorize discharges composed entirely of industrial stormwater.

The NPDES General Permit requires dischargers to file a Notice of Intent requesting coverage under this permit, which has been done for YCCL (SWRCB, 2021). The NPDES General Permit also requires dischargers to prepare and implement both a SWPPP and a SWPPP Monitoring and

[5] The CGP defines three levels of risk (Risk Level I, II, and III) that may be assessed for a construction site. Risk is calculated based on the "project sediment risk", which determines the relative amount of sediment that can be discharged given the project and location details, and the "receiving water risk" (the risk sediment discharges pose to the receiving waters).

[6] Those sites that have a high potential for mobilizing sediment in stormwater and drain to a sediment-sensitive waterbody.

Reporting Program (MRP) and to submit these plans to the RWQCB. Consistent with NPDES requirements, a SWPPP and an MRP have been prepared (Golder, 2021) and implemented for YCCL.

In October 2012, the YCCL's surface water drainage facilities were modified to eliminate stormwater discharge; structural drainage modifications to retain all of the runoff from the 100-year, 24-hour storm event have been implemented. A Notice of Termination (NOT) under the General Industrial Storm Water Permit was filed with the RWQCB, effective November 1, 2012, and a Notice of Non-Applicability was filed related to the updated General Industrial Storm Water NPDES Permit in July 2015. Though not required after the NOT was approved, the YCCL maintained a SWPPP as a planning document to ensure proper stormwater management. Under the current NPDES Permit (Order 2014-0057-DWQ), stormwater discharges to Willow Slough Bypass are permitted from the existing borrow pit and Stormwater Pond 1 via stormwater outfalls SW-1 and SW-2, respectively, as described under "Site Drainage", above.

As described under "Water Quality Monitoring and Reporting", above, current operation of the YCCL is governed by WDR Order No. R5-2016-0094, issued by the RWQCB, on December 14, 2016, and by CDO No. R5-2011-0076. The CDO is primarily related to updating the filling and closure schedule for the existing unlined WMUs. Additionally, a groundwater treatment and disposal system is operated at the YCCL under WDR Order No. R5-2002-0078 issued on May 3, 2002 by the RWQCB.

Anti-Degradation Policy

The SWRCB Anti-Degradation Policy, formally known as the Statement of Policy with Respect to Maintaining High Quality Water in California (SWRCB Resolution No. 68-16), restricts degradation of surface and ground waters. Specifically, this policy protects water bodies where existing quality is higher than necessary for the protection of beneficial uses and requires that existing high quality be maintained to the maximum extent possible.

Under the Anti-Degradation Policy, any actions that can adversely affect water quality in all surface and groundwaters must: (1) be consistent with maximum benefit to the people of California; (2) not unreasonably affect present and anticipated beneficial use of the water; and (3) not result in water quality less than that prescribed in water quality plans and policies. Furthermore, any actions that can adversely affect surface waters are also subject to the federal Anti-Degradation Policy (40 CFR Section 131.12) developed under the CWA. Discharges from the Project that could affect surface water quality would be required to comply with the Anti-Degradation Policy, which is included as part of the NPDES permit requirements for point discharges.

Local Regulations

The Yolo County 2030 Countywide General Plan (Yolo County, 2009) has established the following water resource related conservation policies:

> *Goal CO-5 Water Resources*: Ensure an abundant, safe, and sustainable water supply to support the needs of existing and future generations.

Policy CO-5.14: Require that proposals to convert land to uses other than agriculture, open space, or habitat demonstrate that groundwater recharge will not be significantly diminished.

Policy CO-5.15: Encourage new development and redevelopment to use reclaimed wastewater, where feasible, to augment water supplies and to conserve potable water for domestic purposes.

Policy CO-5.21: Encourage the use of water management strategies, biological remediation, and technology to address naturally occurring water quality problems such as boron, mercury, and arsenic.

Policy CO-5.23: Support efforts to meet applicable water quality standards for all surface and groundwater resources.

3.10.2 IMPACTS AND MITIGATION MEASURES

Significance Criteria

Consistent with CEQA Guidelines Appendix G, a project would have a significant impact on hydrology or 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
  - impede or redirect flood flows;
- 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

Compliance with applicable federal, state, and local laws and regulations is assumed in the analysis of impacts because these regulatory requirements are mandatory and the application of the associated protective measures (such as BMPs, Monitoring and Reporting Plans, and the application of corrective actions) are non-discretionary, and are proven to minimize and/or avoid

hydrologic or water quality impacts. Further, regulatory agencies with technical jurisdiction and authority for oversight would require adherence to regulatory requirements as a condition of Project or permit approval and would continue to enforce applicable requirements throughout Project construction and operation phases.

State and federal standards have been established for the siting, design, construction, operation, closure, and post-closure maintenance of Class III landfills. These standards incorporate state-of-the-art engineering requirements that are intended to reduce the risks to water resources associated with waste disposal facilities to an acceptable level. The County would need to obtain an exemption to Subtitle D prohibitions against the addition of liquids to landfills, similar to US EPA's site-specific rule governing the current bioreactor demonstration project. To achieve optimal moisture levels within the waste mass additional approvals may be required to enable the County to add other types of liquids to the waste mass that are not approved for the current demonstration project. Such deviations from existing regulatory requirements (as approved by the appropriate authorities) would not of themselves constitute significant impacts.

Mitigation Measures Incorporated from the 2005 YCCL SEIR

The 2005 Yolo County Central Landfill Subsequent Environmental Impact Report (2005 YCCL SEIR) (Yolo County, 2005) identified various mitigation measures to reduce identified impacts related to hydrology and water quality to a less-than-significant level. The identified mitigation measures were adopted and formalized as part of the YCCL MMRP. The following previously adopted mitigation measures would continue to apply to the Project and are relevant to the analysis of water resources related impacts from implementation of the Project (Note, DIWM refers to the County's Division of Integrated Waste Management):

- **3.5.1c** requiring DIWM to maintain a response plan to address the contingency of leachate production level exceeding expected levels for future bioreactor units.

- **3.5.1d** requiring incorporation of containment features and engineering recommendations for leachate collection trench and sump areas.

- **3.5.6** requiring composting operations and public salvage area operations to be conducted on pads that are designed and constructed to limit infiltration and to control runoff. Runoff to be directed to a properly designed sump and pumped into a truck for disposal into the leachate ponds or the WWTP.

- **3.5.7a** requiring DIWM to update YCCL's Storm Water Pollution Prevention Plan (SWPPP), required under the NPDES General Industrial Storm Water Permit, to address pollution controls and the containment and control of runoff at non-erosive velocities from new and expanded site operations. The updated SWPPP will address composting facility operations.

- **3.5.7b** requiring DIWM to update its maintenance and operations plan (MOP) for YCCL. The revised MOP to include calculations as to the amount of leachate expected to be generated as a result of precipitation contacting compost feedstock and composting materials, as well as any runoff from application of quench water applied to the composting materials. The MOP will outline strategies for managing the collected leachate to ensure that adequate capacity is maintained.

- **3.5.8a** requiring the HHW facility incorporate double containment system to contain spills and water used for any fire control activities above ground and to limit excavations for MRF and HHWCF to surface grading.

- **3.5.8b** requiring DIWM to prepare a construction SWPPP prior to construction or grading activities that incorporates BMPs that addresses erosion, sediment transport, and construction related water quality degradation.

- **3.5.9a** requiring DIWM to implement a SWPPP for a new soil borrow area prior to commencement of any quarrying or excavation or if the site is adjacent, update YCCL's existing SWPPP to include the new borrow area. The SWPPP will describe activities and potential pollution sources at the site and BMPs to limit soil erosion and prevent the sedimentation of nearby surface drainage channels and other surface waters. Control measures may include, but are not limited to, placement of hay bales, sediment fences, and other structures to limit erosion and the transport of sediments, and limiting the size of the area being cleared and excavated to the minimum needed for the operation. The revised SWPPP will provide for reseeding exposed areas when they are no longer actively being quarried, and include a monitoring program. Pursuant to NPDES General Permit requirements, the revised SWPPP will be implemented, and a copy of the SWPPP will be retained at the YCCL site and available for RWQCB review upon request.

- **3.5.9b** requiring DIWM to obtain a permit if required by SMARA prior to quarrying activities commence at a new soil borrow area. Permit approval requires submission of a plan for returning the land to a usable condition (known as a "reclamation plan"), and financial assurances to guarantee costs for reclamation.

- **3.5.9c** requiring drainage structures at the soil borrow site be designed and constructed to prevent offsite discharge of runoff.

Impact Analysis

Impact 3.10.1: The Project could violate any water quality standards or waste discharge requirements, or otherwise substantially degrade surface or groundwater quality. (Significant)

Construction of Facilities at YCCL Site

While some of the Project elements, such as the waste gasification facility, are entirely new, many of the Project elements are revisions or improvements to existing facilities and operations (see Chapter 2, Project Description, for details). Construction of new or alteration of existing Project facilities at the YCCL site would include earthwork activities (i.e., grading, excavation, and other soil-disturbing activities) and the placement of imported engineered soils.

Stormwater runoff from disturbed soils associated with construction activities is a common source of pollutants (mainly sediment) to receiving waters. Earthwork activities can render soils and sediments more susceptible to erosion from stormwater runoff and result in the migration of soil and sediment in stormwater runoff to storm drains and downstream water bodies. Excessive and improperly managed grading or vegetation removal can lead to increased erosion of exposed earth and sedimentation of watercourses during rainy periods. A critical period for surface water

quality is following a rainstorm which produces significant amounts of drainage runoff into streams during the seasonal low flow period. Such conditions are most frequent during the fall at the beginning of the rainy season when stream flows are near their lowest annual levels and contaminants have accumulated on impervious surfaces over the drier summer months. In slower moving water bodies these same factors can cause a buildup of sediment, which can lead to a reduction in conveyance capacity. In addition, construction would likely involve the use of various materials typically associated with construction activities such as paint, solvents, oil and grease, petroleum hydrocarbons, concrete and associated concrete wash-out areas. If improperly handled, these materials could result in pollutants being mobilized and transported offsite by stormwater runoff (nonpoint source pollution) and degrade receiving water quality.

Because the Project exceeds one acre in size, construction activities not covered under the SWPPP for operations associated with the IGP (Order 2014-0057-DWQ) would be required to comply with NPDES regulations and obtain coverage under the State CGP. Under the CGP, Yolo County or their contractor(s) would be required to implement construction BMPs as set forth in a detailed SWPPP. SWPPPs are a required component of the CGP and must be prepared by a Qualified SWPPP Developer (QSD) and implemented by a Qualified SWPPP Practitioner (QSP). SWPPPs must describe the specific erosion control and stormwater quality BMPs being implemented to minimize pollutants in stormwater runoff, and detail their placement and proper installation. The BMPs are designed to prevent pollutants from coming into contact with stormwater and to keep all products of erosion and stormwater pollutants associated with construction activities from moving offsite into receiving waters. Typical BMPs to be implemented at construction sites include placement of fiber rolls or gravel barriers to detain small amounts of sediment from disturbed areas, and temporary or permanent covering of stockpiles to prevent rainfall from contacting the stockpiled material. In addition to erosion control BMPs, SWPPPs also include BMPs for preventing the discharge of pollutants other than sediment (e.g. paint, solvents, concrete, petroleum products) to downstream waters. BMPs for pollutants include conducting routine inspections of equipment for leaks, maintaining containers of supplies such that the contents are clearly labeled, the integrity of the containers is not compromised, and ensuring that construction materials are disposed of in accordance with applicable regulations.

Under the provisions of the CGP, the State-certified QSD is responsible for determining site risk level for sediment transport, developing the SWPPP, and managing its implementation. Site risk level is determined using a combination of the sediment risk of the project and the receiving water quality risk. Projects can be characterized as Risk Level 1, Level 2, or Level 3, and the minimum BMPs (stormwater controls) and monitoring that must be implemented during construction are based on the risk level. Under the direction of the QSD, the QSP is required to conduct routine inspections of all BMPs, conduct surface water sampling, when necessary, and report site conditions to the State and/or Regional Water Quality Control Board as part of CGP compliance monitoring and reporting using the Stormwater Multi-Application Reporting and Tracking System (SMARTS). Compliance with the CGP is required by law and has proven effective in protecting water quality at construction sites.

Construction earthwork activities would mainly involve grading and shallow subsurface excavation. If shallow groundwater were encountered during excavation activities, it would have to be pumped out of the construction trench to create a dry work area. If excavations intersect shallow groundwater and dewatering activities are required, dewatering would be temporary, highly localized, and would typically involve the extraction of low volumes of shallow groundwater from excavation trenches. The components proposed to be constructed are generally outside of the areas of known contamination and dewatering discharges would be discharged to the existing landfill drainage system. In areas where potential contamination of shallow groundwater may be an issue (e.g., near the gas plant) water would be tested and, if no contaminants are identified, sent to drainage system. If contamination is present, or suspected to be present, dewatering effluent would be collected and trucked or otherwise conveyed to the surface impoundments.

Compliance with the requirements of the CGP, including the implementation of associated BMPs as part of the SWPPP, would prevent the discharge of pollutants to surface waters or groundwater and minimize or eliminate potential degradation of surface water or groundwater quality during construction of the Project. Additionally, direct impacts to major offsite receiving waters, such as Willow Slough Bypass, would be avoided through implementation of **Mitigation Measure BIO-3.4.9**, which requires that Project activities be designed to avoid or minimize surface activities within 300 feet of Willow Slough Bypass. Water quality impacts related to violation of water quality standards or degradation of water quality due to discharge of construction-related stormwater runoff from implementation of the Project would be less than significant.

Operation of Proposed On-Site Facilities

Following completion of construction, implementation of the proposed changes to the design and operation of the YCCL that constitute the Project would be required to adhere to the NPDES Permit for Industrial Activities, which includes a SWPPP and MRP. YCCL has completed and implemented an updated SWPPP and MRP (Golder, 2021), consistent with the requirements of the NPDES Industrial Permit (Order 2014-0057-DWQ) as well as the mitigation requirements contained in the 2005 YCCL SEIR (Mitigation Measure 3.5.7a, summarized above) to address pollution controls and the containment and control of runoff at non-erosive velocities from new and expanded site operations, including composting facility operations.

The SWPPP for industrial activities at the YCCL Project site specifies implementation of BMPs sufficient to reduce significant hydrologic and water quality impacts, including the concentration of pollutants found in Project site stormwater runoff. Erosion control measures are specified in the SWPPP, including BMPs to address sediments generated during the active phase of the landfill development. During the wet season, erosion and sediment control devices such as sediment traps and silt fences are used to minimize sediment transport to downstream drainage facilities and the retention pond. Additionally, sediment production is expected to decline on the Project site over time as portions of the landfill are closed and vegetated (Yolo County, 2018). The standards and specific BMPs required as part of the SWPPP are industry-accepted methods and proven effective at attenuating concentrated stormwater flows, reducing erosion, and minimizing or avoiding the transport of pollutants in stormwater. These BMPs are adequate to provide protection against water quality degradation provided they are maintained effectively and

monitored regularly. The SWPPP includes a monitoring and maintenance element with periodic scheduled monitoring of BMP performance. The performance of BMPs, including any related failures, improvements, and corrective actions taken as a result of periodic monitoring conducted by erosion control specialists are described in annual regulatory reports submitted to the RWQCB as required under the SWPPP.

YCCL is required to adhere to all water quality and hydrologic standards and monitoring requirements contained in the NPDES Discharge Permit (General Permit for Storm Water Discharges Associated with Industrial Activities, NPDES Order CAS000001) issued by the RWQCB, including routine scheduled water quality monitoring of specified pollutants and subsequent correction of any water quality exceedances indicated by sampling results. Consistent with the landfill's WDRs (see Section 3.10.1), the leachate, groundwater, and surface water monitoring program required under the MRP would continue to be conducted to ensure the landfill is in compliance with all water quality standards and Basin Plan water quality objectives. Monitoring under the MRP would minimize or avoid potential impacts on surface water and groundwater quality through the required implementation of corrective actions and additional targeted monitoring, if a WQPS exceedance is determined to have occurred.

During the initial operation of each waste module, the height of waste and cover may not be sufficient to shed rainfall runoff outside of each module. Special provisions with respect to the landfill operations are completed, consistent with BMP requirements, to prevent much of the stormwater from coming into contact with waste. These provisions allow much of the clean stormwater (i.e., stormwater that has not been in contact with solid waste) that enters the landfill module to be pumped out of the module and disposed of through the landfill drainage system. Pumping of the stormwater out of the landfill module area begins as soon as the depth of water is sufficient to operate the pump (Yolo County, 2018). Additionally, operations are conducted consistent with BMP requirements to ensure drainage of rainwater off and away from all wastes to minimize leachate generated in the area. As needed, v-ditches and berms are constructed to maintain positive drainage, minimize erosion around the working areas, and minimize infiltration and leachate generation in all areas of operation.

Compliance with the requirements of the NPDES Permit for Industrial Activities, including the implementation of associated BMPs as part of the associated SWPPP covering operations, as well as WDRs, including discharge prohibitions, monitoring, and corrective actions under the MRP, would prevent the discharge of pollutants to surface waters or groundwater and minimize or eliminate potential degradation of surface water or groundwater quality during operation of the Project. Further, YCCL's WDRs specify that any necessary erosion control measures and any necessary construction, maintenance, or repairs of precipitation and drainage control facilities needed to prevent erosion or flooding or to prevent surface drainage from contacting or percolating through wastes, is to be completed each year prior to the start of the rainy season, and no later than November 15th. Water quality impacts related to violation of water quality standards or degradation of water quality from implementation of the Project would be less than significant.

Stormwater Treatment and Discharge

The proposed stormwater treatment system would treat collected stormwater from the YCCL stormwater collection and retention facilities prior to discharge into Willow Slough Bypass. Discharges would continue to occur via SW-1 and SW-2 at the existing pump station located on YCCL's existing soil borrow site and at the southern boundary of Stormwater Pond 1, respectively (see **Figure 2-3**). Stormwater discharges off-site to Willow Slough Bypass could result in the discharge of pollutants associated with the YCCL stormwater. Increased concentrations of water quality constituents in receiving waters could degrade water quality and adversely affect the beneficial uses of the receiving waters and/or violate water quality standards or WDRs.

As described in Section 3.10.1, prior to 2012 YCCL discharged stormwater to Willow Slough Bypass. A Notice of Termination under the General Industrial Storm Water Permit was filed with the RWQCB, effective November 1, 2012, and a Notice of Non-Applicability was filed related to the updated General Industrial Storm Water NPDES Permit in July 2015. As described under the Regulatory Setting section, above, YCCL currently operates under an updated NPDES Permit (Order 2014-0057-DWQ), which includes coverage of stormwater discharges to Willow Slough Bypass via stormwater outlets SW-1 and SW-2. As described in Section 3.10.2 under "Site Drainage", above, stormwater collected and retained on site is managed and re-used such that it is not currently discharged off-site, although off-site discharge can occur if needed (i.e., should capacity not be available in the stormwater/groundwater reservoir).

Under the proposed Project, stormwater would be collected, retained, and re-used as currently occurs, but would also be conveyed to the borrow site excavation, which would be used as a retention basin, and from there be discharged via the existing pump station at the southeast corner of the borrow site following treatment, as needed. Discharges would occur using the existing outfall structures, as occurred prior to 2012 and as is currently permitted under Order 2014-0057-DWQ, but the stormwater would undergo additional treatment prior to release, consistent with water quality standards and WDRs. No modifications to the outfall facilities are proposed. The existing outfall is sized sufficiently to manage discharges associated with the 100-year, 24-hour storm, as required by the facility's WDRs, and the structure includes erosion control measures (i.e., armoring) that have historically mitigated erosion and scour of the Willow Slough Bypass channel bed and bank successfully.

The discharge of stormwater to Willow Slough Bypass would occur following on-site collection, retention, and testing of retained stormwater to determine if additional treatment is required prior to release. Stormwater would be treated prior to release to meet U.S. EPA benchmarks and water quality standards and objectives for receiving waters contained in the Basin Plan, including for Boron. The proposed stormwater treatment would achieve regulatory requirements for water quality through implementation of treatment methods such as bioswales and passive floc logs that are used to clarify stormwater by removing turbidity, sediment, heavy metals, and nutrients, thereby reducing the total suspended solids (TSS) concentrations in the discharges. Discharges would occur in a periodic and controlled way to recover storage capacity in YCCL stormwater retention ponds or be conducted to mitigate an anticipated rise in groundwater elevation. As such, discharges would occur in a manner that would not contribute increased flows to Willow Slough Bypass such that may result in hydromodification or flooding related impacts on-site or downstream.

As described in Section 3.10.1, Regulatory Framework, under "NPDES Waste Discharge Requirements", regulations require that stormwater discharges from the Project be designed to ensure that operation of the Project would not violate WDRs defined in the NPDES permit, which incorporate the Basin Plan water quality objectives, upon discharge via the outfall. Further, the County would be required to comply with the MRP requirements of the NPDES Permit. Implementation of an MRP ensures technical and monitoring data is provided to the RWQCB to determine the Discharger's compliance with NPDES effluent limitations and other requirements to assess the need for further investigation or enforcement action, and to protect public health and safety and the environment. Reports submitted under the MRP would contain a description of any noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the noncompliance.

Discharges would not be allowed if they do not conform to the NPDES effluent limitations that are prescribed for the protection of receiving water quality and beneficial uses. Adherence to regulatory requirements would ensure that the proposed stormwater discharges do not degrade the quality of receiving waters in Willow Slough Bypass or impair designated beneficial uses. Given that the discharge of stormwater would adhere to NPDES effluent limits, the RWQCB Basin Plan water quality objectives, and would not substantially increase the concentration of constituents in receiving waters as compared to baseline conditions, the water quality impact associated with the discharge of stormwater would be less than significant.

Construction and Operation of Non-Specific Future Off-Site Borrow Area

As one component of the Project, the County proposes to identify and purchase land to be used as an off-site borrow area, or quarry, to provide cover material for landfill operations. A specific site has not yet been identified. Regardless of the specific location of such a site, excavation activities at a soil borrow area could result in adverse impacts to surface water or groundwater quality. Excavation would require removal of vegetative cover, which could result in increased erosion of the exposed soils and the transport of sediment and other pollutants associated with quarrying activities (such as oil and grease) to be transported offsite in stormwater runoff and degrade downgradient receiving waters.

The 2005 YCCL SEIR (Impact 3.5.9 in Section 3.5, Hydrology and Water Quality) assessed the potential for erosion and water quality impacts resulting from a non-specific future soil borrow site and determined that erosion, sedimentation, and transport of pollutants in stormwater could result in a significant impact to receiving waters. The 2005 YCCL SEIR included mitigation measures (summarized above) to ensure that the stormwater hydrologic, erosion control, and water quality control measures are maintained, remain effective throughout the operational life of the borrow site, and that they are kept current and in compliance with all RWQCB permit requirements, primarily through implementation of a SWPPP, with associated BMPs for water quality, for any future borrow site as well as drainage and runoff control features to ensure runoff does not leave the site (Mitigation Measures 3.5.9a, 3.5.9b, and 3.5.9c). These mitigation measures are currently implemented through the MMRP for YCCL. Further, YCCL is required to adhere to all water quality and hydrologic standards and monitoring requirements contained in the NPDES Discharge Permit (General Permit for Storm Water Discharges Associated with

Industrial Activities, NPDES Order CAS000001) issued by the RWQCB, including routine scheduled water quality monitoring of specified pollutants and subsequent correction of any water quality exceedances indicated by sampling results.

Implementation of the actions and BMPs required under the NPDES Permit, the SWPPP, as well as the mitigation requirements described above would prevent significant impacts to water quality associated with quarrying activities at a future off-site borrow area. With continued adherence to these requirements, the Project would not violate any water quality standards or WDRs, or otherwise substantially degrade surface or groundwater quality. The mitigation measures identified above would be sufficient to reduce water quality impacts associated with implementation of quarrying at a non-specific future off-site borrow area to less than significant.

Groundwater Quality

Shallow groundwater beneath the YCCL is generally poor and contains elevated concentrations of boron and selenium. The shallow groundwater is not suitable for domestic supply without treatment and softening. Groundwater for domestic and agricultural use is extracted from water-bearing sediments at considerable depths below the water table and is of higher water quality. In 1993, low concentrations of VOC's were detected in two interior wells at WMU 3 and 5 prompting the need to route extracted groundwater (150,000 to 200,000 gallons per day) through the AST system to remove/reduce the VOC concentrations. Detected concentrations of VOCs prior to treatment approach regulatory action levels and after treatment have been non-detectable at laboratory reporting limits.

The Project proposes to increase extraction of groundwater in phases to maintain the required 5-foot separation between the bottom of the WMUs (WMUs 1-5) and the surface of the shallow groundwater. Phase 1 of this program (10 wells) would involve the pumping an additional 26 million gallons of groundwater. The elevated boron and selenium concentration in the water require that the extracted groundwater be stored onsite. In years of average or below average precipitation, the additional groundwater would be stored in the on-site groundwater/surface water storage basins but in wet years, a substantial amount of stormwater would be routed to the borrow site to infiltrate and evaporate while the extracted groundwater would be routed and retained for onsite storage in the reservoir. Because the shallow groundwater extracted in the Phase 1 program would be stored onsite and not discharged off-site, it would not contribute to a water quality impact. The excess groundwater routed to the borrow pit during wet years would infiltrate into the same water bearing sediments it was extracted from and thus would not degrade a groundwater source. Extracted groundwater would continue to be routed to and treated by the AST then stored onsite with no offsite recharge.

As discussed in Section 3.10.1, the updated YCCL facility water balance determined that under full build-out conditions (39 operational extraction wells), the YCCL would not have adequate storage capacity to retain all the extracted groundwater and surface water within the landfill using existing on-site storage infrastructure, especially during periods of heavy rainfall during above normal and wet years. Potential adverse effects of inadequate onsite storage include overtopping of the storage reservoir or borrow site, localized onsite flooding, and/or inadvertent offsite

discharge of selenium- and boron-laden groundwater water. Flooding and potential threats to onsite and offsite water quality would be considered significant impacts of the Project.

Mitigation Measures

Mitigation Measure 3.10.1: The YCCL shall complete the following actions to monitor and evaluate groundwater extraction and retention during and following its Phase 1 groundwater extraction program (10 extraction wells):

I. During the implementation period of the Phase 1 groundwater extraction program, YCCL shall continue to conduct regular groundwater level monitoring throughout each water year to assess the separation distance between the top of the groundwater table and bottom extent of the waste prism (5-foot separation) in WMUs 1-5. These data shall be reviewed annually to gauge the effectiveness of the groundwater extraction program. As required, water level monitoring data shall be submitted to the RWQCB.

II. Within one year following the completion of the Phase 1 groundwater extraction well program, acquired annual groundwater elevation and extraction rate data shall be applied, as appropriate, to determine whether the 5-foot separation is adequately maintained, and to update and refine the site groundwater model and YCCL facility water balance.

III. Groundwater level monitoring data, results of the updated groundwater model, and facility water balance shall be used to (a) determine the necessity and optimal location for additional extraction wells, (b) project the rate and quantity of extracted groundwater that would be necessary to maintain the 5-foot groundwater separation, and (c) determine whether storage area for that volume is available onsite.

IV. If results of the updated groundwater model and updated facility water balance determine that additional extraction wells are necessary and would generate groundwater discharges in excess of onsite facility storage infrastructure available at that time, the County shall develop and implement alternative water storage strategies prior to installing and operating additional extraction wells. These alternatives could include:

- Arrangements with neighboring properties to purchase excess stormwater for irrigation uses.
- Acquiring additional property for land application of stored water or for construction of additional storage basins.
- Developing technologies to enhance evaporative capacity of surface water.

Level of Significance after Mitigation

Mitigation Measure 3.10.1 would require the YCCL to determine the groundwater extraction rates and volumes that are necessary to maintain the 5-foot separation after the Phase 1 extraction well program is completed to ensure that the facility has adequate storage for the groundwater/surface water that could be generated as the extraction well program approaches the estimated build-out of 39 extraction wells. The measure requires YCCL to have additional storage strategies in place prior to installing and operating additional extraction wells, thus reducing the potential for flooding or water quality impacts that could occur due to inadequate onsite storage. The implementation of Mitigation Measure 3.10.1 would reduce this impact to less-than-significant.

Impact 3.10.2: The Project could substantially decrease groundwater supplies or interfere substantially with groundwater recharge such that the Project may impede sustainable groundwater management of the basin. (Less than Significant)

The YCLL would pump shallow groundwater to maintain the required 5-foot separation between the top of the water table and the bottom of the waste prism, as described above in Section 3.10.1. The YCCL proposes to develop the groundwater extraction system in phases. Phase 1 would involve 10 additional groundwater extraction wells near WMU 1 and 2. An estimated 26 million gallons of additional groundwater would be extracted each year.

The extracted groundwater is shallow groundwater with generally poor water quality, and thus is not considered a source of drinking water. In accordance with the significance criteria (Section 3.10.2), a significant impact would occur if groundwater pumping required as part of the Project substantially decreased groundwater supplies or if groundwater pumping interfered with groundwater recharge. Given that the groundwater originates in the shallow water table and is of poor quality, its removal from below the WMU would not decrease a viable domestic or irrigation water supply. Groundwater for irrigation and domestic use is pumped from confined water-bearing sediments located at much greater depths than the saturated near-surface sediments of the shallow unconfined groundwater.

Groundwater pumping necessary to maintain the 5-foot separation would occur throughout the year but could increase between January and the end of April when surface water recharge of the shallow water table is prevalent throughout the sub-basin. The proposed groundwater extraction under Phase 1 (10 wells) and eventual build-out phase (29 additional wells) is intended to reduce shallow groundwater levels (less than 5 feet), which would not hinder recharge but could enhance it locally by providing additional storage in the shallow sediments to accommodate additional infiltration. Furthermore, recharge would be additionally enhanced by allowing the extracted groundwater to infiltrate on 45-acre Fescue field and the through the base of the soil borrow area.

The Project would increase the volume of groundwater extracted from the shallow water table aquifer and would not interfere with neighboring domestic or irrigation wells that typically extract groundwater at greater depths. Additionally, the Project would not inhibit or eliminate groundwater recharge because the majority of pumping is proposed in the winter months when basin recharge is at its seasonal maximum. Therefore, the impacts to groundwater would be less than significant.

Mitigation Measures

None required.

Impact 3.10.3: The Project could 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 off-site. (Less than Significant)

Implementation of the Project would not substantially alter the existing drainage pattern of Project site. The stormwater drainage system at YCCL would continue to collect, convey, and retain stormwater as described in Section 3.10.1 via the Project site stormwater runoff control and surface water drainage facilities, drainage ditches, culverts, down-drain pipes and perimeter ditches. Drainage ditches with flow velocities of 5 fps or less are lined with grass or erosion control matting to minimize and/or avoid erosion and sedimentation. Drainage ditches with greater than 5-fps flow velocities are lined with concrete or equivalent protective material for protection against erosion (Yolo County, 2018). The stormwater control system is sized to accommodate the 100-year, 24-hour storm event (Golder, 2021).

As described under Impact 3.10.1, above, implementing actions and BMPs required under the NPDES Permit and WDRs, the construction SWPPP, the industrial operations SWPPP, as well as those outlined in the MMRP associated with the 2005 YCCL SEIR, and **Mitigation Measure BIO-3.4-9**, would prevent significant water quality impacts associated with construction and operation activities, including those associated with discharges of treated stormwater to Willow Slough Bypass, and would minimize adverse water quality conditions (i.e., erosion and sedimentation) in on- and off-site receiving waters, resulting in less-than-significant water quality impacts. Additionally, the Project would not substantially increase impervious area within the non-specific future off-site borrow area compared to baseline conditions. As described in Chapter 2, Project Description, while some of the Project elements, such as the waste gasification facility, are entirely new, the majority of the Project elements proposed at the YCCL site are revisions or improvements to existing facilities and operations.

As described under Impact 3.10.1, treated stormwater would be discharged via the existing outfall structures, as occurs under the current IGP, and that occurred prior to 2012. The outfall structures are sufficiently armored to dissipate the energy of historic and planned discharges. Additionally, under the proposed Project, stormwater would also be conveyed to the borrow site excavation, which would be used as a retention basin, and from there be discharged via the existing pump station and outfall at the southeast corner of the borrow site following treatment, as needed. As such, no construction activities are required within Willow Slough Bypass that could result in altered drainage patterns, erosion, or sedimentation as a result of alteration of the bed or bank associated with new outfall construction. The discharge of stormwater to Willow Slough Bypass would occur following on-site collection, retention, and testing of retained stormwater to determine if additional treatment is required prior to release. Discharges would occur in a periodic and controlled way to recover storage capacity in YCCL stormwater retention ponds or conducted to mitigate an anticipated rise in groundwater elevation. As such, discharges would be conducted in a manner, and using appropriately sized and stabilized outfall facilities, to ensure erosion and scour of the Willow Slough Bypass channel bed and bank does not occur.

Off-site, implementation of the non-specific future off-site borrow area would locally alter existing drainage patterns and potentially expose soils to erosion, resulting in transport of sediment in

stormwater to off-site receiving waters as a result of quarrying and excavation activities. As described under Impact 3.10.1, mitigation requirements for the non-specific future borrow site specified in the 2005 YCCL SEIR and formalized in the MMRP ensure that the stormwater hydrologic, erosion control, and water quality control measures are implemented, maintained, and remain effective throughout the operational life of the borrow site, and that they are kept current and in compliance with all RWQCB permit requirements, primarily through implementation of a SWPPP, with associated BMPs for water quality, for any future borrow site as well as drainage and runoff control features to ensure runoff does not leave the site (2005 YCCL SEIR Mitigation Measures 3.5.9a, 3.5.9b, and 3.5.9c).

Implementation of the Project would not result in substantially altered existing drainage patterns 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 off-site related to increased runoff volume and velocity or provide substantial additional sources of polluted runoff. Adherence to the provisions of regulatory requirements and permits, which would require source controls of stormwater volumes and implementation of BMPs for stormwater quality management would ensure impacts would be less than significant.

Mitigation Measures

None required.

Impact 3.10.4: The Project could 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 substantially increase the rate or amount of surface runoff in a manner which would result in flooding on- or offsite. (Less than Significant)

As described under Impact 3.10.3, the Project would not result in substantially altered drainage patterns at the Project site or a substantial increase in impervious surface area. As described under Impact 3.10.1, the discharge of treated stormwater to Willow Slough Bypass would be done in a managed way, with stormwater discharges conducted periodically to regain retention capacity in stormwater ponds or in anticipation of rising groundwater levels. Managed stormwater discharges to Willow Slough Bypass would not result in overtopping of channel banks on-site or downstream. WDR Order R5-2016-0094 (RWQCB) requires YCCL to determine the required height to protect the WMUs from flooding events with a 100-year return period and demonstrate that WMUs are designed, constructed, and operated to prevent inundation or washout from such a flood event. In compliance with WDRs, each WMU is protected from inundation by flood waters by perimeter soil levees around each cell at 33 feet MSL (Yolo County, 2018). The YCCL drainage system components are designed to accommodate 100-year, 24-hour precipitation conditions with sizing and capacity to safely convey storm flows associated with 100-year storm.

As described under Impact 3.10.3, implementation of the non-specific future off-site borrow area would not result in the addition of substantial areas of impervious surfaces but could alter existing drainage patterns at the site in a manner that increases surface runoff, such as through steepening

slopes during excavation activities. The 2005 YCCL SEIR mitigation measures formalized in the YCCL MMRP ensure that hydrologic, erosion control, and water quality control measures are maintained, remain effective throughout the operational life of the borrow site, and that they are kept current and in compliance with all RWQCB permit requirements, primarily through implementation of a SWPPP. The SWPPP would include BMPs for water quality as well as drainage and runoff control features to ensure runoff does not leave the site (2005 YCCL SEIR Mitigation Measures 3.5.9a, 3.5.9b, and 3.5.9c). Impacts related to flooding due to altered drainage patterns or the addition of impervious surfaces from implementation of the Project would be less than significant.

Mitigation Measures

None required.

Impact 3.10.5: The Project could 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 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. (Less than Significant)

As described above under Impact 3.10.4, the YCCL stormwater management system has been designed consistent with regulatory requirements, including those related to conveyance capacity for peak discharges associated with the 100-year/24-hour storm. Stormwater treatment measures are incorporated into the design of the stormwater management system to ensure pollutants are not mobilized and transported to downgradient waters, as required by NPDES and WDR permits. As described in detail under Impact 3.10.1 and Impact 3.10.3, the Project would not result in new sources of pollutants as a result of construction or operation that could be transported via storm runoff. Impacts related to exceeding stormwater conveyance infrastructure or creating additional sources of polluted runoff would be less than significant.

Mitigation Measures

None required.

Impact 3.10.6: The Project could 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 impede or redirect flood flows. (Less than Significant)

As described in Section 3.10.1, the Project site is located in the 100-year flood zone (Zone A). While some of the Project elements, such as the waste gasification facility, are entirely new, many of the Project elements are revisions or improvements to existing facilities and operations (see Chapter 2, Project Description, for details). Construction of new or alteration of existing Project facilities would all occur at the existing YCCL property, with the exception of the

non-specific future off-site borrow area. The drainage system can accommodate 100-year, 24-hour precipitation conditions with sizing and capacity to safely convey storm flows associated with 100-year storm. Run-on from adjacent properties would continue to be prevented by existing ditches and topography. Construction of new facilities or modifying existing facilities or operations would not alter on-site drainage patterns or result in the addition of impervious surfaces in a manner that would impede or redirect flood flows, either on- or offsite. The 2005 YCCL SEIR mitigation measures formalized in the YCCL MMRP ensure that hydrologic, erosion control, and water quality control measures are implemented at the non-specific future borrow site. Impacts related to impeding or redirecting flood flows would be less than significant.

Mitigation Measures

None required.

Impact 3.10.7: In flood hazard, tsunami, or seiche zones, the Project could risk release of pollutants due to inundation. (Less than Significant)

The Project site and non-specific future off-site borrow area are not located in areas at risk of inundation by tsunami or seiche. As described in Section 3.10.1, the Project site is located in the 100-year flood zone (Zone A) as a result of the decertification of the Willow Slough Bypass levee. WDR Order R5-2016-0094 requires YCCL to determine the required height to protect the WMUs from flooding events with a 100-year return period and demonstrate that WMUs are designed, constructed, and operated to prevent inundation or washout from this flood event. In compliance with WDRs, each WMU is protected from inundation by flood waters by perimeter soil levees around each cell between 26 and 33 feet MSL (Yolo County, 2018). Inundation of the non-specific future off-site borrow area could result in erosion of active quarrying and excavation areas and the transport of sediment to downgradient receiving waters. Mitigation Measure 3.5.9a from the 2005 YCCL SEIR MMRP requires, in addition to implementation of erosion and sedimentation control measures, that size of the area being cleared and excavated be limited to the minimum needed for the operation and that exposed areas be re-seeded when no longer being actively quarried to ensure vegetative cover is established to protect exposed soils from erosive forces. Impacts related to the release of pollutants from inundation by flood waters would be less than significant.

Mitigation Measures

None required.

Impact 3.10.8: The Project could conflict with or obstruct implementation of a water quality control plan or sustainable groundwater management plan. (Less than Significant)

As discussed above under Impacts 3.10.1, 3.10.2, and 3.10.3, no water quality degradation would occur as a result of the Project as compared to baseline conditions. As described under Impact 3.10.1, the Project would have a less-than-significant impact on surface water and

groundwater quality on-site and off-site. This includes the Willow Slough Bypass, which is subject to the RWQCB Basin Plan water quality objectives. The Basin Plan water quality objectives are designed to preserve and enhance water quality and protect the beneficial uses of all regional terrestrial surface water bodies (e.g., creeks, rivers, streams, and lakes) and groundwaters within the RWQCB's jurisdictional area. Willow Slough Bypass is currently classified as impaired for boron. As discussed under Impact 3.10.1, under the Project stormwater would be retained onsite in retention ponds, treated (such as through use of bioswales and floc logs) for boron and other pollutants, consistent with NPDES discharge requirements, and tested prior to release to ensure receiving water quality and beneficial uses are not degraded and/or impaired and that Basin Plan Water Quality Objectives are met.

The Project would comply with the requirements of the CGP and the YCCL Industrial NPDES Permit under the NPDES Permit program, including implementation of BMPs and other requirements of associated NPDES Permit required SWPPPs, as well as the WDRs and the associated MRP, all of which are designed to ensure stormwater discharges associated with construction, operation and maintenance activities at the Project site comply with applicable water quality standards. The Project would not result in impacts related to ongoing substantial groundwater withdrawals or reduce groundwater recharge, as discussed under Impact 3.10.2, and therefore would not conflict with or obstruct implementation of a sustainable groundwater management plan. Impacts relating to conflict or obstruction of implementing a water quality control plan or sustainable groundwater management plan would be less than significant.

Mitigation Measures

None required.

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