Davenport Recycled Water System

Feasibility Study

April 2015

DAVENPORT RECYCLED WATER SYSTEM FEASIBILITY STUDY

DAVENPORT COUNTY SANITATION DISTRICT

DAVENPORT, CALIFORNIA

Project No. 11837-8410848

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Glossary of Terms

AACE	Association for the Advancement of Cost Engineering, International
ADMMF	Average Day Maximum Month (Influent) Flow
BOD	Biochemical Oxygen Demand, 5-day
CDBG	Community Development Block Grant
Coast Dairies	Coast Dairies & Land Company
CWSRF	Clean Water State Revolving Fund
District	Davenport County Sanitation District
ENR CCI	Engineering News Record Construction Cost Index
gpd	Gallons Per Day
gpm	Gallons Per Minute
I/I	Infiltration and Inflow
IRWM	Integrated Regional Water Management
kW-hrs	Kilowatt Hours
LAFCO	Local Agency Formation Commission
MAWWF	Monthly Average Wet Weather (Influent) Flow
O&M	Operation and Maintenance
PDF	Peak Day (Influent) Flow
psi	Pounds Per Square Inch
REDIP	Rural Economic Development Infrastructure Panel
RWQCB	Regional Water Quality Control Board
State Parks	California Department of Parks and Recreation
SWRCB	State Water Resources Control Board
Title 22	California Code of Regulations, Title 22, Division 4, Chapter 3 Water Recycling Criteria
WDRs	Order No. 95-27 Waste Discharge Requirements
WRFP	Water Recycling Funding Program

1. Executive Summary

The Davenport County Sanitation District (the District) provides potable water and sanitary sewer services to the unincorporated community of Davenport, located about 12 miles northwest from the City of Santa Cruz along California's Central Coast (Figure 1). Davenport is an economically disadvantaged community of approximately 250 residents and a few commercial establishments surrounding the recently closed Cemex cement plant.

The District's 50,000 gpd wastewater treatment facility produces disinfected tertiary-23 quality water in accordance with the *California Code of Regulations, Title 22, Division 4, Chapter 3 Water Recycling Criteria* (Title 22) requirements and, before the cement plant closed, 100 percent of this water was reused as conditioning water for the cement production process. After learning that the cement plant would close in 2010 the District's Waste Discharge Requirements (WDRs) were modified to allow for application of the recycled water to a spray field immediately adjacent to the treatment facility. The updated WDRs do not allow for any discharge of recycled water including surface runoff from the spray field. During wet years and extended periods of rainfall the District lacks necessary storage to adequately ensure against a potential discharge or surface runoff from the spray field.

With assistance from the State Water Board's Clean Water State Revolving Fund Program (CWSRF) and Water Recycling Funding Program (WRFP) the District initiated this Feasibility Study to study alternatives to store and reuse treated water in the Davenport area and thereby minimize the risk of an illegal discharge. The District would be able to reuse up to 20 acre-feet annually during "average" weather years. Since there are no other large industrial users nearby and residential and commercial landscape irrigation is limited, the project Study Area (Figure 2) includes agriculture lands immediately adjacent to Davenport.

1.1 Project Purpose and Potential Benefits

The primary purpose of the project is to develop new water reuse customers that will replace the former Cemex cement plant demands. Since treated water is produced continuously while new user demands would be seasonal the project needs to include storage of treated water during the wet season. The project would also include conveyance infrastructure to serve new users and treatment plant upgrades as necessary to meet Title 22 requirements and provide water quality matching the desired end use. Application of treated water to the spray field would remain as a backup for summer and fall disposal in years where the user demands do not draw the storage down before the wet season arrives.

Potential benefits of the project support the goals and objectives of the *Santa Cruz Integrated Water Management Plan (IRWM)* including:

- Enhances water supply reliability (for irrigation of crops and landscaping);
- Maximizes raw water quality (by minimizing potential for illegal discharges);
- Maximizes quality of recycled water; and
- Brings value to the regional economy (by supporting agriculture needs).

The project also aligns with the *State Planning Priorities* and *Sustainable Water Resource Management Priorities* for the following goals:

- Improves existing infrastructure;
- Redevelops previously developed land;
- Preserves and enhances farmland;
- Repairs and upgrades existing infrastructure;
- Pricing and rate structure reflects true cost of project; and
- Maximizes capital investments made previously.

1.2 Project Alternatives

Four alternatives were evaluated for the project including construction of a percolation pond with no reuse other than providing a truck fill station, two alternatives with various combinations of agriculture reuse, and a fourth alternative with a mix of agriculture reuse and landscape irrigation. For all alternatives the treatment facility would be upgraded to provide disinfected tertiary water in accordance with Title 22 requirements. A comparison of the four alternatives is provided in Table 1.

Table 1 Project Alternative Comparison for "Average" Weather Year

Criteria	Alt 1	Alt 2	Alt 3	Alt 4
Area Served (acres)	0	47.54	48.70	55.54
Annual Reuse (acre-feet)[a.]	0.18	19.62	19.62	19.62
Capital Cost (x $1,000)	$2,366	$3,968	$5,214	$3,968
Annual Cost per Acre-Foot[b.]	$111,110	$1,427	$1,732	$1,427

a. Annual reuse includes water used for irrigating landscaping and crops, and water taken from truck fill station. It does not include water percolated from the pond or applied to the spray field.
b. Annual cost per acre-foot is the annual operation and maintenance cost divided by the amount of water reused, not including water percolated from the pond or applied to the spray field.

Alternative 1 – Percolation Pond

Alternative 1 (Figure 7) consists of a truck fill station for permitted users to take water for allowable uses offsite, and a percolation pond that provides storage during the wet season while also providing additional discharge through evaporation and percolation in the summer and fall. Beneficial reuse is minimal with this alternative and a percolation pond must be approved by the Regional Water Quality Control Board (RWQCB), which is a lengthy process with no guarantee of approval.

Alternative 2 – Irrigate State Parks Agriculture Land

Alternative 2 (Figure 8) consists of a new storage pond adjacent to the existing treatment facility with a truck fill station for permitted users to take water for allowable uses offsite. A pump station and transmission pipeline would be constructed to deliver water to two small irrigation ponds located on State Parks land on the seaward side of Highway 1. State Parks leases the land to a local farmer who has actively farmed the land for multiple generations.

Alternative 3 – Irrigate State Parks Land and Urban Landscaping

Alternative 3 (Figure 9) builds on Alternative 2 by extending another transmission main into Davenport to serve urban landscaping areas. The amount of urban landscaping in the community of Davenport is very limited, however, because the community has evolved under water scarce conditions for decades. Potable offsets are likewise very limited for this alternative.

Alternative 4 – Irrigate State Parks and Coast Dairies Agriculture Lands

Alternative 4 (Figure 10) maximizes beneficial reuse for agriculture lands. A new storage pond is located northwest of Davenport on agriculture land. A truck fill station is provided at the treatment facility for permitted users to take water for allowable uses offsite. Treated water is pumped to storage through a new transmission main. A floating pump on the pond pumps water to the two irrigation ponds on State Parks land across Highway 1, with an additional turnout provided for the Coast Dairies property immediately adjacent to the new storage pond.

1.3 Recommended Project

Alternative 4 is the recommended project because it maximizes beneficial reuse potential while having the best cost efficiency on an annual basis. Also, the storage pond would be located where the land owner has agreed in principle to allow its construction.

Alternative 1 provides minimal beneficial reuse and would only be viable with the Regional Board's approval. Alternative 3 adds significant cost to the project to serve urban landscape areas in Davenport but the return on this investment is poor with very limited potable offset potential. Alternative 2 is similar to Alternative 4 but the District has so far been unable to obtain rights to access the property where the storage pond would be located.

2. Study Area Characteristics

The project study area is located along the coast of Santa Cruz County in the unincorporated community of Davenport, located about 12 miles northwest of the City of Santa Cruz (Figures 1 and 2). It lies primarily within the Davenport watershed as defined in the *Santa Cruz Integrated Water Management Plan*, with a small portion also lying within the San Vicente watershed. This portion of the Central Coast is known to consist of pocket beaches, sandstone bluffs and coastal terraces giving way to steeper hills and mountains moving inland. Topography (Figure 3) in the project study area is sloped towards the ocean, with elevation 50 feet above sea level on top of the bluffs ranging to about 150 feet above sea level at the inland boundary of the study area.

The Central Coast has a temperate Mediterranean climate characterized by mild, wet winters and warm, dry summers. The climate in the project study area is dominated by the Pacific Ocean and characterized by small daily and seasonal temperature changes and high relative humidity. Average historical precipitation for the area is about 31 inches annually with most rainfall occurring between late November and mid-April.

2.1 Hydrologic Features

Located within the northern most portion of the Central Coast Hydrologic Region the project study area has similar hydrologic features to the nearest mapped aquifer to the south, the Majors Creek Groundwater Basin (*CA Groundwater Bulletin 118*), described as follows:

> *Majors Creek Groundwater Basin is comprised of marine terrace deposits generally seaward (southwest) of Highway 1 to the Pacific Ocean near where Majors Creek empties into the ocean. Elevation ranges from 60 to 100 feet above sea level. The marine terrace deposits are Pleistocene in age and are surrounded by Middle Miocene rocks (Jennings 1958). The basin boundary confidence is considered low due to undetermined depth of the terrace deposits and the lack of information regarding groundwater occurrence or movement.*

The Majors Creek Groundwater Basin is similar in size (364 acres) to the project study area and extends about the same distance inland from the coast, which is basically to the inland boundary of the coastal terraces (Figure 4). Bulletin 118 cites records for three wells in the Majors Creek basin with depths of 58, 65 and 245 feet below the land surface. Well records indicate gravel and sand to depths of 50 – 60 feet, shale to 105 feet, and hard rock below this depth. Well yields are reported for two of the wells and are in the range of 25 – 50 gallons per minute (gpm).

Groundwater aquifers in the Central Coast Hydrologic Region (*Update 2013 – California Water Plan*) are described as follows:

> *Groundwater resources in the Central Coast Hydrologic Region are supplied by both alluvial and fractured rock aquifers. Alluvial aquifers are composed of sand and gravel or finer grained sediments, with groundwater stored within the voids or pore space, between the alluvial sediments. Fractured-rock aquifers consist of impermeable granitic, metamorphic, volcanic, and hard sedimentary rocks, with groundwater being stored within cracks, fractures, or other void spaces. The distribution and extent of alluvial and fractured-rock aquifers and water wells vary significantly within the region.*

Based on the references cited above one could expect that wells in the Davenport area that are within the alluvial aquifer (< 100 feet below land surface) would be impacted by the amount of precipitation falling on the coastal terraces (recharge areas) and the rate of groundwater extraction from the wells. With the State predicting greater variation in precipitation in local microclimates as a result of climate change, the Davenport alluvial aquifer could be subject to reduced yields or even potential overdraft conditions (depending on extraction rates) in extended periods of drought.

Deeper wells (> 150 feet below land surface) that extend into the fractured-rock aquifers are likely to have highly variable yields depending on whether they tap into a large or small reservoir within the voids. According to the *Update 2013 – California Water Plan* description of fractured-rock aquifers in the Central Coast Hydrologic Region, “wells drawing from fractured-rock aquifers yield 10 GPM or less.”

For the project study area groundwater as an irrigation water supply is likely limited to the alluvial aquifer within the Davenport watershed. Water reuse has several potential benefits to the local groundwater supply including aquifer recharge through percolation, reduced extraction by providing an alternative crop irrigation supply, and providing a reliable source of water for crop irrigation.

2.2 Water Quality

2.2.1 Groundwater

The *Update 2013 - California Water Plan* cites naturally occurring arsenic as a potential concern for groundwater used as a drinking water source in the Central Coast Hydrologic Region. Also cited is the potential for nitrate and salt pollution from intensive agricultural activities, although this does not appear to be a high risk in the project study area. Saltwater intrusion is cited in Bulletin 118 and the California Water Plan as a potential contaminant when aquifers along the Central Coast are overdrawn.

According to the *Geology and Natural History of the San Francisco Bay Area: A 2001 NAGT Field-Trip Guidebook, UC Santa Cruz Geology Department*, water wells in Davenport Landing, just north of the project study area, produce methane gas with the water. Samples were taken from a 655-foot deep well with standing water at 330 feet and gas apparently originated from organic mudstone.

No references were found citing evidence of groundwater quality degradation in the Davenport watershed due to human activities.

2.2.2 Surface Water

The project study area is within the Davenport watershed as defined in the Santa Cruz Integrated Water Management Plan and is bounded by San Vicente Creek to the south and an unnamed creek to the north (just south of Molino Creek and terminating at Davenport Landing). However, the topography of the project study area directs the majority of the surface runoff to the Pacific Ocean and we do not anticipate any interaction with the nearby streams.

2.3 Land Use and Land Use Trends

A decommissioned cement plant, originally constructed in or around 1905, dominates the center of the project study area. The community of Davenport was originally housing for workers at the plant and nearby quarries but has evolved into a small beachside coastal community with a commercial district and an elementary school. The cement plant site is zoned Mountain Residential (Figure 6) and could be redeveloped, creating new opportunities for water reuse, although the property would need to undergo remediation before development occurs. The land surrounding the community of Davenport is zoned agriculture and will likely remain this way for the foreseeable future.

California State Parks owns the land on the seaward side of Highway 1 within the project study area and they lease the land to a second generation farmer, with leases lasting 1 – 5 years in duration. Coast Dairies & Land Company, (Coast Dairies) owns land to the northwest of Davenport and on the inland side of Highway 1 that is within the Study Area and that is not currently in agriculture production. Typical commercial crops in this area of the coast include brussel sprouts, artichokes, and berries.

2.4 Population Projections

Davenport has a permanent population of about 250 residents and the District does not anticipate further growth.

2.5 Beneficial Uses of Receiving Waters

The *California Ocean Plan 2012* describes beneficial uses for the Pacific Ocean as follows:

> *The beneficial uses of the ocean waters of the State that shall be protected include industrial water supply; water contact and non-contact recreation, including aesthetic enjoyment; navigation; commercial and sport fishing; mariculture; preservation and enhancement of designated Areas of Special Biological Significance (ASBS); rare and endangered species; marine habitat; fish migration; fish spawning and shellfish harvesting.*

According to the *Update 2013 – California Water Plan* San Vicente Creek is targeted for improving flow conditions in support of coho salmon in NOAA's *Central California Coast Coho Salmon Recovery Plan*.

2.5.1 Portion of Flow that is Effluent

Treated wastewater effluent is currently discharged to a spray field immediately adjacent to the treatment facility. The District's WDRs do not allow for surface runoff so there is no discharge to receiving waters.

3. Water Supply Characteristics and Facilities

3.1 Wholesale and Retail Entities

The District is the sole provider of potable water to the community of Davenport at present. Figure 5 depicts the District's boundary in relation to the project study area and the location of the water treatment plant.

3.2 Sources of Water and Major Facilities

Water is supplied from two surface water intakes, one on San Vicente Creek and the other on Mill Creek (which feeds into San Vicente Creek). The water flows about 3 miles by gravity pipeline along San Vicente Creek and then cross-country to the water treatment plant located within the old cement plant site (see Figure 5).

The water treatment plant was constructed and put into operation in 2011. It was designed to meet current surface water requirements for high turbidity water and consists of pre-filtration with 20-micron disc filters, sand filtration, followed by a bank of bag filters. The project also included construction of a new 250,000 gallon steel storage tank for peak day storage plus fire flows.

3.3 Capacities of Present Facilities

The peak daily flow capacity for this facility is 130,600 gallons (90 gpm) and accounts for fire flows.

3.4 Groundwater Management and Recharge

The District does not utilize wells for water supply.

3.5 Water Use Trends and Future Demands

In 2013 the water demand in February averaged 36,600 gallons per day (gpd) and in August averaged 52,900 gpd, which according to the District are typical demands for wet weather and dry weather months. In 2014 the total potable water demand for the District was 16.9 million gallons, an average of 46,419 gpd.

The District boundary is contiguous with its Urban Services Line. Alteration of the Urban Services Line would require a General Plan amendment, and alteration of the District's boundary would require approval of the Local Agency Formation Commission (LAFCO). Future demands are not expected to increase beyond current levels.

3.6 Quality of Water Supplies

Table 2 provides a summary of sampling results for the detection of contaminants from the District's 2013 Consumer Confidence Report. For reference, Stream 1 is San Vicente Creek and Stream 2 is Mill Creek. According to the report there was no detection for total coliform bacteria or fecal coliform.

Table 2 Summary of 2013 Consumer Confidence Report

Chemical or Constituent	Sample Date	Level Detected	Range of Detections	MCL	PHG (MCLG)
Sodium (ppm)					
Stream 1	08/28/2007	15	15	None	None
Stream 2	08/28/2007	15	15	None	None
Hardness (ppm)					
Stream 1	08/28/2007	61	1	None	None
Stream 2	08/28/2007	58	1	None	None
Perchlorate (ug/L)					
Stream 1	05/27/2014	ND	4	4	6
Stream 2	05/27/2014	ND	4	4	6
Turbidity (units)					
Stream 1	08/28/2007	0.52	0.52	1	N/A
Stream 2	08/28/2007	0.55	0.55	1	N/A
Total Dissolved Solids (ppm)					
Stream 1	08/28/2007	130	130	1,000	1,000
Stream 2	08/28/2007	130	130	1,000	1,000
Specific Conductance (uS/cm)					
Stream 1	05/27/2014	180	240	1,600	N/A
Stream 2	05/27/2014	170	240	1,600	N/A
Chloride (ppm)					
Stream 1	08/28/2007	12	12	500	N/A
Stream 2	08/28/2007	13	13	500	N/A
Sulfate (ppm)					
Stream 1	08/28/2007	9	9	500	N/A
Stream 2	08/28/2007	9	9	500	N/A

3.7 Sources for Additional Water and Plans for New Facilities

Having just completed the new water treatment and storage facilities in 2011, the District has no plans to construct new facilities in the foreseeable future. Rates for potable water services are high in comparison to other nearby water service areas as indicated in Table 3.

Table 3 Comparative Monthly Water Service Charges

Agency	Rates Effective	Single Family ($/month)	Restaurant (44HCF/month) ($/month)	Notes
Davenport County Sanitation District (FY14/15)	7/2014	$129.58	$453.62	1
Davenport County Sanitation District (FY15/16)	7/2015	$133.24	$466.46	1
Lompico County Water District	7/2010	$98.24	n/a	2

Agency	Rates Effective	Single Family ($/month)	Restaurant (44HCF/month) ($/month)	Notes
City of Pacifica (North Coast County WD)	3/2010	$65.79	$264.77	2,3
City of Half Moon Bay (Coastside County WD)	7/2010	$61.28	$302.76	2,3
Scotts Valley Water District	12/2010	$58.03	$318.27	2,3
City of Santa Cruz	1/2011	$48.83	$219.52	2,3
San Lorenzo Valley Water District	3/2010	$48.82	$182.61	2,3
City of Morgan Hill	1/2011	$17.72	$90.06	2,3
City of Gilroy	1/2009	$16.87	$78.40	2,3

Notes:
1. Flat monthly fee for residential customers.
2. Monthly charges for residential customers based on 10 HCF/month.
3. Based on 1-inch meter for restaurants.

4. Wastewater Characteristics and Facilities

4.1 Description of Entities

The District provides wastewater collection, treatment and disposal for the community of Davenport. Figure 5 depicts the District's boundary in relation to the project study area and the location of the wastewater treatment plant and disposal area.

4.2 Description of Major Facilities

The existing treatment plant receives untreated wastewater from New Town, Old Town and the decommissioned cement plant. With the cement plant out of operation the wastewater is primarily residential with a small component of commercial and institutional flow.

The wastewater is treated in a 4 million gallon capacity aerated lagoon where it undergoes primary and secondary treatment. A submersible pump conveys lagoon effluent to downstream treatment facilities. Coagulant and hypochlorite are added to the lagoon effluent prior to treatment in an up-flow sand filter. The filter has an area of 19 square feet which equates to a capacity of 95 gpm (136,800 gpd) at the maximum allowable loading rate under Title 22 requirements.

The treated wastewater then passes through a 3,000-gallon chlorine contact chamber for disinfection. Sodium bisulfite is injected after the chlorine contact chamber for de-chlorination and the secondary-23 treated water is pumped to a spray field adjacent to the plant for application to un-mowed grass. Figure 11 provides a process flow diagram of the existing treatment facilities.

4.3 Water Quality of Effluent and Seasonal Variations

Effluent water quality for a range of parameters is provided in Table 4, including the seasonal range and average for each.

Table 4 Effluent Water Quality and Seasonal Variations

Year	Turbidity		Coliform		BOD_5		Cl_2 Residual	
	Range	**Avg.**	**Range**	**Avg.**	**Range**	**Avg.**	**Range**	**Avg.**
2011	0.3-1.7	0.70	<0.1-<1.0	0.9	2.0-6.0	4.8	0.7-7.6	3.9
2012	0.4-1.7	0.86	<1.5-<1.8	1.7	2.0-2.4	2.0	1.6-5.5	2.9
2013	0.5-1.8	0.97	<1.5-<1.6	1.5	2.0-14.0	4.4	0.8-3.3	2.1
Year	pH		Nitrate (as N)		Total N			
	Range	**Avg.**	**Range**	**Avg.**	**Range**	**Avg.**		
2011	7.3-8.1	7.6	0.2-9.0	3.8	1.3-17.0	6.8		
2012	7.1-7.9	7.5	0.2-140.0	36.4	3.0-27.0	9.3		
2013	7.2-8.4	7.8	0.2-11.0	5.7	2.3-14.0	9.0		

4.4 Additional Facilities Needed for WDR Compliance

The treatment plant is operated under *Order No. 95-27, Waste Discharge Requirements* (WDR), issued by the Central Coast RWQCB (Appendix A).

The WDR states that monthly daily average dry weather influent from May to October shall not exceed 50,000 gpd. Historical flow records for 2011 through 2013 indicate that this requirement was not violated. The WDR also states that monthly average wet weather influent flow (MAWWF) from November to April may exceed 50,000 gpd provided effluent meets reclaimed water requirements. Historical flow records indicate that the MAWWF exceeded 50,000 gpd once in March of 2011. Exceeding the 50,000 gpd limit is allowed so long as the effluent continues to meet the required recycled water quality (secondary-23) and this requirement was met in March 2011.

An analysis was performed to evaluate the existing lagoon's capacity to treat various flow scenarios. This analysis used the lagoon model equation taken from *Wastewater Technology Fact Sheet – Aerated, Partial Mix Lagoons*, developed by the United States Environmental Protection Agency.

For this analysis effluent BOD was assumed to be 10 milligrams per liter (mg/L) and the influent BOD varied depending on the time of year. The analysis for maximum month flow and peak day flow used a weighted average influent BOD value to account for dilution from infiltration and inflow. A baseline value for dry weather flow was assumed to have an influent BOD of 200 mg/L. The remainder of the flow over and above dry weather averages, which would be from infiltration and inflow, was assumed to have an influent BOD of 9 mg/L. This weighted-average BOD represents the diluting effect that the rainfall-induced infiltration would have on the overall BOD strength during peak flow periods. The results of the lagoon analysis are shown in Table 5.

Table 5 Lagoon Treatment Volume Required for Varios Flow Scenarios

	Avg. Dry Weather	Avg. Wet Weather	Average Annual	Max Month	Peak Flow
Flow (gpd) =	13,453	22,077	21,442	40,101	98,704
V_{Req} (gal) =	926,109	1,519,790	1,476,046	2,760,591	895,221

After accounting for accumulated sludge in the lagoon (8 feet) and a minimum of 2 feet of freeboard during a peak event, the existing lagoon has approximately 2.8 million gallons of treatment capacity, which is adequate to handle the peak flow scenario (maximum month) shown in Table 5.

4.5 Sources of Industrial or Other Constituents of Concern and Control Measures

Now that the cement plant is decommissioned there are no known sources of industrial or other constituents of concern entering the collection system.

4.6 Existing Recycling

The treatment plant produces secondary-23 quality water as defined under Title 22. When the cement plant was operating 100 percent of the treated effluent (>30 acre-feet annually) was reused in the conditioning tower and was subsequently vaporized in the making of cement. At present there is no water recycling from the treatment plant and treated effluent is spray irrigated onto un-mowed grass in a controlled location. With the amount of influent generated from the cement plant reduced since its closure, the amount of treated effluent available for reuse has also been reduced.

4.7 Existing Rights to Use of Treated Effluent After Discharge

In its agreement with Cemex (formally Lone Star), the District agreed to provide secondary-23 quality recycled water to the cement plant with Cemex having first right of refusal (Appendix B). With the cement plant decommissioned they are not taking any of the recycled water. If a property transfer occurs the legal rights to use the water would have to be addressed in the transfer, or new agreements drawn with the new property owners.

4.8 Wastewater Flow Variations

In 1992 the District replaced the collection system sewer mains to address infiltration and inflow (I/I) concerns. The District implemented improvements to the collection system again in 2011 to further reduce I/I. In June of 2014 the District had smoke testing of the sewer mains and laterals completed which revealed only two potential sources of I/I of “light” concern; these were cleanouts needing repair but they are located above grade. The smoke testing results indicate that the previous improvements have in fact reduced I/I flows to the treatment plant.

Flow characteristics from the collection system are provided in Table 6. The average daily flow to the treatment plant after 2011 is 84 gpd per capita which is within the allowable 120 gpd per capita, and therefore a *Sewer System Evaluation Survey* is not required under the CWSRF program.

Table 6 Wastewater Flow Variations

Year	Avg. Annual Daily Flow	Avg. Day Max Month Flow	Peaking Factor (ADMMF)	Peak Day Flow	Peaking Factor (PDF)	Avg. Dry Weather Flow	Avg. Wet Weather Flow
	(gpd)	**(gpd)**		**(gpd)**		**(gpd)**	**(gpd)**
2011	26,000	58,000	2.2	119,000	4.7	14,000	n/a
2012	18,000	32,000	1.8	52,000	2.9	12,000	20,000
2013	21,000	31,000	1.5	125,000	6.0	14,000	24,000

5. Treatment Requirements for Discharge and Reuse

5.1 Required Water Qualities for Potential Uses

The primary purpose of the project is to develop new water reuse customers that will replace the former Cemex cement plant demands. Potential reuse options include crop irrigation, landscape irrigation including schools and playgrounds, and miscellaneous approved uses from a truck fill station. Crop irrigation could include surface irrigation of food crops where recycled water contacts the edible portion of the crop.

Title 22 describes levels of treatment required for various water reuse options, and Table 7 indicates the treatment levels for potential uses associated with the project.

Table 7 Required Water Qualities for Potential Uses

Potential Use	Treatment Level
Irrigation:	
Surface irrigation of food crops where recycled water does not contact edible portion of crop	Secondary-2.2
Freeway landscaping	Secondary-23
Non-edible vegetation in controlled access area	Secondary-23
Pastures for milk-producing animals for human consumption	Secondary-23
Surface irrigation of edible food crops where recycled water contacts edible portion of crop (including roots)	Disinfected Tertiary
Parks and playgrounds	Disinfected Tertiary
School yards	Disinfected Tertiary
Residential landscaping	Disinfected Tertiary
Other Uses:	
Dust control	Secondary-23
Mixing concrete	Secondary-23
Soil compaction	Secondary-23
Wash down of outdoor work areas	Secondary-23

5.2 Required Health-Related Water Qualities

Outside of the wastewater treatment plant and approved spray field location, all potential users will need to meet the requirements of Title 22 including signage, backflow prevention, buffer zones, and approved reuse application based on the recycled water quality provided to the customer. Customers will first need to obtain a Recycled Water Use Permit from the District which will require education and training on proper use of recycled water.

5.3 Wastewater Discharge Requirements

Under the District's WDRs discharge is limited to the current spray field unless otherwise approved by the Executive Officer. Production and use of reclaimed water for additional uses shall be in

conformance with the reclamation criteria contained in Title 22. Adding additional users will require completion of an Engineering Report and must be approved by the Executive Officer before water is delivered to the new users. The WDR would also be modified by the RWQCB to address the new requirements for supplying recycled water to the new users.

No irrigation or impoundment of reclaimed water is allowed within 500 feet of a domestic supply well or within 100 feet of an irrigation well unless it can be demonstrated that special circumstances justify lesser distances.

5.4 Water Quality-Related Requirements of the RWQCB

The District's WDRs stipulate effluent limits for metals for all new reuse applications, and additional limits for groundwater applications (e.g. percolation pond) and MCLs for groundwater (Appendix A). No analytical information on metals content in the treated effluent was available at the time this report was written. Additional analyses for constituents of concern will be required to pursue reuse of the treated effluent.

For aquifer recharge with recycled water the RWQCB will consider proposals on a case by case basis and determine specific requirements to protect the quality of the groundwater. This could include limits on ammonia and nitrate levels as well as groundwater sampling and reporting down gradient from the recharge site.

6. Recycled Water Market

6.1 Description of Market Assessment Procedures

The categories and number of potential water reuse customers is fairly limited within the project study area. A market assessment was undertaken by mailing a stakeholder notice and questionnaire to all property owners and residents within the project study area (Appendix C). The questionnaire was developed to gauge interest in water reuse, characterize potential reuse applications and demands, and identify stakeholder concerns with a reuse program.

Consideration was made for Spanish-speaking residents based on information the District has on file. The notice and questionnaire was sent out in December 2013 with a follow-up mailing in January 2014.

For the planted fields on the seaward side of Highway 1, the local representative of State Parks was contacted regarding water reuse in these fields. The name of the farmer who leased the land from the State was provided but after several attempts contact was not made with the farmer. For the Coast Dairies agriculture land contact was made with the farmer who leases the property and verbal confirmation was made regarding interest in using recycled water.

6.2 Description of All Users or Categories of Users

Potential users of recycled water fit into the following categories:

- Private residences (landscaping)
- Institutions (school yard, church yard landscaping)
- Common area landscaping (along public streets)
- Freeway landscaping

- Commercial crops
- Dust control and other uses

Out of a total of 110 parcels in the project study area, the District received a total of 16 responses, the majority of which were only partially completed.

6.3 Summary Tables of Potential Users and Related Data

Table 8 provides a summary of the potential user categories and approximate size of the reuse areas within the project study area and potential demands in an "average" weather year. Water reused for dust control and other uses would be delivered via a truck fill station at the treatment plant and the application of the water could take place outside of the study area.

Table 8 Potential Recycled Water Demand in an "Average" Weather Year

Potential User Category	Approximate Size	Time of Demand	Potential Demand
Surface irrigation of food crops where recycled water contacts edible portion of plant	55.5 acres	Jun - Aug	150 acre-feet
Parks, playgrounds and school yards	1.2 acres	Jun - Aug	3 acre-feet
Freeway landscaping	0.5 acre	Jun - Aug	1 acre-foot
Dust control and other miscellaneous uses	3,000 gal/week	Jun - Oct	0.2 acre-foot
Aquifer recharge through percolation	TBD	All Year	5 acre-feet

Landscape irrigation for parks, playgrounds, school yards and common greenbelts in Davenport is the only water reuse cateory that could generate potable offset benefits. Based on current demands the cost for the potable water that could be offset by water reuse is estimated to be $5,475 per acre-foot. This does not include freeway landscaping because these areas are not currently irrigated.

Groundwater is currently used for crop irrigation on the State Parks land and the cost of this water is the cost of electrical power and maintenance and upkeep of the equipment. Pumping groundwater is the lowest cost alternative as a water supply but it is a limited resource. It should be noted that the well used to water the State Parks land is located on Coast Dairies land and if the Coast Dairies land goes back into production the State Parks land may not have an alternative water supply.

Onsite retrofits of existing landscaping irrigation systems in Davenport would require disconnecting the potable system from the recycled system, adding backflow prevention, and installing appropriate signage and markings for the recycled water features. Onsite retrofit of the crop irrigation systems would be limited to signage and markings to identify water recycling facilities. No other onsite retrofits are envisioned.

6.4 Definition of Logical Service Area Based on Results of Market Assessment

The logical service area would be defined by the District's existing service area (Figure 5), which also provides drinking water and wastewater collection and treatment. The State Parks and Coast Dairies agriculture land that is within the project study area would would also be part of the recycled

water service area, and there could be users that take water from a truck fill station but apply the water outside of the project study area.

7. Project Alternative Analysis

Project alternatives described in this section provide a range of options with varying scope, customers served, benefits to the watershed, and costs to construct, operate and maintain.

7.1 Planning and Design Assumptions

7.1.1 Delivery and System Pressure Criteria

Delivery and system pressure criteria for the alternatives are included in Table 9.

Table 9 Delivery and System Pressure Criteria

Description	Criteria
Furthest landscape irrigation customer	40 - 80 psi
Furthest irrigation pond	10 - 20 psi
Truck fill station	10 - 20 psi

7.1.2 Peak Delivery Criteria

Recycled water will be pumped to the storage pond at a maximum rate of 100 gpm. For a 3,000-gallon tank truck this would result in a 30 minute wait at a truck fill station. Recycled water will be pumped from the storage pond to users at a maximum rate of 300 gpm, but this could be adjusted based on the number and types of users for the selected alternative.

7.1.3 Storage Criteria

Storage will be provided in the existing aerated lagoon and a new storage pond for recycled water. The aerated lagoon is operated to maintain storage capacity for wet months when necessary since the maximum flow rate through the chlorine contact chamber is the limiting factor for meeting disinfected tertiary quality water in accordance with Title 22. For the maximum month flow the required treatment capacity is 2,760,000 gallons (8.5 acre-feet). After allowing for 2 feet of freeboard, the aerated lagoon has a total storage volume of 3,964,000 gallons (12.2 acre-feet) which means that there is 3.7 acre-feet of working storage available for solids accumulation and wet weather flow equalization.

The new storage pond will hold only recycled water meeting the Title 22 requirements for disinfected tertiary quality water. The working volume of the new pond, after allowing for 2 feet of freeboard and 2 feet of minimum depth, will be 10 acre-feet. With an additional 1.4 acre-feet of winter storage in the aerated lagoon the District will be capable of storing and reusing all water treated in an “average” weather year. In an especially wet year the District would need to utilize the spray field as conditions allow during the winter months to manage the water and maintain freeboard in the aerated lagoon and storage pond.

7.1.4 Cost Basis

Construction costs are based on a Class 5 (planning-level) estimate of probable cost as defined by the Association for the Advancement of Cost Engineering, International (AACE). AACE defines the "Class 5" estimate as follows:

> *Generally prepared on very limited information, where little more than proposed plan type, its location, and the capacity are known, and for strategic planning purposes such as but not limited to market studies, assessment of viability, evaluation of alternate schemes, project screening, location and evaluation of resource needs and budgeting, long-range capital planning, etc. Some examples of estimating methods used would include cost/capacity curves and factors, scale-up factors, and parametric and modeling techniques. Typically, very little time is expended in the development of this estimate. The typical expected accuracy ranges for this class estimate are -20% to -50% on the low side and +30% to +100% on the high side.*

Construction costs are based on the April 2014 Engineering News Record Construction Cost Index (ENR CCI) for San Francisco, CA (10,895). Estimates of probable cost are provided in Appendix E.

7.1.5 Planning Period

Present worth valuations are based on a 20-year planning horizon and a discount rate of 3 percent. Replacement costs are based on a 50-year asset life.

7.2 Water Recycling Alternatives

Four alternatives were evaluated for the project including construction of a percolation pond with no reuse other than providing a truck fill station, two alternatives with various combinations of agriculture reuse, and a fourth alternative with a mix of agriculture reuse and landscape irrigation. For all alternatives the treatment facility would be upgraded to provide disinfected tertiary water in accordance with Title 22 requirements. A regionalized alternative was not developed since Davenport is isolated and the nearest wastewater facility is in Santa Cruz approximately 12 miles down the coast. The District already handles potable water and wastewater services and there are no other water agencies operating in the vicinity.

A brief description of each alternative developed is provided below and a comparison of the alternatives with respect to meeting *State Planning Priorities* and *Sustainable Water Resources Management Priorities* is provided in Table 10.

Alternative 1 – Percolation Pond

Alternative 1 is shown in Figure 7 and includes the following features:

- Treatment plant upgrade to meet Title 22 disinfected tertiary quality water
- Construction of a storage/percolation pond adjacent to the aerated lagoon
- Construction of a truck fill station and hose bibb at the treatment plant

The primary benefit of this alternative is to provide additional storage and thereby provide a more reliable disposal system for compliance with the WDR and protection of raw water quality. Beneficial reuse is minimal and would only occur through use of the truck fill station. Construction costs would be minimized by avoiding the need for conveyance infrastructure to new customers. Aquifer recharge could potentially provide secondary benefits to nearby farmers who use groundwater for crop irrigation. Stored recycled water would be applied to the spray fields as it is currently done to draw storage levels down before the rainy season begins.

The truck fill station and hose bibb would be located at the treatment plant and would make water available for approved uses outside of the project study area, such as dust control and other approved construction uses. Residents of Davenport who have been through training and hold permits issued by the District could also get water from the hose bibb to take back to their properties for approved reuse applications.

Climate change is expected to include both prolonged periods of drought and extremely wet years. This alternative provides a buffer for both extremes with storage to hold water in wet years and minimize the chance of an illegal discharge, and providing aquifer recharge benefits and an additional source of water in periods of drought.

Alternative 2 – Irrigate State Parks Agriculture Land

Alternative 2 (Figure 8) includes the following features:

- Treatment plant upgrade to meet Title 22 disinfected tertiary quality water
- Construction of a lined storage pond adjacent to the aerated lagoon
- Construction of a truck fill station and hose bibb at the treatment plant
- Pump station and piping to convey water from the new storage pond to existing irrigation ponds on the State Parks agriculture land on the seaward side of Highway 1

This alternative provides beneficial reuse of recycled water by providing water for crop irrigation on 47.5 acres of agriculture land owned by the State Parks and leased to a local farmer. A truck fill station would also be provided at the treatment plant for additional reuse by permitted individuals and for approved uses under Title 22. A predictive water balance model was prepared (Appendix D) which indicates that 100 percent of the available water in a year with historically “average” rainfall would be reused for crop irrigation, about 20 acre-feet annually after accounting for evaporation losses. The existing spray field would remain as a backup disposal option to empty the storage pond before the rainy season begins if all of the available water was not used in a given year.

Considering the State’s planning priorities and water sustainability goals this alternative provides several benefits including beneficial reuse, protecting agriculture resources, reducing dependence on groundwater, protection of raw water quality, and construction in previously developed areas immediately adjacent to the water users. As with Alternative 1 this alternative provides a buffer against climate change by providing needed storage in wet years to minimize the chance of an illegal discharge, and maximizing water reuse in dry years.

Alternative 3 – Irrigate State Parks Agriculture Land and Urban Landscaping

Alternative 3 (Figure 9) is an expanded version of Alternative 2 where additional distribution pipe is installed to deliver water to New Town and Old Town for landscape irrigation. Landscape irrigation potential is estimated to be about 1.2 acres with an annual demand of about 3 acre-feet. It is the most costly alternative because of the amount of distribution piping needed to serve the dispersed landscaped areas that would be potential candidates for reuse.

This alternative has the same benefits as Alternative 2 plus generates potable offsets to the extent of the landscape irrigation demands. However, the potable offsets reduce the amount of water available for crop irrigation and the related benefits agriculture brings. As with Alternative 1 this alternative provides a buffer against climate change by providing needed storage in wet years to avoid an illegal discharge and maximizing water reuse in dry years.

Alternative 4 – Irrigate State Parks and Coast Dairies Agriculture Land

Alternative 4 (Figure 10) includes the following features:

- Treatment plant upgrade to meet Title 22 disinfected tertiary quality water
- Construction of a lined storage pond on Coast Dairies property north of New Town
- Construction of a truck fill station and hose bibb at the treatment plant
- Pump station and piping to convey water from the treatment plant to the storage pond
- A floating pump in the new pond and distribution piping to two existing irrigation ponds on the State Parks land and a turnout for the Coast Dairies parcel

This alternative provides beneficial reuse of recycled water by providing water for crop irrigation on 55.5 acres of agriculture land owned by State Parks and Coast Dairies and leased to local farmers. A truck fill station would also be provided at the treatment plant for additional reuse by permitted individuals and for approved uses under Title 22. A predictive water balance model was prepared (Appendix D) which indicates that 100 percent of the available water in a year with historically "average" rainfall would be reused for crop irrigation, about 20 acre-feet annually after accounting for evaporation losses. The existing spray fields would remain as a backup disposal option to empty the storage pond before the rainy season begins if all of the available water was not used in a given year.

Considering the State's planning priorities and water sustainability goals this alternative provides several benefits including beneficial reuse, protecting agriculture resources, reducing dependence on groundwater, protection of raw water quality, and construction in previously developed areas immediately adjacent to the water users. As with Alternative 1 this alternative provides a buffer against climate change by providing needed storage in wet years to avoid an illegal discharge and maximizing water reuse in dry years.

Table 10 provides a comparison of the four alternatives as they relate to *State Planning Priorities* and *Sustainable Water Resource Management Priorities*.

Table 10 Comparison of Alternatives Against State Priorities

State Priorities	Alt. 1	Alt. 2	Alt. 3	Alt. 4
State Planning Priorities:				
Improves existing infrastructure	X	X	X	X
Redevelops previously developed land	X	X	X	X
Preserves and enhances farmland		X	X	X
Sustainable Water Resource Management Priorities:				
Repair and upgrade existing infrastructure	X	X	X	X
Redevelop previously developed land	X	X	X	X
Robust alternatives analysis	X	X	X	X
Pricing and rate structures reflecting true costs	X	X	X	X
Maximize capital investments previously made	X	X	X	X

7.2.1 Treatment Alternatives

The treatment plant currently meets the WDR requirements for Title 22 secondary-23 quality water for disposal to the dedicated spray field. However, there are several improvements that are required to meet the disinfected tertiary requirements for delivery to new reuse customers outside of the controlled treatment plant area. Improvements to the treatment plant include those items described in Table 11. Alarms in the coagulant, disinfection, filtering, and de-chlorination systems would trigger automatic shutdown of the tertiary treatment system as appropriate, and utilize storage in the aerated lagoon until the failure has been addressed and the system is returned to full functionality. These measures help protect the quality of the water for the customers, and in particular those requiring disinfected tertiary quality water.

Table 11 Improvements to Treatment Plant to Serve New Reuse Customers

Improvement	Benefit
Aerated Lagoon:	
Dredge pond of accumulated solids	Facilitate pump replacement
Replace submersible pump in aerated lagoon	Title 22 compliance
Install pump controls and alarms	Title 22 compliance
Coagulation:	
Influent turbidity analyzer/recorder w/ alarm	Title 22 compliance
Backup metering pump with automatic dosage	Reliability
Alarm for low coagulant level in storage	Reliability
Shutdown of tertiary systems on high effluent turbidity	Title 22 compliance
Filtration:	
Governor on influent flow rate (95 gpm max)	Maximum allowable loading rate
Shutdown of tertiary systems on filter failure	Title 22 compliance
Disinfection:	
Backup metering pump with automatic dosage	Reliability
Alarm for low hypochlorite level in storage	Reliability
Chlorine analyzer/recorder after filter (5 mg/L target)	Title 22 compliance
Shutdown of tertiary systems on disinfection failure	Title 22 compliance
Dechlorination:	
Backup metering pump with automatic dosage	Reliability
Alarm for low sodium bisulfite level in storage	Reliability
Chlorine analyzer/recorder after dechlorination	Operational control

The maximum flow through the tertiary treatment processes is 48,000 gpd and is limited by the maximum allowable flow rate to achieve disinfection requirements for Title 22 disinfected tertiary quality water. Flows in excess of the 48,000 gpd (33.3 gpm) rate would need to be temporarily stored in the lagoon to stay within this maximum flow limit. Figure 11 provides a flow schematic of the existing treatment plant processes and the recommended improvements described in Table 11.

7.2.2 Pipeline Route Alternatives

New pipelines will be routed along existing roadways to reach new customers; because the community is small there are very few alternatives to consider. Table 12 provides brief descriptions of the pipeline routes and considerations for construction.

Table 12 Pipeline Route Descriptions

Alignment	Description
Cement Plant Road	Install in trench outside concrete pavement where there are no habitat restrictions; saw cut concrete and trench inside concrete pavement for crossings or otherwise.
Highway 1	Crossings will include installing a casing by jack and bore method; longitudinal alignment in the Caltrans right-of-way will be outside the travel lanes and outside the paved area where it's feasible.
County roads	Install in trench outside the pavement where feasible; trench within the paved area where otherwise constrained.
Frontage road	Along the seaward side of Highway 1 in the State Parks property install the pipe in the gravel frontage road.
Railroad	Crossings will include installing a casing by jack and bore method.

7.2.3 Alternative Markets

At the current level of treatment, secondary-23 quality water, the project could serve the following applications:

- Freeway landscaping (along Highway 1)
- Irrigation of pastures outside project study area (from truck fill station)
- Dust control and construction applications outside project study area (from truck fill station)

If improvements are made to meet the requirements for disinfected tertiary quality water, the project could serve additional applications, including:

- Irrigation of edible crops with contact (State Parks and Coast Dairies agriculture land)
- Irrigation of school yard, church playground and public area landscaping (New Town and Old Town)
- Irrigation of residential landscaping and gardens (from hose bibb at treatment plant)
- Aquifer recharge (from percolation pond; would benefit irrigation of edible crops on State Parks and/or Coast Dairies agriculture land)

7.2.4 Storage Alternatives

Storage would consist of a pond at grade with the interior excavated and berms surrounding the pond to further add to the overall storage capacity. If aquifer recharge is a viable reuse option than the pond would be unlined and percolation would be a benefit. Otherwise the pond will be lined to save the water for other reuse applications if the demands for the water warrant it.

Ideally the new storage pond would be located immediately adjacent to the treatment plant on Cemex property in order to consolidate the District's equipment in a single area, which is more efficient for the operations and maintenance staff. However the District has not had success in gaining access to this site or come to a general agreement for constructing the pond in this location. Alternatively the storage pond would be located on the Coast Dairies property north of New Town where the property owner is willing to accommodate the District and to work out an easement arrangement.

If water is delivered to the State Parks land for irrigating food crops, there are two small irrigation ponds that would be used to receive and store water for irrigation purposes. These ponds would be owned and maintained by the farmer.

7.2.5 Sub-alternatives

Alternatives 1 – 3 have the storage pond located on the Cemex property next to the treatment plant, and Alternative 4 has the storage pond on the Coast Dairies property north of New Town. The pond could be located in either location for any of the alternatives with the only restriction being access to property by the current owners. The Cemex property location is preferred but this land owner has not been open to discussions as of this date.

Alternative 2 distributes recycled water to the State Parks land only, and Alternative 4 distributes recycled water to State Parks and Coast Dairies land for crop irrigation. If a User Agreement cannot be negotiated with State Parks or its tenant farmer then Alternative 4 could be reduced to serve just the Coast Dairies property.

7.3 Non-recycled Water Alternatives

7.3.1 Other Potentially Viable New Sources of Water

Other potentially viable sources of water include extending a pipeline from the City of Santa Cruz to provide emergency backup supply, or installing a small community desalination plant.

7.3.2 Economic Analysis

The nearest pipeline in the City of Santa Cruz system is 3.5 miles south on Highway 1. It is a raw water supply line from the City's Liddell Spring and Laguna Creek intakes. Although the City serves coastal farmers north of the City it is unknown whether they would be willing to extend a pipeline to Davenport to serve additional demands, even if as an emergency supply. The project cost of a 3.5-mile pipeline for this purpose would be roughly $4 million which is similar to the cost of the alternatives being evaluated for water reuse.

Sand City, a small community located at the south end of Monterey Bay, installed a small desalination system for their water supply. Desalination systems are very difficult to permit and expensive to build and operate. This is not a viable option for the economically disadvantaged community of Davenport given that they just completed a new water treatment plant within the last 5 years.

7.4 Water Conservation/Reduction Analysis

Based on 2014 water records provided by the District, the community of Davenport consumed about 185 gpd per capita over the 12-month period (indoor use, outdoor use and commercial). Currently the baseline consumption for the Central Coast Hydrologic Region is 154 gpd per capita

annually and the 2020 target is 123 gpd per capita. The community does not have a significant amount of landscaping and general outdoor use, but there is a significant amount of tourism especially in the summer that drives water usage up. Winter water usage is about 146 gpd per capita which is in line with the baseline number for the Central Coast.

Water conservation would help reduce the annual amount of water used but would not eliminate the need for the project. The District would still be at risk of potential illegal discharge in periods of prolonged rain during winter months, and there would still be a benefit to reusing water for crop irrigation.

7.5 Pollution Control Alternatives

There are no identified pollution control alternatives that would generate additional water supply.

7.6 No Project Alternative

The "no project" alternative would not provide any benefits to the watershed, which is already vulnerable to limited water supplies and especially during extended periods of drought. Also, an opportunity would be missed to contribute to the State's priority to improve drought preparedness and the Santa Cruz IRWM strategies to develop or increase production of alternative sources.

7.7 Project Alternative Evaluation

Project alternatives are evaluated based on cost, cost efficiency, economics, energy use, and water quality impacts. A comparison of the four project alternatives under these criteria are provided in Tables 13 - 16.

Table 13 Project Components for Alternatives

Project Component	Alt. 1	Alt. 2	Alt. 3	Alt. 4
Treatment plant upgrades	X	X	X	X
Percolation/storage pond, unlined	X			
Storage pond, lined		X	X	X
Truck fill station and hose bibb	X	X	X	X
Pipeline to State Parks land for crop irrigation		X	X	X
Turnout for Coast Dairies crop irrigation				X
Pipeline to New Town for landscape irrigation			X	
Pipeline to Old Town for landscape irrigation			X	

Table 14 Estimated Project Costs for Alternatives

Cost Description	Alt. 1	Alt. 2	Alt. 3	Alt. 4
Construction	$1,527,000	$2,560,000	$3,364,000	$2,560,000
Engrg, Admin & Contingency	$839,000	$1,408,000	$1,850,000	$1,408,000
Total Capital Cost	**$2,366,000**	**$3,968,000**	**$5,214,000**	**$3,968,000**
Annual O&M Cost	**$20,000**	**$29,000**	**$35,000**	**$29,000**
Present Value (20 years, 3%)	**$2,664,000**	**$4,399,000**	**$5,735,000**	**$4,399,000**

Annual Capital Recovery (50 yrs)	**$92,037**	**$154,355**	**$202,825**	**$154,355**

Table 15 Estimated Reuse and Cost Efficiency for Alternatives

Description	Alt. 1	Alt. 2	Alt. 3	Alt. 4
Annual Reuse (acre-feet)[a]	0.18	19.62	19.62	19.62
Present Value (20 years, 3%)	$2,664,000	$4,399,000	$5,735,000	$4,399,000
PV per Acre-Foot of Annual Reuse	**$14,800,222**	**$224,210**	**$292,304**	**$224,210**

[a] Does not include aquifer recharge from percolation pond (Alt. 1) or water sent to spray fields.

Table 16 Estimated Energy Use for Alternatives

Description	Alt. 1	Alt. 2	Alt. 3	Alt. 4
Annual Energy Use (kW-hrs)	3,015	5,313	5,823	8,012
Annual Savings from Spray Fields (kW-hrs)	4,337	4,337	4,337	4,337
Net Annual Energy Use (kW-hrs)	**(1,322)**	**976**	**1,486**	**3,675**

Alternative 1 (percolation pond) is subject to review and approval by the RWQCB, which can be a lengthy and expensive process and there is no guarantee of approval. Furthermore this alternative does not have a means to recover annual expenses other than a rate increase. Given that this economically disadvantaged community is already paying the highest rates in the area and cannot afford an additional rate increase this is not a viable alternative.

Alternative 2 includes lined storage and maximizes reuse for crop irrigation on State Parks land on the seaward side of Highway 1. This alternative is the most cost efficient alternative and annual expenses could be recovered by selling the water for $1, 427 per acre-foot as long as the tenant farmer agrees to enter into a User Agreement with the District under these terms. It is our understanding that the farmer is currently using a well on the Coast Dairies property for irrigation water and this water supply may not be secure if the Coast Dairies property is put back into production. The location of the storage pond on the Cemex property adjacent to the existing treatment facility could be an issue; Cemex has not been open to discussions with the District about the use of this property as of this date.

Alternative 3 is the same as Alternative 2 except that there is additional distribution pipe to serve several small landscape areas in New Town and Old Town. The potable offset benefit from the landscape irrigation could be as high as 3 acre-feet annually. However, the cost of the distribution pipe is high and there is no increase in overall reuse compared with Alternative 2, so this alternative is not viable from a cost efficiency basis.

Alternative 4 includes a new storage pond on the Coast Dairies property and the land owner has expressed an interest in having it located there even though the footprint of the pond would reduce the area available for crops. Recycled water would be provided to the State Parks land and the Coast Dairies land for crop irrigation. This alternative would reuse the same amount of water as Alternative 2 but potentially assist two farmers. The capital cost is slightly higher than Alternative 2 but the overall cost efficiency is close.

8. Recommended Facilities Project Plan

The recommended project, Alternative 4, provides the District with the means to reuse all water treated in an “average” weather year and minimizes the potential for an illegal discharge under its WDRs in extended periods of rain. Potential benefits of the project support the goals and objectives of the *Santa Cruz Integrated Water Management Plan* including:

- Enhances water supply reliability (for irrigation of crops);
- Maximizes raw water quality (by minimizing potential for illegal discharges);
- Maximizes quality of recycled water; and
- Brings value to the regional economy (by supporting agriculture needs).

The project also aligns with the *State Planning Priorities* and *Sustainable Water Resource Management Priorities* for the following goals:

- Improves existing infrastructure;
- Redevelops previously developed land;
- Preserves and enhances farmland;
- Repairs and upgrades existing infrastructure;
- Pricing and rate structure reflects true cost of project; and
- Maximizes capital investments made previously.

8.1 Description of Facilities and Basis for Selection

Alternative 4 is preferred over the other alternatives because the cost efficiency is reasonable on a present value basis, annual expenses could be recovered through the sale of the recycled water, the new storage pond would be located at a site with a cooperative land owner, and there are potentially two users with which to negotiate a User Agreement. No other alternative had the same number of benefits.

The project will allow for reuse of 20 acre-feet of disinfected tertiary water in an “average” weather year on edible crops grown locally by two farmers on land owned by State Parks and Coast Dairies. Additionally the project provides needed storage in the existing aerated lagoon and new seasonal storage pond so that the District can manage operations to stay within the limits of the WDRs. Storage capacity in the aerated lagoon provides emergency equalization storage during extended rain events and operating within maximum flow through rates in the chlorine contact chamber to meet Title 22 requirements for disinfected tertiary. Storage in the new pond provides winter storage of recycled water for reuse later on during the summer growing season.

Recommended facilities will include the following components:

- Upgrades to the existing treatment facilities to provide alarms, redundancy and controls to meet Title 22 requirements for disinfected tertiary water (see Table 11);
- Construction of a new effluent pump station and truck fill station just downstream from the chlorine contact chamber and a new 6-inch transmission pipeline to the storage pond;

- Construction of a new storage pond (10 acre-feet working storage) on Coast Dairies property with an inlet pipe, floating pump with flexible hose for discharge, and a new electrical service for the pump;
- Construction of a 6-inch metered turnout for the Coast Dairies property off of the pump discharge from the pond and terminating at a valved quick connect;
- Installation of a 12-inch casing pipe under Highway 1 and the Union Pacific Railroad by tunneling; and
- Construction of a metered 6-inch distribution pipe from the pumped discharge from the storage pond to two existing irrigation ponds on the State Parks land.

8.2 Preliminary Design Criteria and Refined Pipeline Routes

The refined pipeline routes are shown in Figures 12 – 17. The pipe alignments were selected to avoid mapped wetlands and known utilities. Additional refinement will be needed during the design phase after detailed topographic mapping is completed and discussions with farmers have identified any additional utilities or structures that need to be avoided during construction of the new pipelines. Easements will be necessary for pipelines across private property on both sides of Highway 1.

Preliminary design criteria used for preparing estimates of probable cost are listed in Table 17. These criteria are deliberately conservative and need to be refined during detailed design after customer demands are confirmed.

Table 17 Preliminary Design Criteria

Preliminary Design Criteria
Pipelines and Appurtenances:
AWWA C900 PVC DR25 pipe with gasketed joints
6-inch nominal diameter, minimum
Horizontal separation from water mains 10 feet minimum
Vertical separation from water mains 1 foot minimum below water main
Thrust restraints as required at fittings
Gate valves for isolation of pipe segments and 1000 foot maximum intervals
Recycled Water Pump Station at WWTF:
One duty and one standby pump for pumping to storage pond (100 gpm)
Variable speed drives
480 volt, 3-phase power
Gate valves for pump isolation
Swing check valves on pump discharge lines
Concrete wet well with level transducer for pump control
Hydropneumatic tank with bladder
Recycled Water Pump Station at Pond:
One floating pump in storage pond (300 gpm)
Constant speed

Preliminary Design Criteria
480 volt, 3-phase power
Reinforced discharge hose with cam-lock fittings
Discharge connection at pond berm
Gate valve and swing check on pump discharge line
Truck Fill Station:
4-inch ductile iron pipe with breakaway flange and cam-lock connection
Butterfly valve on main stem
Hose bibb on stem upstream of butterfly valve
Buried meter upstream from hose bibb in utility vault
Concrete apron with grated sump for spillage
User Meters:
4-inch meter in utility vault with couplings
Basket strainer upstream of meter
4-inch gate valves for isolation of meter

8.3 Estimate of Probable Cost and Completion Schedule

An estimate of probable cost for construction, soft costs and annual operation and maintenance is provided in Table 18, summarized as a present worth value for a 20-year period and an interest rate of 3 percent.

Table 18 Estimate of Probable Cost (ENRCCI = 10,895)

Description	Quantity	Units	Cost
CAPITAL COSTS			
Aerated Lagoon:			
Dredge solids from lagoon	1	LS	$400,000
Replace/add pumps, controls, alarms	1	LS	$150,000
RW Storage Pond:			
Site preparation and grading	3	Acre	$4,000
Import fill	750	CY	$23,000
Excavate pond and construct berm	22,500	CY	$563,000
Pond liner	65,000	SF	$130,000
Install inlet/outlet piping and structures	1	LS	$50,000
RW Pump Stations:			
Pump station at WWTF	1	LS	$300,000
Pump station at storage pond	1	LS	$150,000
Truck fill station	1	LS	$100,000
Pipelines:			

Description	Quantity	Units	Cost
Open cut, unpaved, 6-inch PVC	2600	LF	$260,000
Open cut, paved, 6-inch PVC	2,040	LF	$357,000
Tunnel under highway and railroad	170	LF	$68,000
User services	2	EA	$5,000
Subtotal – Construction			**$2,560,000**
Engineering, Admin & Legal (35%)			$896,000
Contingency (20%)			$512,000
TOTAL CAPITAL COSTS			**$3,968,000**
Annual O&M Costs:			
Storage pond maintenance	1	LS	$15,000
Pump station maintenance	1	LS	$10,000
Pipeline maintenance	1	LS	$3,000
Net increase in power	1	LS	$1,000
Subtotal – Annual O&M			**$29,000**
PRESENT WORTH VALUE (20 yrs, 3%)			**$4,399,000**

The current schedule is to complete design in the first half of 2016, bid in the fall of 2016, and construct in 2017. Construction activities will be limited to June through September to minimize impacts to sensitive species in the area.

8.4 List of Potential Users

Potential users of the recycled water will include two farms with direct connections to their irrigation systems, and permitted users taking water from the truck fill station. The farmers would include the following:

- State Parks (owner) and Seaside Ranch (tenant)
- Coast Dairies Land and Trust (owner) and Swanton Berry Farm (tenant)

Potential users of the truck fill station would be required to go through training and become a permitted user of recycled water. This could be contractors, ranchers, farmers and individuals who have a need for water and can provide the means to transport it themselves.

8.5 Reliability of Facilities Regarding Users' Requirements

The wastewater treatment facilities will receive upgrades to improve reliability and provide additional alarms with automatic shutdown of facilities to ensure that the quality of the recycled water complies with Title 22 requirements for disinfected tertiary water. Water that does not comply will be sent to the spray field if it meets secondary-23 requirements, or returned to the aerated lagoon if it does not meet secondary-23 quality. The quality of the water sent to the storage pond for irrigation of food crops must be maintained at disinfected tertiary quality at all times.

The pumps conveying disinfected tertiary to the truck fill station and the storage pond will have one duty pump and one standby pump for when the duty pump is down for service. As long as the treatment facility is making disinfected tertiary water the pumps will convey water for reuse or

storage. The pumps will be part of the essential load at the plant and will operate from the standby power when primary power is down because moving the treated water to storage is an essential function during storm events.

The floating pump at the storage pond that conveys water to the farms will not have a standby unit. Scheduled maintenance will occur in the winter when the farms are not irrigating crops. When the unit goes down unexpectedly during the irrigation season the farmers will need to go without water until it is repaired. If this is expected to be a prolonged period the District will have the ability to rent a pump and continue supplying water to the farms for irrigation.

8.6 Implementation Plan

The District has initiated discussions with potential users and land owners to provide some level of confidence that an approved and funded project can be constructed and demand for the recycled water will be realized. Additional coordination and finalization of permits, agreements and easements will occur simultaneous with the detailed design and be completed prior to construction.

8.6.1 Coordination with Water Suppliers

Davenport County Sanitation provides potable water and wastewater collection, treatment and disposal services to the community of Davenport. There is therefore no coordination necessary with a separate water supplier.

8.6.2 Ability and Timing of Users to Connect and Make On-site Improvements

The State Parks land currently has two lined irrigation ponds from which the farmer can draw water for irrigation. The project will deliver water to these existing ponds and no onsite improvements are required except for marking and signage in accordance with Title 22 requirements. Recycled water will be available for use after construction is completed, the Engineering Report has been accepted, the WDRs updated, and a User Agreement has been executed.

The Coast Dairies land is not currently being farmed. A metered turnout will be provided with the project and water will be delivered at a pressure of 10 – 20 psi. The tenant farmer will need to provide its own irrigation equipment and that could include a booster pump depending on the irrigation method. Onsite improvements provided by the District would be markings and signage only. Recycled water will be available for use after construction is completed, the Engineering Report has been accepted, the WDRs updated, and a User Agreement has been executed.

8.6.3 Tentative Water Recycling Requirements of RWQCB

Implementing the project will require preparation of an Engineering Report for review and approval by the Executive Officer of the RWQCB. The Engineering Report will need to demonstrate that the wastewater treatment plant can consistently produce disinfected tertiary quality water and that safeguards are in place to prevent non-compliant water from being discharged illegally. The District's WDRs will also need to be updated to reflect changes in operations and water reuse anticipated with the implementation of the project and this will also require review and approval by the Executive Officer.

8.6.4 Commitments from Potential Users

Letters of intent from landowners and potential recycled water users are provided in Appendix G.

8.6.5 Water Rights Impact

Under the WDRs the District is permitted to provide secondary-23 water for reuse at the Cemex cement plant and for application to the spray field. The District has an agreement with Cemex (formally Lone Star) that provides Cemex the first right of refusal for the water (Appendix B). Since the cement plant was decommissioned in 2010 Cemex is no longer taking any recycled water from the District. User Agreements with new recycled water customers will need to acknowledge this agreement with Cemex unless the agreement is terminated.

8.6.6 Permits, Right-of-Way, Design and Construction

The design phase of the project will include topographic mapping and boundary surveys, detailed design and preparation of construction documents, acquisition and filing of easements, execution of User Agreements, and application for and issuance of construction permits by agencies with jurisdiction. Advertisement for bids and construction will not proceed until all of the design phase tasks are completed.

Permits required include:

- Coastal Development Permit (California Coastal Commission)
- Encroachment Permit (Caltrans)
- Pipeline Crossing Permit (Union Pacific Railroad)

Easements will be required on the following parcels:

- 058-021-07 (State Parks)
- 058-021-03 (State Parks)
- 058-022-11 (Coast Dairies)

8.6.7 Detailed Schedule

The detailed schedule is dependent on securing funding for the project. Table 19 provides a summary of key milestones and their anticipated completion dates.

Table 19 Anticipated Project Milestones

Key Milestone	Completion
Certify Environmental Documents	May 2015
Feasibility Study Accepted	July 2015
Execute Initial Agreement with CWSRF	September 2015
Consultant Notice to Proceed for Design	October 2015
Permits, Easements and Agreements In Place	April 2016
Construction Documents Completed	April 2016
Execute Finalized Agreement with CWSRF	May 2016
Advertise for Bids	June 2016
Award Contract for Construction	August 2016
Contractor Mobilization	May 2017
Project Closeout	November 2017

8.6.8 Operational Plan

The District's existing operation and maintenance staff will operate the recycled water facilities. Most of the mechanical, electrical and instrumentation improvements will occur at the wastewater treatment facility but there will be additional operational activities at the new storage pond. Additional offsite activities will include monthly meter readings, exercising valves, mowing grass around the storage pond, and routine maintenance of the floating pump.

9. Construction Financing Plan and Revenue Program

The District provides sewer and water services to the community of Davenport which has been determined through a recent income survey to qualify as a financially disadvantaged community. The community is currently paying water and sewer rates that are among the highest in the State of California and cannot afford to have their rates increased further.

In 2014 the District was awarded a $200,000 grant to complete this Recycled Water System Feasibility Study that was financed by the State Water Resources Control Board through the State Revolving Fund Small Community Wastewater Grant and the Water Recycling Funding Program. Implementation of the recommended project will require additional funding to cover design and construction costs without negatively impacting the ratepayers of the District.

9.1 Sources and Timing of Funds for Design and Construction

The District is applying for a $1.5 million Community Development Block Grant (CDBG) to partially fund construction of the project. In addition the District is applying for $2.0 million in funding (half of the total capital cost) from the SWRCB's Clean Water State Revolving Fund (CWSRF) Small Community Wastewater Grant program. The remainder of the capital costs ($500,000) will be financed through the CWSRF program with a 30-year loan at 2 percent interest.

The District would like to execute an Initial Agreement for the CWSRF funding in September 2015, before beginning design, so that consultant fees can be paid as the detailed design phase progresses. The District anticipates having the CDBG funding in place before the detailed design phase is completed, and anticipates executing a Finalized Agreement for the CWSRF funding in May 2016.

9.2 Pricing Policy for Recycled Water

Recycled water will be priced to cover annual operation and maintenance costs directly associated with conveying water to customers via the truck fill station or from the storage pond, over and above what would be spent to discharge the water to the spray field as is the current practice. This will ensure that the ratepayers will not see an increase in rates resulting from the project.

9.3 Costs Allocated to Water Pollution Control

All of the project costs can be allocated to water pollution control. One of the primary benefits of the project is constructing seasonal storage and reuse for the District to minimize the potential for an illegal discharge during extended periods of rain.

9.4 Annual Projection

9.4.1 Water Prices for Each User or Category of Users

All users will pay a single price for the water which will be set to recover the annual costs for reuse that are in addition to the current treatment and disposal costs during an “average” weather year. Based on an estimated annual reuse of 19.62 acre-feet of water and annual operation and maintenance costs of $29,000, the price of water would be $1,427 per acre-foot ($3.28 per hundred cubic feet). This price will be adjusted as required at the time that User Agreements are executed to make sure that the latest estimates are being used.

9.4.2 Recycled Water Used by Each User

The estimated annual recycled water use by user is as follows:

- Truck Fill: 0.2 acre-feet (3,000 gallons/week during summer)
- State Parks: 9.71 acre-feet
- Coast Dairies: 9.71 acre-feet

It is likely that the State Parks land could use all of the recycled water if it were available and the farmer agreed to the price, and this might also be true for the Coast Dairies land depending on the crops grown. It is unknown how much water will be sold from the truck fill station and this will likely vary seasonally and year to year.

9.4.3 Annual Costs of Recycling Project

The estimated annual cost over and above application of the water to the existing spray field is $29,000 per year. This would cover power consumption and expenses for routine operation and maintenance. This does not include labor charges because it is anticipated that current staff can perform the incremental administrative and operation and maintenance duties associated with the reuse program.

9.4.4 Sensitivity Analysis

Key variables in determining the price of the recycled water include:

- Supply – will the assumptions in the water balance hold true for recycled water production, rainfall and surface evaporation rates?
- Demand – will assumptions about irrigation rates hold true and will users agree to purchase all of the water?
- Costs – will annual costs be more or less than estimated $29,000?

The District has addressed infiltration and inflow in the collection system and the community is not expected to grow beyond its current size, so the supply of recycled water should remain stable.

The price of the recycled water is very reasonable compared to potable water rates in the area and there should be demand given general water scarcity along the Central Coast and potential extended periods of drought as we are now experiencing in the State. However, Seaside Ranch is reportedly using an irrigation well located on Coast Dairies property to irrigate the State Parks land and the yield and reliability of this water supply is unknown to the District. If the well can reliably produce enough water to meet the farmers’ needs then they may be unwilling to pay for the recycled

water. Conversely the well could be unreliable especially in times of drought which may increase demand for the recycled water.

Estimated annual costs for power and expenses are conservatively on the high side for an average year to cover infrequent years where there are major maintenance projects required that are above average. The variability associated with costs is for the District's labor and whether or not they can perform the additional administrative and O&M duties with the staff they have.

9.5 Sunk Costs and Indebtedness

The District is currently repaying an SRF loan at $9,674.36 annually that will be paid in 5 years. The District is also repaying a Rural Economic Development Infrastructure Panel (REDIP) loan at $7,863.95 annually that will be paid off in 9 years. Together the District is currently paying $17,538.31 in loan repayments annually.

The current sewer rates allow for $45,000 annually for capital improvements which can also be used towards payment of debt service. With a new 30-year SRF loan of $500,000 at 2 percent interest the District would have an additional $22,300 in debt service annually. The total debt service for all three loans can be covered with existing rates.

Figures

Paper Size 8.5" x 11" (ANSI A)

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Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California III FIPS 0403 Feet

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Davenport County Sanitation District
Recycled Water Project

Job Number 8410848
Revision
Date March 2015

Vicinity Map

Figure 1

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Note: Davenport is an unincorporated community in Santa Cruz County, CA

Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

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Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California III FIPS 0403 Feet

Legend

- Study Area
- Property Boundary & ID
- Stream
- Disposal Area

Davenport County Sanitation District
Recycled Water Project

Job Number	8410848
Revision	
Date	March 2015

Study Area

Figure 2

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Map Projection: Mercator Auxiliary Sphere
Horizontal Datum: WGS 1984
Grid: WGS 1984 Web Mercator Auxiliary Sphere

Legend

- Study Area
- Stream
- Disposal Area
- 200 Contour Line and Elevation

Davenport County Sanitation District
Recycled Water Project

Job Number 8410848
Revision
Date March 2015

Topographical Map

Figure 3

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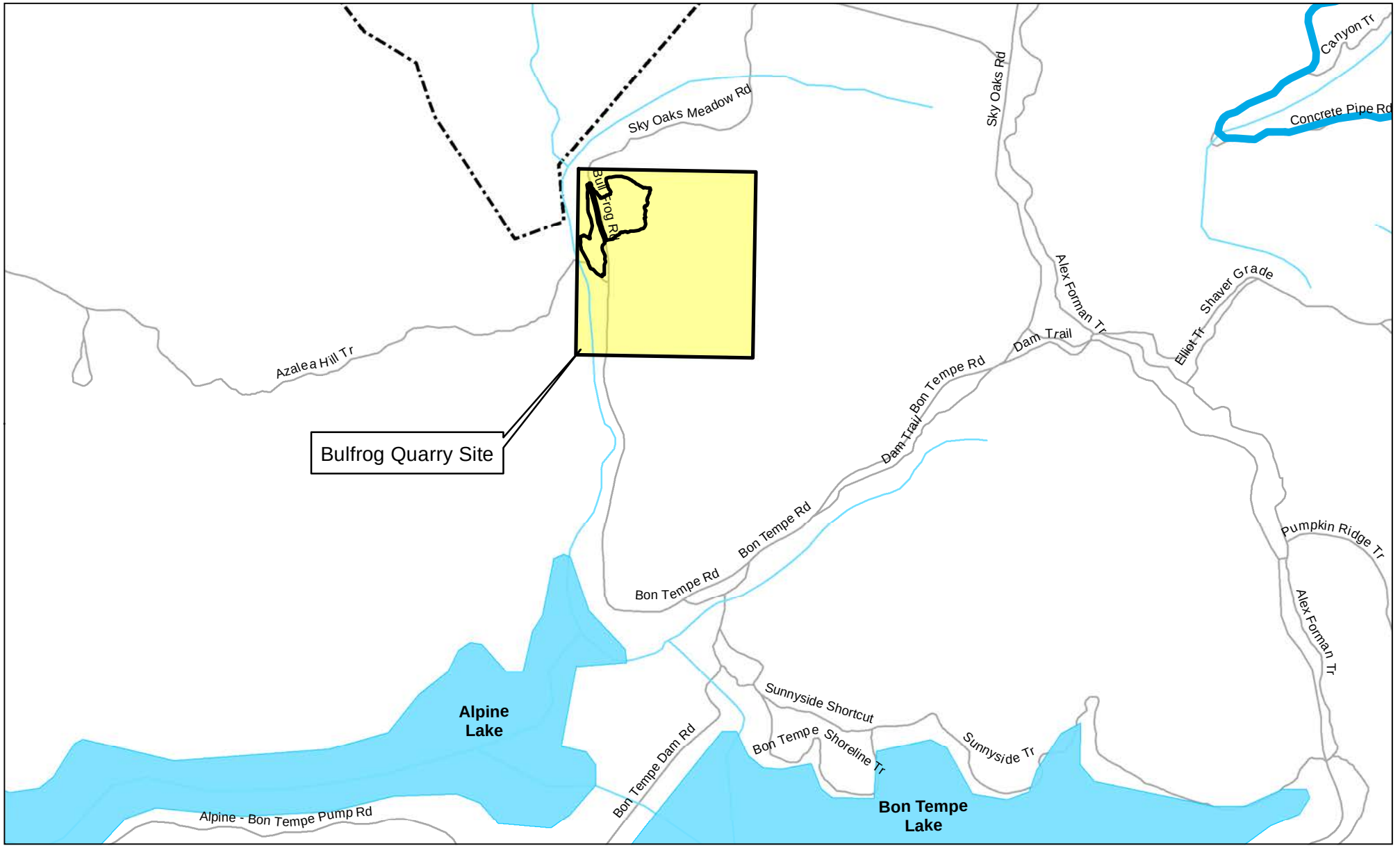

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Horizontal Datum: North American 1983 HARN
Grid: NAD 1983 HARN StatePlane California III FIPS 0403

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LEGEND

- Project Location
- MMWD Mt. Tamalpais Watershed Lands
- Citys/Towns
- Concrete Pipe Road Transmission Line

Marin Municipal Water District
Water Storage Improvement Project

Job Number	8410689
Revision	1
Date	Apr 2015

Bullfrog Quarry Location

Figure 3-15

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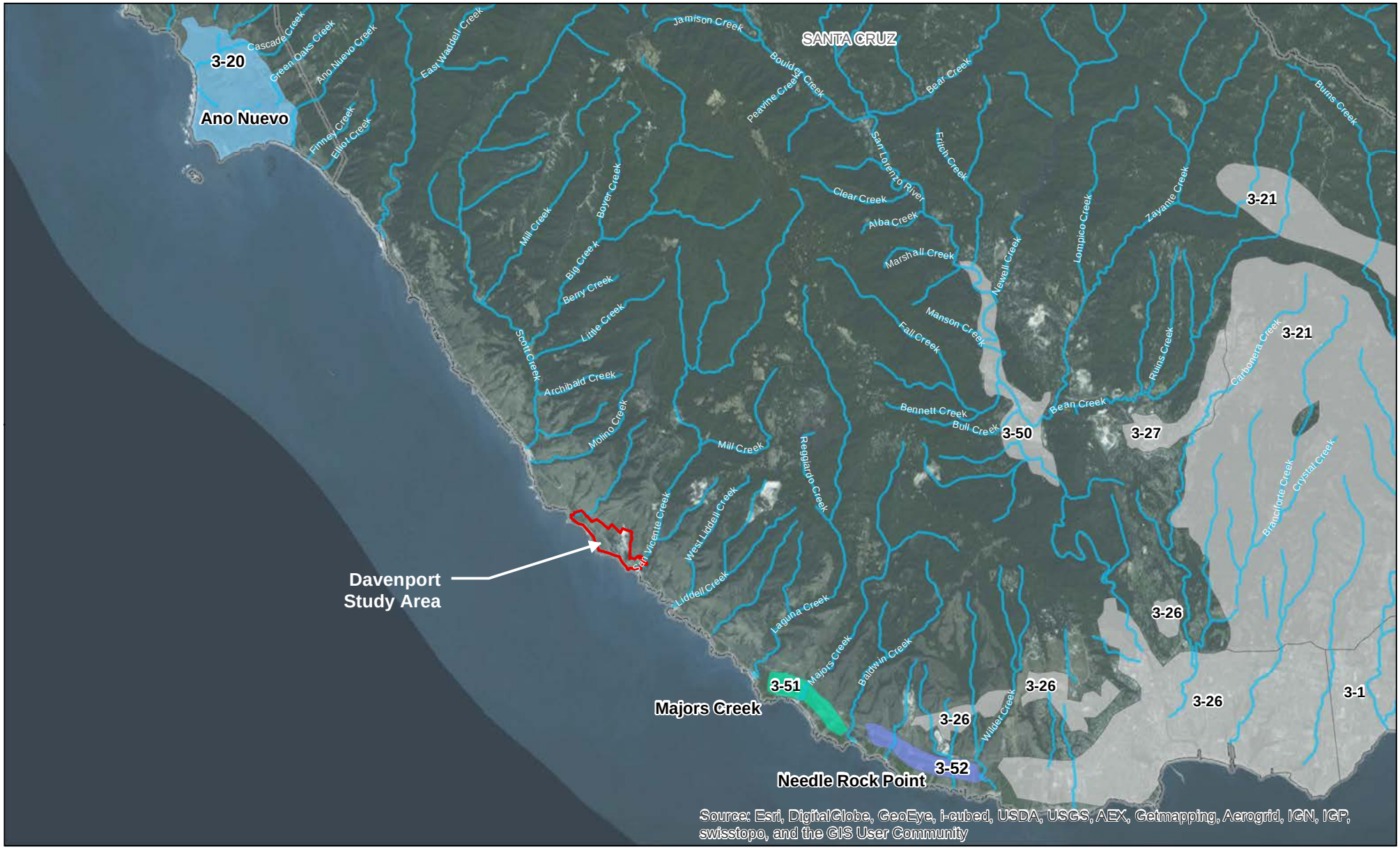

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Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California III FIPS 0403 Feet

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LEGEND

- Project Limits
- Stream/River
- 3-20 Ano Nuevo GW Basin
- 3-51 Majors Creek GW Basin
- 3-52 Needle Rock Point GW Basin
- Other GW Basins

Davenport County Sanitation District
Recycled Water Project

Job Number 8410848
Revision A
Date March 2015

Groundwater Basins & Streams

Figure 4

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Note: Davenport County Sanitation District provides potable water and wastewater collection/treatment.

Water Supply Pipeline

WATER PLANT

SAN VICENTE CREEK (SEPTIC ONLY)

(E) Disposal

NEW TOWN

Tank

Decommissioned Cement Plant

School

SEWAGE TREATMENT PLANT

Treatment Plant

OLD TOWN

Highway 1

Cement Plant Rd

Adeline St

1st St

Ocean St

Davenport Ave

Marine View Ave

Railroad

(E) Frontage Road

Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Paper Size 11" x 17" (ANSI B)

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Feet

Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California III FIPS 0403 Feet

Legend

- Study Area
- Property Boundary & ID
- Stream
- Disposal Area
- District Boundary
- Easement for 8" Water Main

Davenport County Sanitation District
Recycled Water Project

Job Number 8410848
Revision
Date March 2015

Davenport County Sanitation District Boundary

Figure 5

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Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California III FIPS 0403 Feet

Legend

- Study Area
- Property Boundary
- Stream
- Disposal Area

Zoning

CA	Commercial Agriculture	M-2-L	Mounain Residential	R-1-6	Urban Residential
CA-L	Commercial Agriculture	PF	Public Facility	RA	Agriculture
CA-P	Commercial Agriculture	PR	Parks & Recreation	SU	Services/Commerical

Davenport County Sanitation District
Recycled Water Project

Job Number 8410848
Revision
Date March 2015

Land Use

Figure 6

G:\11837 - Santa Cruz Sanitation District\11837-8410848 Davenport Recycled Water Study\08-GIS\Maps\Figures\Feasibility Study\Land Use.mxd
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Paper Size 11" x 17" (ANSI B)

0 400 800

Feet

Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California III FIPS 0403 Feet

Legend

- Study Area
- Property Boundary & ID
- Stream
- New Pipelines
- Disposal Area
- New Storage Pond/Pump Station

Davenport County Sanitation District
Recycled Water Project

Job Number 8410848
Revision
Date March 2015

Alternative 1
Percolation Pond

Figure 7

G:\11837 - Santa Cruz Sanitation District\11837-8410848 Davenport Recycled Water Study\08-GIS\Maps\Figures\Feasibility Study\Alternative 1 Minimum Project.mxd
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(E) Disposal

(N) Storage Pond

Decommissioned Cement Plant

School

Treatment Plant

Highway 1

Cement Plant Rd

Adeline St

1st St

Marine View Ave

Ocean St

Davenport Ave

Railroad

(E) Irrigation Pond

(E) Frontage Road

(E) Irrigation Pond

Jack and Bore Under Hwy & RR

14.50 acres

11.73 acres

9.31 acres

12.00 acres

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community

Paper Size 11" x 17" (ANSI B)

0 400 800

Feet

Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California III FIPS 0403 Feet

Legend

- Study Area
- Property Boundary & ID
- Stream
- Jack and Bore HWY/RR
- New Pipelines
- Disposal Area
- New Storage Pond/Pumpstation
- Irrigation

Davenport County Sanitation District
Recycled Water Project

Alternative 2
Irrigate State Parks Agriculture Land

Job Number 8410848
Revision
Date March 2015

Figure 8

G:\11837 - Santa Cruz Sanitation District\11837-8410848 Davenport Recycled Water Study\08-GIS\Maps\Figures\Feasibility Study\Alternative 2 Medium Project.mxd
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0 400 800

Feet

Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California III FIPS 0403 Feet

Legend

- Study Area
- Property Boundary & ID
- Stream
- Jack and Bore HWY/RR
- New Pipelines
- Disposal Area
- New Pond/Pump Station
- Potential HWY Landscape Area
- Irrigation

Davenport County Sanitation District
Recycled Water Project

Alternative 3
Irrigate State Parks Agriculture Land & Urban Landscaping

Job Number 8410848
Revision
Date March 2015

Figure 9

G:\11837 - Santa Cruz Sanitation District\11837-8410848 Davenport Recycled Water Study\08-GIS\Maps\Figures\Feasibility Study\Alternative 3 Max Project.mxd

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Paper Size 11" x 17" (ANSI B)

0 400 800

Feet

Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California III FIPS 0403 Feet

Legend

- Study Area
- Property Boundary & ID
- Stream
- Jack and Bore HWY/RR
- New Pipelines
- Disposal Area
- New Storage Pond/Pumpstation
- Irrigation

Davenport County Sanitation District
Recycled Water Project

Alternative 4
Irrigate State Parks & Coast Dairies Agriculture Land

Job Number 8410848
Revision
Date March 2015

Figure 10

G:\11837 - Santa Cruz Sanitation District\11837-8410848 Davenport Recycled Water Study\08-GIS\Maps\Figures\Feasibility Study\Alternative 4 Ag Reuset.mxd
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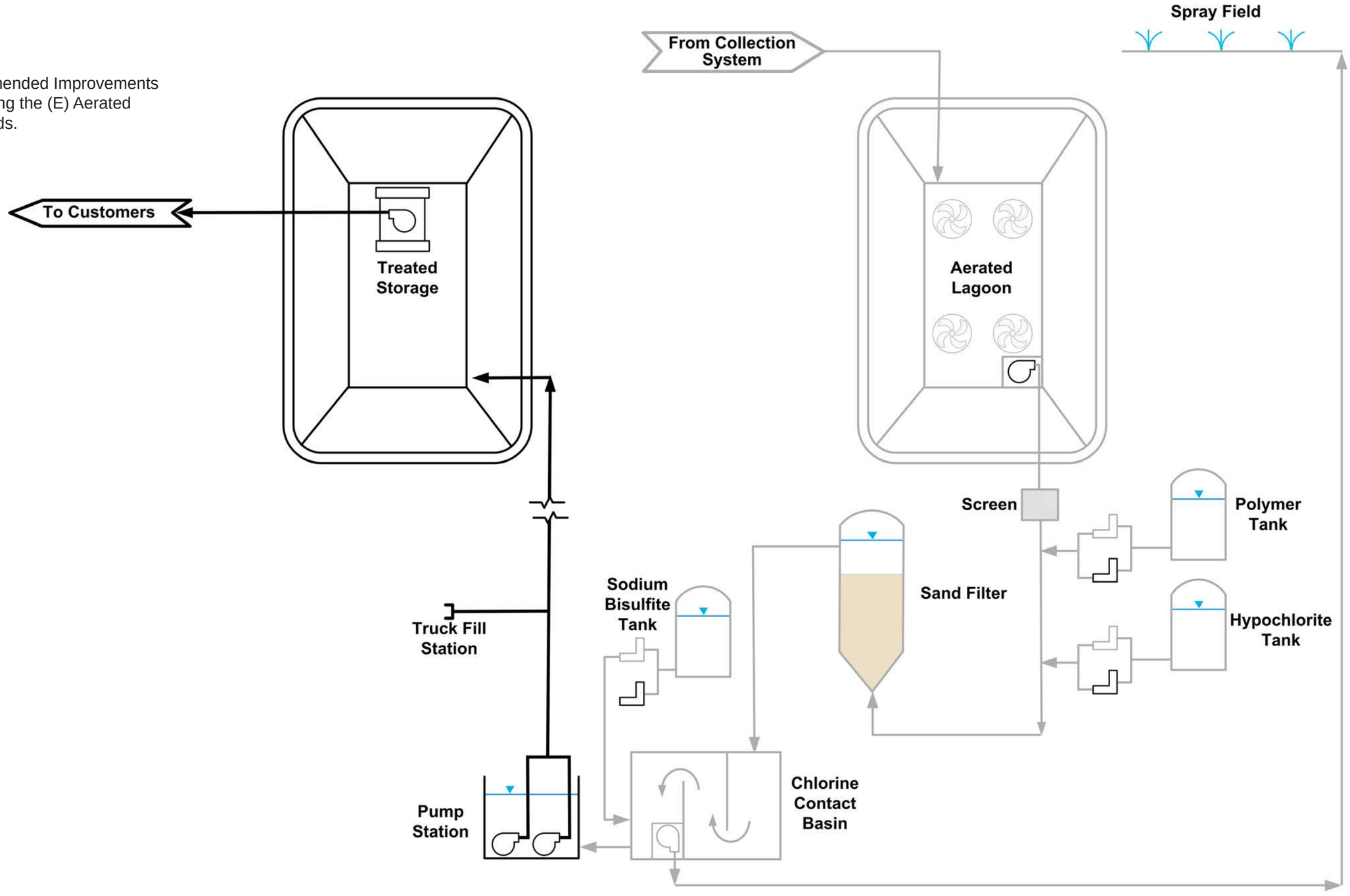
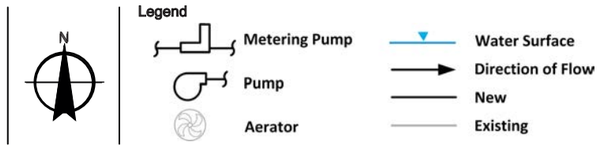
Note: Recommended Improvements Include Dredging the (E) Aerated Lagoon of Solids.





Davenport County Sanitation District
Recycled Water Project

Job Number	8410848
Revision	
Date	March 2015

Wastewater Treatment and Recycled Water System Schematic

Figure 11

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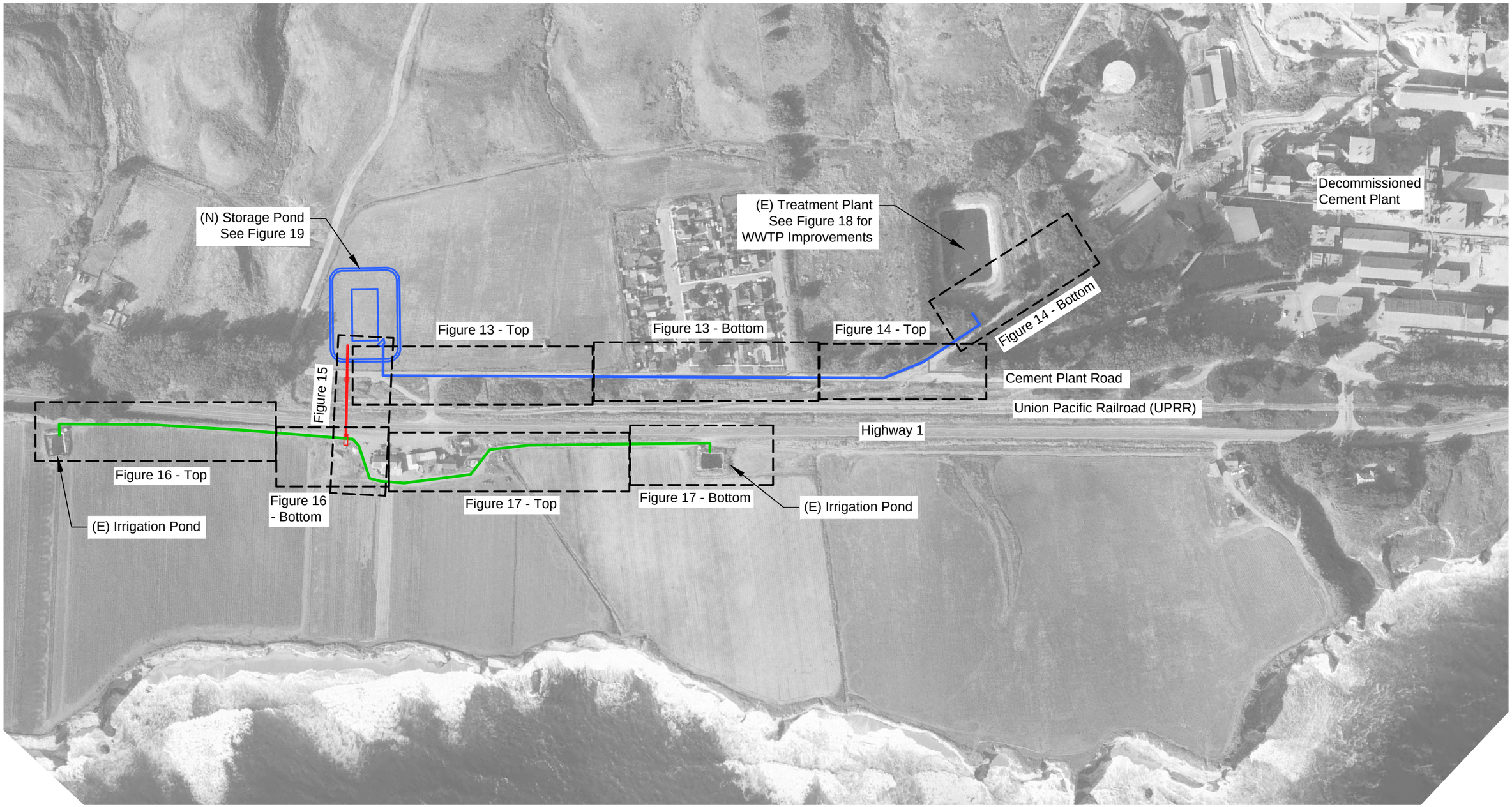

Location Key Map

SCALE IN FEET
0 300

NORTH

Legend

- Pipeline "A"
- Pipeline "B"
- Pipeline "C"

Davenport County Sanitation District
Recycled Water Project

Job Number 8410848
Revision
Date April 2015

Recommended Facilities
Location Key Map

Figure 12

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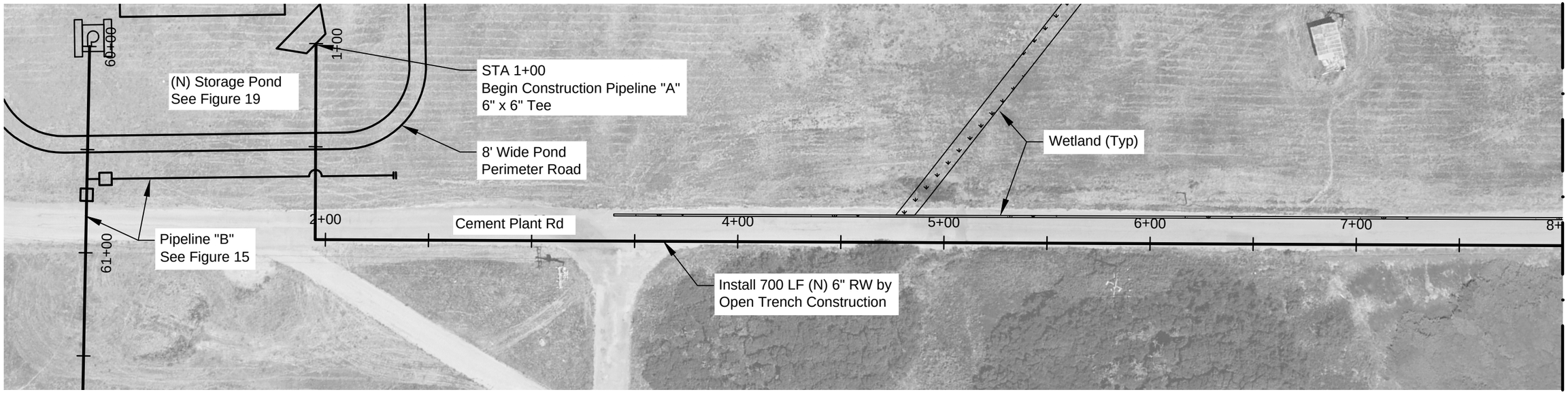
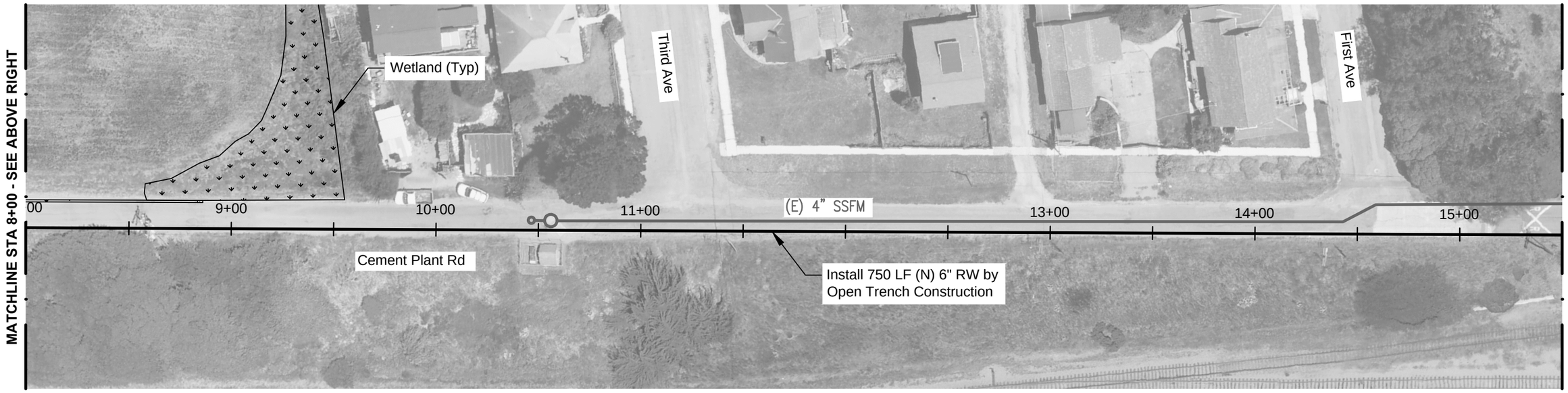


Pipeline "A" - STA 1+00 to STA 8+00



Pipeline "A" - STA 8+00 to STA 15+50

SCALE IN FEET
0 50

NORTH

GHD

Davenport County Sanitation District
Recycled Water Project

Job Number 8410848
Revision
Date April 2015

Recommended Facilities
Pipeline "A" - STA 1+00 to STA 15+50

Figure 13

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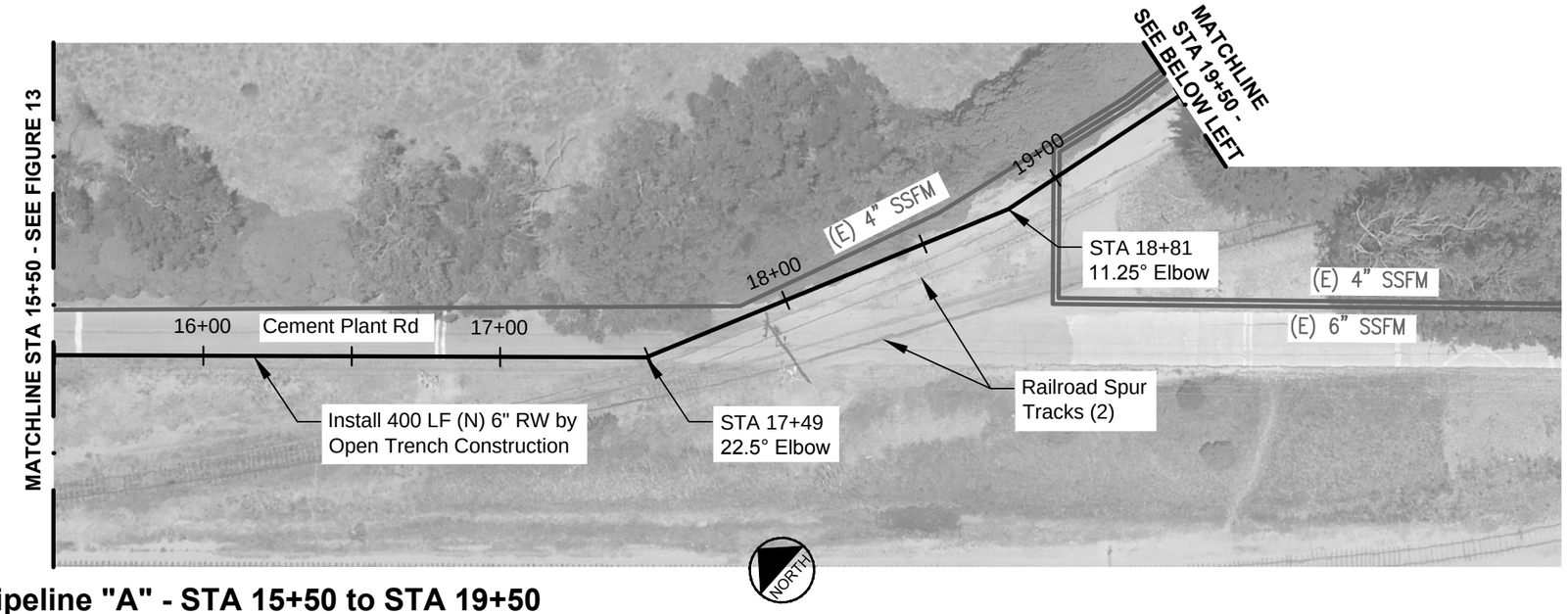
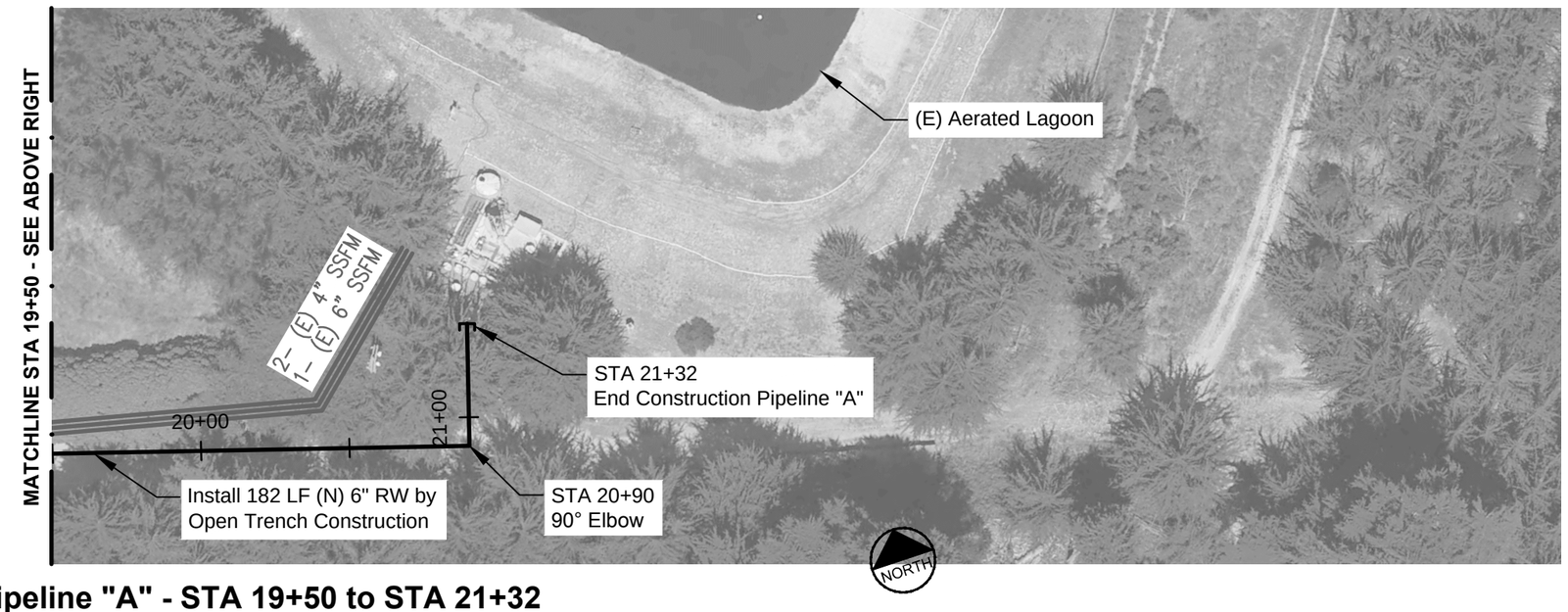


Pipeline "A" - STA 15+50 to STA 19+50



Pipeline "A" - STA 19+50 to STA 21+32

SCALE IN FEET
0 50

Davenport County Sanitation District
Recycled Water Project

Job Number 8410848
Revision
Date April 2015

Recommended Facilities
Pipeline "A" - STA 15+50 to STA 21+32 Figure 14

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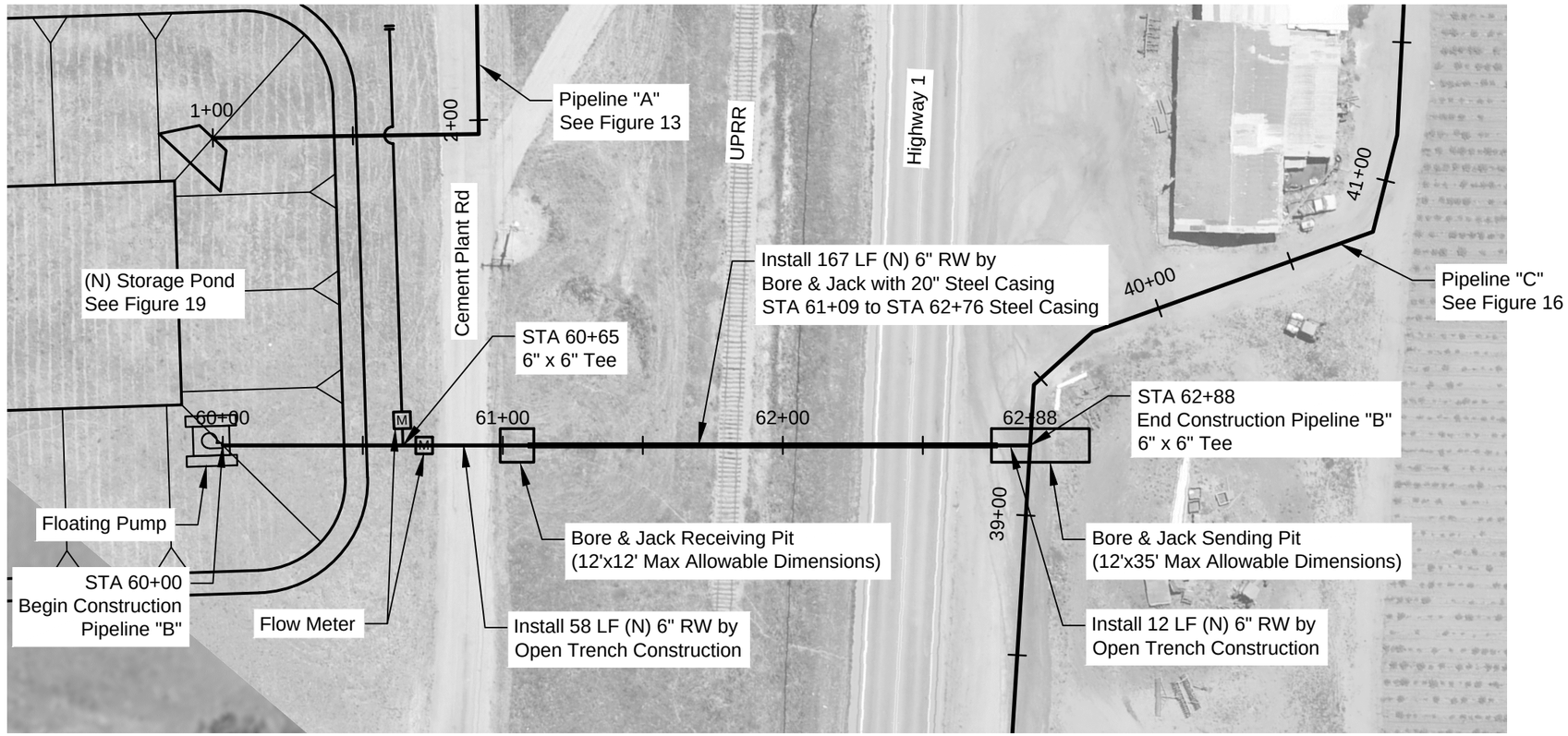

Pipeline "B" - STA 60+00 to STA 62+88

SCALE IN FEET
0 50

NORTH

Davenport County Sanitation District
Recycled Water Project

Job Number 8410848
Revision
Date April 2015

Recommended Facilities
Pipeline "B" - STA 60+00 to STA 62+88 Figure 15

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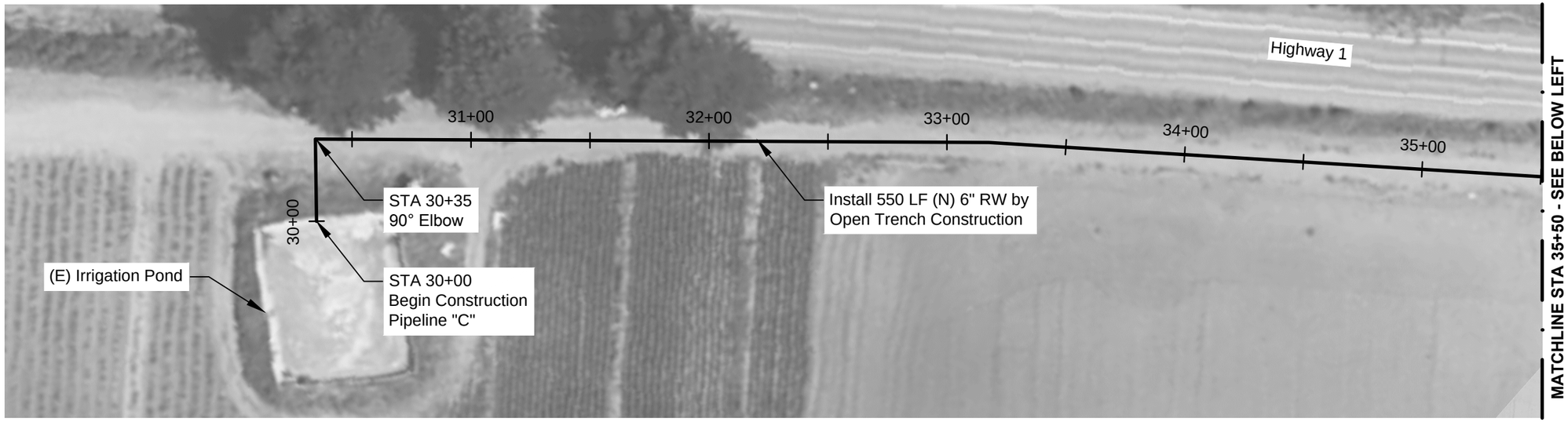
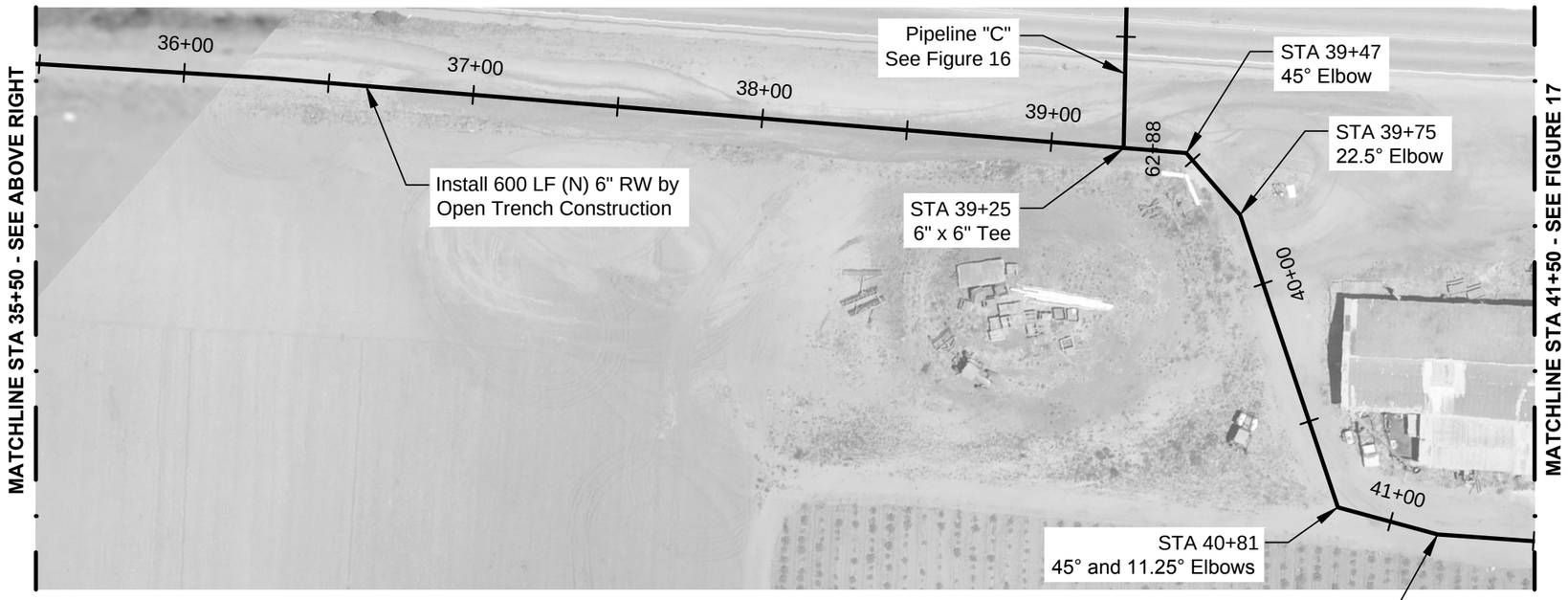


Pipeline "C" - STA 30+00 to STA 35+50



Pipeline "C" - STA 35+50 to STA 41+50

SCALE IN FEET
0 50

NORTH

Davenport County Sanitation District
Recycled Water Project

Job Number 8410848
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Date April 2015

Recommended Facilities
Pipeline "C" - STA 30+00 to STA 41+50 Figure 16

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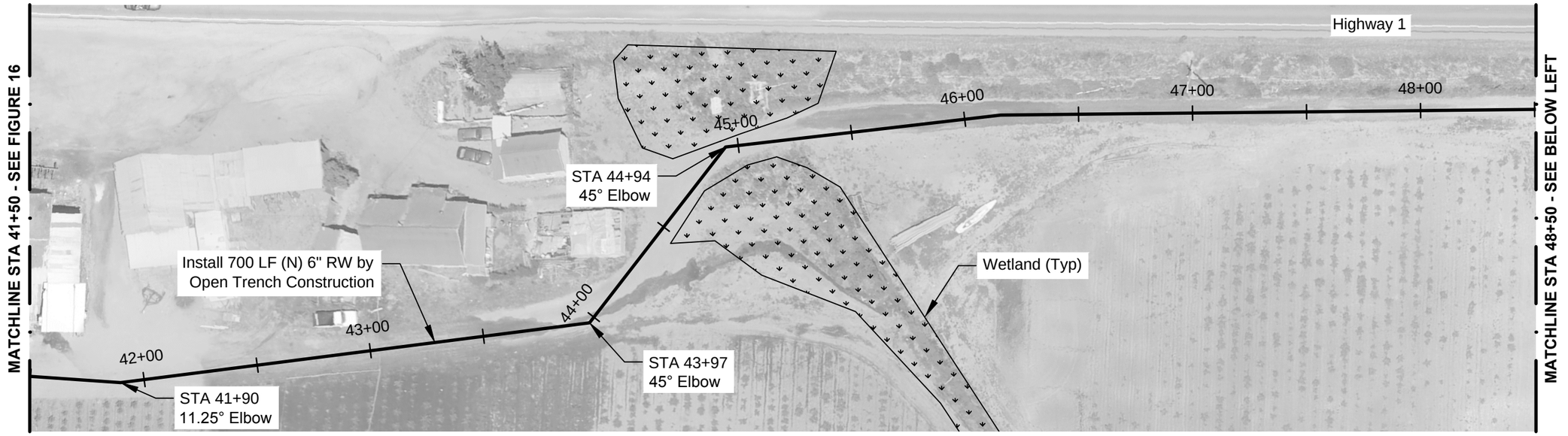
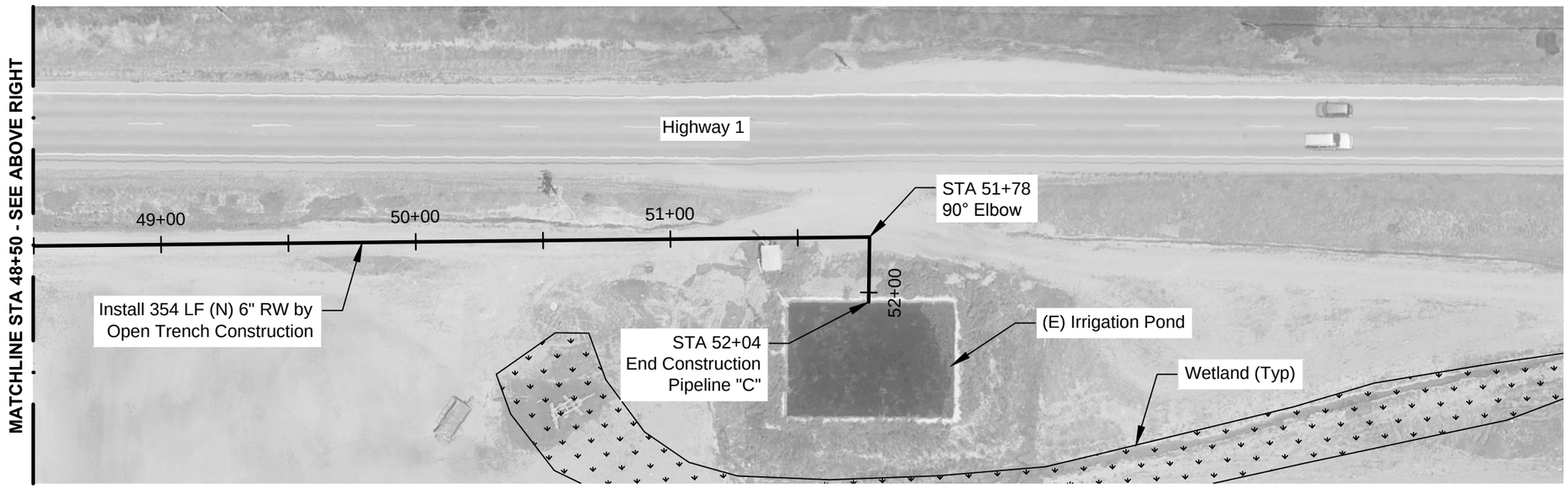
Plot Date: 6 April 2015 - 11:40 AM CAD File No: G:\11837 - Santa Cruz Sanitation District\11837-8410848 Davenport Recycled Water Study\06-CAD\Figures\Figure 13 to 17 - Recmnd Facil_Pipe Align.dwg



Pipeline "C" - STA 41+50 to STA 48+50



Pipeline "C" - STA 48+50 to STA 52+04

SCALE IN FEET
0 50

NORTH

Davenport County Sanitation District
Recycled Water Project

Job Number 8410848
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Date April 2015

Recommended Facilities
Pipeline "C" - STA 41+50 to STA 52+04 Figure 17

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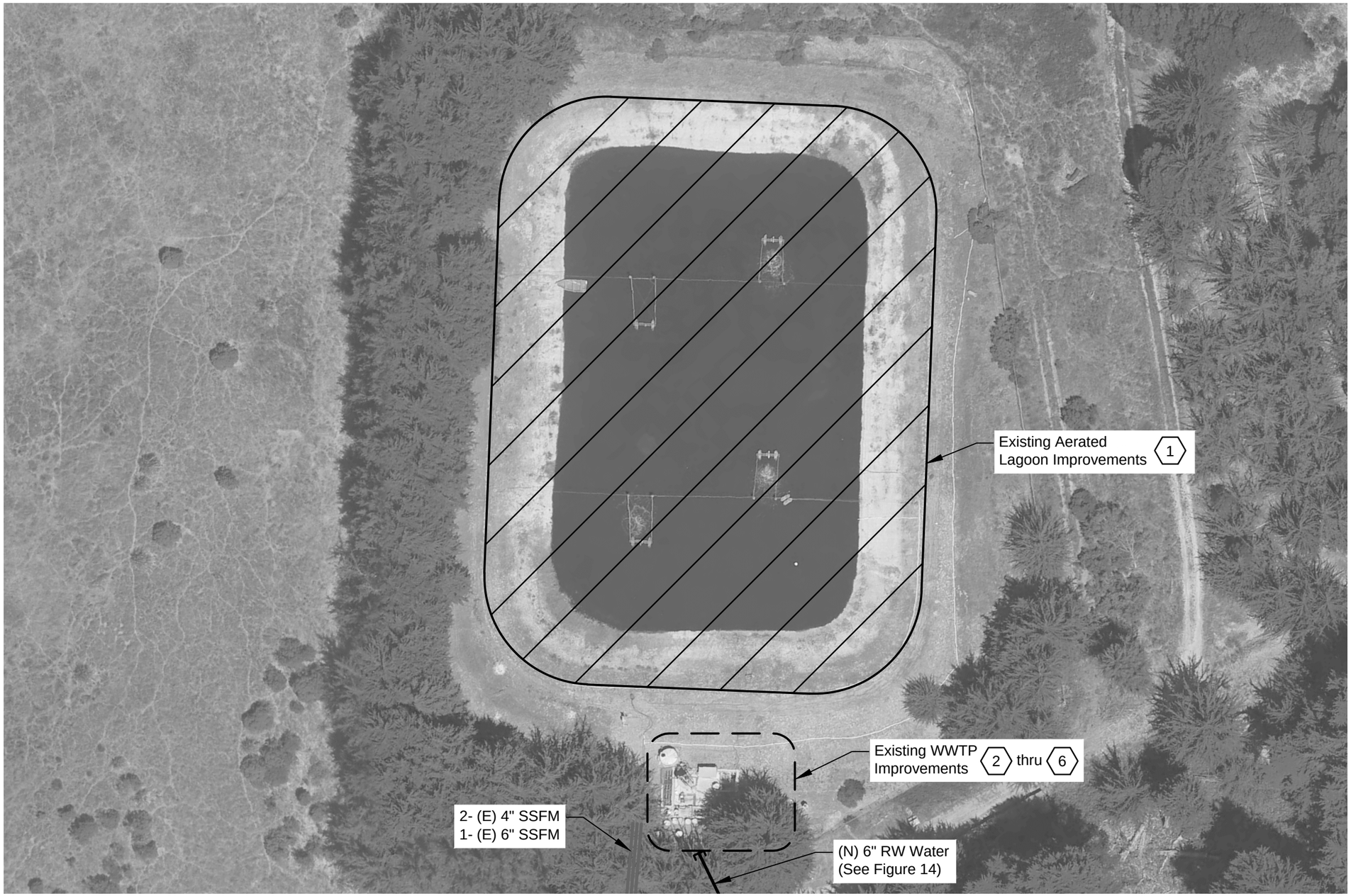
Plot Date: 6 April 2015 - 11:40 AM CAD File No: G:\11837 - Santa Cruz Sanitation District\11837-8410848 Davenport Recycled Water Study\06-CAD\Figures\Figure 13 to 17 - Recmnd Facil_Pipe Align.dwg



KEYNOTES

1. Aerated Lagoon
   - 1.1. Dredge pond of accumulated solids
   - 1.2. Replace submersible pump in aerated lagoon
   - 1.3. Install pump controls and alarms
2. Coagulation
   - 2.1. Influent turbidity analyzer/recorder with alarm
   - 2.2. Backup metering pump with automatic dosage
   - 2.3. Alarm for low coagulant level in storage
   - 2.4. Shutdown of tertiary systems on high effluent turbidity
3. Filtration
   - 3.1. Governor on influent flow rate (95 gpm max)
   - 3.2. Shutdown of tertiary systems on filter failure
4. Disinfection
   - 4.1. Backup metering pump with automatic dosage
   - 4.2. Alarm for low hypochlorite level in storage
   - 4.3. Chlorine analyzer/recorder after filter (5 mg/L target)
   - 4.4. Shutdown of tertiary systems on disinfection failure
5. Dechlorination
   - 5.1. Backup metering pump with automatic dosage
   - 5.2. Alarm for low sodium bisulfite level in storage
   - 5.3. Chlorine analyzer/recorder after dechlorination
6. RW Pump Station
   - 6.1. Construct recycled water pump station
   - 6.2. Construct truck fill station

NOTE:

See Figure 11 for schematic of WWTP and improvements.

WWTP Improvements

SCALE IN FEET
0 50

NORTH

Davenport County Sanitation District
Recycled Water Project

Job Number 8410848
Revision
Date April 2015

Recommended Facilities
WWTP Improvements

Figure 18

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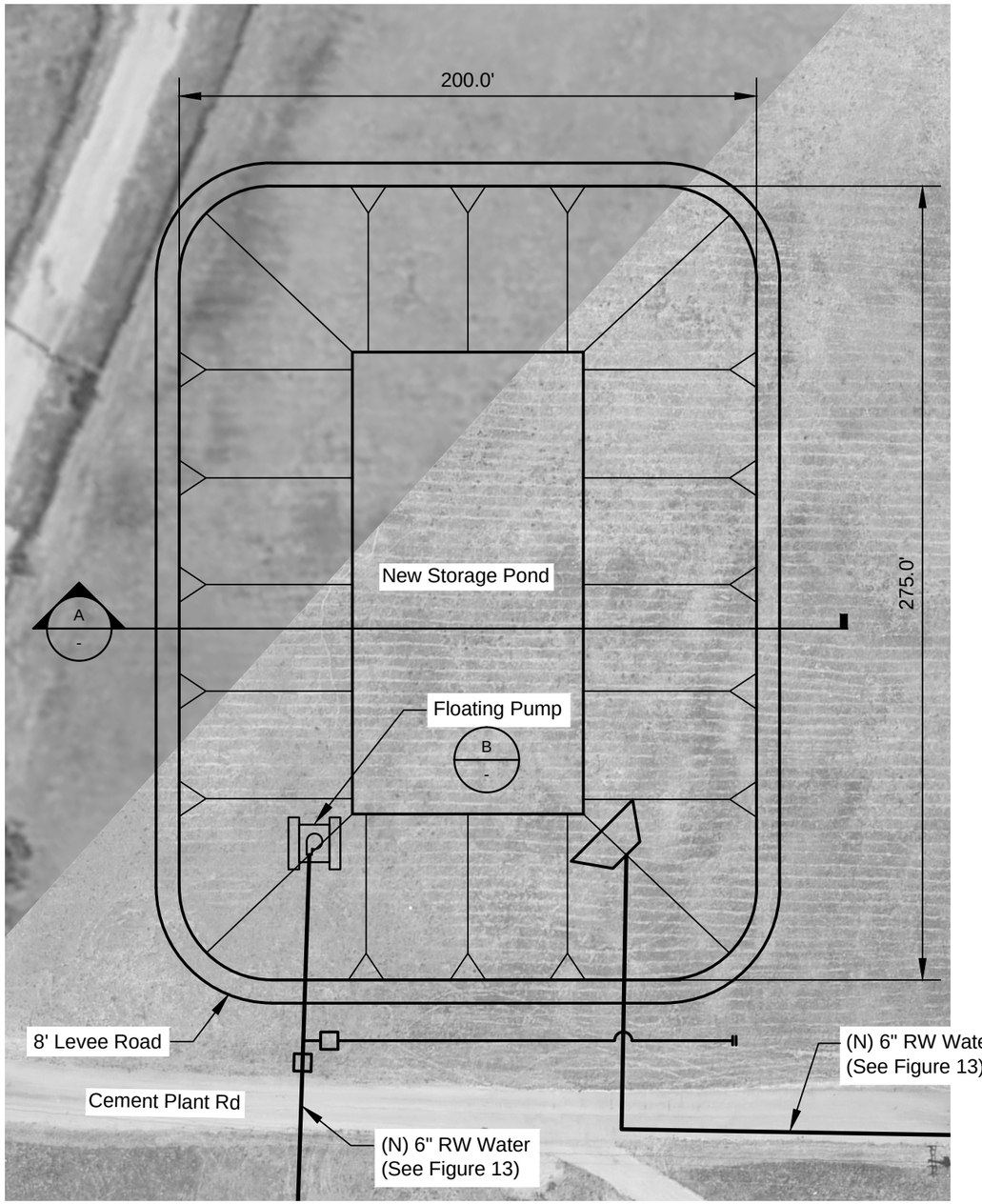
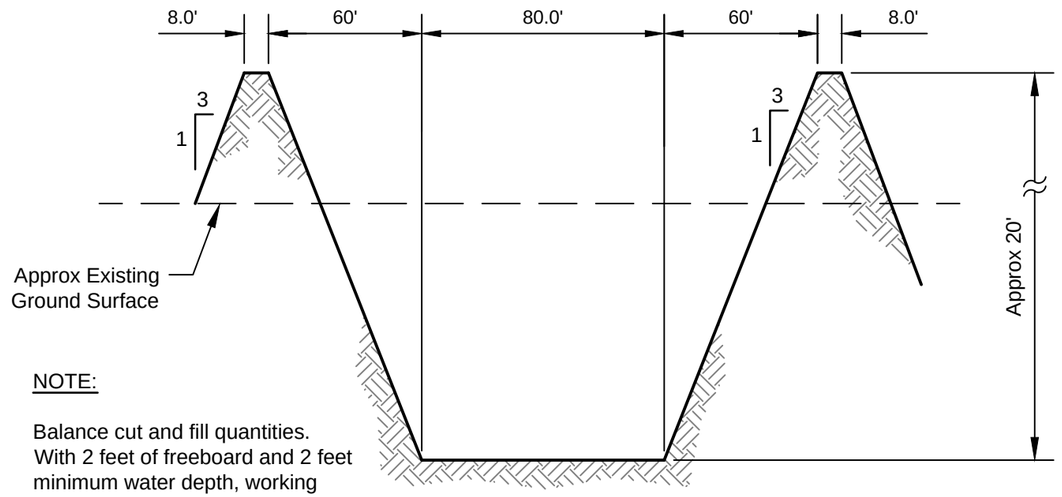


Site and Grading Plan



NOTE:

Balance cut and fill quantities. With 2 feet of freeboard and 2 feet minimum water depth, working storage shall be 10 acre-feet.

A
-

Typical Lagoon Section

B
-

Floating Pump

SCALE IN FEET
0 50

NORTH

Davenport County Sanitation District
Recycled Water Project

Job Number 8410848
Revision
Date April 2015

Recommended Facilities
New Storage Pond

Figure 19

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Appendices

Appendix A – Order No. 95-27 Waste Discharge Requirements and Water Reclamation Requirements for Davenport County Sanitation District

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL COAST REGION
81 Higuera Street, Suite 200
San Luis Obispo, California 93401-5427

ORDER NO. 95-27

WASTE DISCHARGE REQUIREMENTS AND WATER RECLAMATION REQUIREMENTS FOR DAVENPORT COUNTY SANITATION DISTRICT, DAVENPORT WASTEWATER TREATMENT FACILITY SANTA CRUZ COUNTY

The California Regional Water Quality Control Board, Central Coast Region (hereafter Board) finds that:

1. On January 9, 1995, John A. Fantham, District Engineer of Davenport County Sanitation, filed a complete Report of Waste Discharge. The report was filed on behalf of Davenport Wastewater Treatment Facility for authorization to continue the reclamation of effluent by complete evaporation at the conditioning tower of RMC Lonestar Cement Plant, and use of effluent for landscape and agricultural irrigation, and other appropriate reclaimed water uses within the Santa Cruz Coastal sub-basin.

2. Davenport County Sanitation District (hereafter Discharger), 701 Ocean Street, Santa Cruz, CA 95060, owns and operates the Davenport Wastewater Treatment Facility located along the coast in the community of Davenport in Santa Cruz County as shown on Attachment "A" of this Order.

3. Presently, 32,000 gallons per day (gpd) average dry weather flow (ADWF) domestic wastewater from the Oldtown and Newtown Sections of the community of Davenport and RMC Lonestar Cement Plant are treated at the treatment facility. Treatment is provided by an aerated lagoon with a design capacity of 50,000 gpd ADWF. The effluent is reclaimed by complete evaporation in RMC Lonestar's Cement Plant conditioning tower. Vaporization of the wastewater in this fashion poses no threat to public health or water quality, so there is no Order regulating the tower itself.

4. On February 12, 1992, to February 20, 1992, and from February 26, 1992, to March 5, 1992, the Discharger discharged partially treated wastewater to the RMC Lonestar seepage pond. The seepage pond overflows into a ditch which drains to the Pacific Ocean. About 576,000 gallons per day of wastewater were discharged for each of the discharge days enumerated above. A series of storms that hit the area resulted in massive volume of infiltration/inflow (I/I) to the collection system and the discharge of partially treated sewage from the storage lagoon. The discharge of partially treated sewage was effected to avoid the catastrophic failure of the storage lagoon. Failure of the lagoon's dike would cause the uncontrolled release of up to 2.74 million gallons of sewage. In addition, there would be loss of storage and treatment of wastewater for an extended period. However, these discharges to the seepage pond and to the Pacific Ocean violate Waste Discharge Requirements, Order No. 83-28.

5. On April 5, 1992, RMC Lonestar Cement Plant shut down its operation due to decreased cement sales and increased inventories. While the cement plant was down, effluent could not be disposed in RMC Lonestar's conditioning tower. Consequently,

the water level in the storage lagoon rose to an elevation of 123.5 feet (1.5 feet of freeboard). On April 22, 1992, to April 26, 1992, Discharger released 808,700 gallons of chlorinated primary treated waste to RMC Lonestar's seepage pond. This discharge was done to avoid overflow and inundation of the lagoon's dike. The seepage pond then overflowed to the Pacific Ocean. This discharge violates Waste Discharge Requirements, Order No. 83-28.

6. On July 10, 1992, the Regional Board adopted Cease and Desist Order (CDO) No. 92-106 requiring the Discharger to cease and desist from discharging waste contrary to Order no. 83-28 and to comply with a time schedule for installing a flowmeter at each discharge side of the force mains from the Oldtown and Newtown sections of Davenport, replacing the entire Newtown collection system to reduce I/I, and constructing an alternative effluent disposal system to prevent discharges to the Pacific Ocean due to wet weather or inability of RMC Lonestar to use the effluent.

7. The Discharger had installed the required flowmeters on July 30, 1992, one day ahead of July 31, 1992 CDO schedule. Replacement of the collection system at Newtown was completed on September 15, 1992. This compares with the October 31, 1992, complete construction date contained in the CDO.

8. From January 18, 1993, to February 2, 1993, the Discharger discharged 3.9 million gallons of partially treated but chlorinated wastewater to RMC Lonestar's pond that eventually overflowed and got discharged to the Pacific Ocean due to heavy rains and high I/I. The Discharger had to discharge again to RMC Lonestar's pond on two more occasions (February 17 to March 10, 1993, and April 13 to April 19, 1993) due to the shutdown of the cement plant and high infiltration of ground water to the pond. These two discharges totalled 4.96 million gallons of partially treated but chlorinated effluent that was discharged to RMC Lonestar's pond and eventually into the Pacific Ocean. These discharges violate CDO 92-106. However, no additional enforcement action was taken since the Discharger had already done corrective actions (replacement of Newtown's collection system and installation of flow meters) and had proposed a plant upgrade project to improve effluent quality for reclaimed water uses.

9. In January 1995, the Discharger started construction of the treatment plant upgrade. The plant upgrade consists of the following: chemical feed system for alum and polymer, sand filter, chlorine contact tank, and chlorination system. The upgrade project will result in high quality effluent that will be used for various reclaimed water projects. The Discharger anticipates completion of the upgrade project by mid-April 1995.

10. The Discharger is proposing to use effluent from the upgraded facility for landscape and agricultural irrigation as shown on Attachment "B", and other appropriate reclaimed water uses. Under normal operating condition, treatment pond effluent not subjected to additional treatment, will still be used completely at RMC Lonestar's conditioning tower. The upgraded facility will be used for drawing down the pond for winter storage, during the cement plant shutdown, and during storm conditions. The degree of effluent treatment will be dependent on reclaimed water use.

11. State Department of Health Services' criteria for use of reclaimed water is in Title 22, Chapter 3, of the California Code of Regulations. The Board has consulted with this Department regarding the regulation of this discharge.

12. Results of the March 16, 1994, water supply (to Oldtown and Newtown sections of Davenport and RMC Lonestar) analysis show the following composition:

Constituents	Concentration
Total dissolved solids	140 mg/l
Sodium	13 "
Calcium	17 "
Magnesium	3.1 "
Chloride	17 "
Sulfate	30 "
Nitrate as NO_3	1.8 "
Copper	0.016 mg/l

The following heavy metals were not detected: aluminum, arsenic, barium, cadmium, chromium, fluoride, lead, mercury, selenium, and silver.

13. The Water Quality Control Plan, Central Coastal Basin, (Basin Plan) was adopted by the Regional Board on November 17, 1989, and approved by the State Water Resources Control Board on August 16, 1990. The Basin Plan incorporates statewide plans and policies by reference and contains a strategy for protecting beneficial uses of State waters.

14. Present and anticipated beneficial uses of groundwater in the vicinity of the discharge include: municipal and domestic water supply, industrial water supply, and agricultural water supply.

15. Present and anticipated beneficial uses of the Pacific Ocean that could be affected by the discharge include:

    a. Industrial water supply;
    b. Navigation;
    c. Water contact recreation;
    d. Non-contact water recreation, including aesthetic enjoyment;
    e. Commercial and sport fishing;
    f. Mariculture;
    g. Shellfish harvesting; and
    h. Wildlife habitat.

16. These waste discharge requirements are being revised to incorporate requirements contained in the current Basin Plan and to include water reclamation requirements. The discharge has been regulated by Waste Discharge Requirements Order No. 83-28, adopted by the Board on July 15, 1983. This discharge has been regulated by the Board since then.

17. These waste discharge requirements are for an existing facility and are exempt from provisions of the California Environmental Quality Act (Public Resources Code; Section 21000, et seq.) in accordance with Section 15301, Chapter 3, Title 14, of the California Code of Regulations. The proposed plant upgrade, provided there is no increase in design capacity, is exempt from provisions of the California Environmental Quality Act and Coastal Permit review in accordance with the July 16, 1993 Memorandum from the County of Santa Cruz Planning Department to the County Public Works.

18. Discharge of waste is a privilege, not a right, and authorization to discharge is conditional upon the discharge complying with provisions of Division 7 of the California Water Code and any more stringent effluent limitations necessary to implement water quality control plans, to protect beneficial uses, and to prevent nuisance. Compliance with this Order should assure this and mitigate any potential adverse changes in water quality due to the discharge.

19. On February 3, 1995, the Board notified the Discharger and interested agencies and persons of its intent to adopt waste discharge requirements for the discharge and has provided them with a copy of the proposed Order and an opportunity to submit written views and comments.

20. In a public hearing on April 14 1995, the Board heard and considered all comments pertaining to the discharge and found this Order consistent with the above findings.

IT IS HEREBY ORDERED, pursuant to authority in Section 13263, 13377, and 13523 of the California Water Code, that Davenport County Sanitation District, its agents, successors, and assigns, may discharge wastewater at Davenport Wastewater

Treatment Facility providing compliance is maintained with the following:

[Note: other prohibitions and conditions, definitions, and the method of determining compliance are contained in the attached "Standard Provisions and Reporting Requirements for Waste Discharge Requirements" dated January, 1984. Applicable paragraphs are referenced in paragraph D.3. of this Order.

Throughout the Order superscripts are provided to indicate source of specified requirements. These superscripts are defined below:

A = Basin Plan
B = Title 22, Division 4, Chapter 3, of the California Code of Regulations

Requirements not referenced are based on staff's professional judgment.]

A. PROHIBITIONS

1. Discharge of domestic wastewater to the treatment system from other than the Newtown and Oldtown Sections of Davenport, and RMC Lonestar Cement Plant is prohibited.

2. Discharge of treatment system effluent to other than the RMC Lonestar conditioning tower, the designated reclaimed water areas as shown on Attachment "B" of this Order, and to the other reclaimed water use areas approved by the Executive Officer is prohibited.

3. Bypass of the collection and treatment systems and discharge of untreated wastes or partially treated effluent directly to the reclaimed water use areas as shown on Attachment "B" is prohibited.

4. Delivery of reclaimed water to users during periods when effluent does not meet reclamation specifications of this Order is prohibited.

B. DISCHARGE SPECIFICATIONS

1. Surface drainage shall be excluded from the treatment pond.

2. Freeboard shall exceed two feet in the treatment pond.

3. Nuisance odors shall not be perceptible beyond the facility's property line.

4. Monthly daily average dry weather influent flow from **May** to **October** shall not exceed **50,000 gallons.**

5. Monthly daily average wet weather influent flow from **November** to **April** may exceed **50,000 gallons** provided effluent meets reclaimed water requirements.

C. RECLAIMED WATER SPECIFICATIONS

1. Production and use of reclaimed water shall be in conformance with the reclamation criteria contained in Title 22, Division 4, Chapter 3, of the California Code of Regulations.

2. For uses of reclaimed water not addressed in Title 22, specific review and approval of criteria by the Executive Officer will be required.

3. Delivery of reclaimed water to a specific user shall cease during any period the user cannot comply with water reclamation requirements. Use of reclaimed water may resume when the user can once again comply with its water reclamation requirements.

4. Reclaimed water shall be confined to the authorized use area.

   a. Direct or windblown spray shall be confined to the area designated and approved for reclamation.

   b. Precautions shall be taken to assure that reclaimed water will not be

sprayed on any facility or area not designated for reclamation.

5. Notification shall be provided to inform the public that reclaimed water is being used. The notification shall include the posting of conspicuous warning signs with proper wording of sufficient size to be clearly read.

6. Public contact with reclaimed water shall be minimized except where specifically approved by the health agencies and the Board.

7. The reclaimed water distribution and transmission system piping shall comply with the design requirements contained in the California-Nevada Section AWWA publication "Guidelines for Distribution of Nonpotable Water."

   a. All piping, valves and outlets shall be marked to differentiate reclaimed water from domestic water.

   b. All reclaimed water controllers, valves, etc., shall be affixed with reclaimed water warning sign.

8. All reclaimed water valves, outlets, quick couplers, and sprinkler heads shall be of a type, or secured in a manner that only permits operation by personnel authorized by the user.

9. Use or installation of hose bibs on any irrigation system presently operating or designated to operate with reclaimed water, regardless of the hose bib construction or identification shall not be permitted.

10. There shall be at least a 10-foot horizontal and 1-foot vertical separation (with the domestic water above the reclaimed water pipeline) between all pipelines transporting reclaimed water and those transporting domestic water.

11. There shall be no connection between the potable water supply and piping containing reclaimed water. Supplementing reclaimed water with water used for domestic supply or water from irrigation or industrial wells shall not be allowed except through an air-gap separation.

12. Drinking water facilities shall be protected from direct or windblown reclaimed water spray.

13. Tank trucks and other equipment which are used to distribute reclaimed water shall be clearly identified with warning signs.

14. There shall be no irrigation or impoundment of reclaimed water within 500 feet of any well used for domestic supply or 100 feet of any irrigation well unless it can be demonstrated that special circumstances justify lesser distances to be acceptable.

15. Adequate measures shall be taken to prevent the breeding of insects and other vectors of health significance, and the creation of odors, slimes or unsightly deposits.

16. Inspection, supervision and employee training shall be provided by the user to assure proper operation of the reclaimed water system. Records of inspection and training shall be maintained by the user.

17. Reclaimed water for **landscape irrigation** shall be an adequately disinfected, and oxidized wastewater having a 7-day median number of coliform organisms not exceeding 23 MPN per 100ml or any two consecutive coliform samples not exceeding 240 MPN per 100 ml.[B]

19. Reclaimed water used for the spray irrigation of food crops shall be at all times an adequately **disinfected, oxidized, coagulated, clarified, filtered wastewater.** The wastewater shall be considered adequately disinfected if at some location in the treatment process the median number of coliform organisms does not exceed **2.2 per 100 milliliters and the number of coliform**

organisms does not exceed 23 per 100 milliliters in more than one sample within any 30-day period. The median value shall be determined from the bacteriological results of the last seven days for which analyses have been completed. **Filtered wastewater** means oxidized, coagulated, clarified wastewater which has been passed through natural undisturbed soils or filter media, such as sand or diatomaceous earth, so that the turbidity as determined by an approved laboratory method does not exceed an average operating turbidity of **two turbidity units** and does not exceed **five turbidity units** more than five percent of the time during any 24-hour period.[B]

20. Reclaimed water used for the **surface irrigation of food crops** shall be at all times an adequately **disinfected, oxidized** wastewater. The wastewater shall be considered adequately disinfected if at some location in the treatment process the median number of coliform organisms does not exceed **2.2 per 100 milliliters**, as determined from the bacteriological results of the last seven days for which analyses have been completed.[B]

21. Reclaimed water uses to other than the RMC Lonestar conditioning tower shall meet the following effluent limits:[A]

Constituent	Maximum Concentration (mg/l)
Aluminum	5.00
Arsenic	0.10
Beryllium	0.10
Boron	0.75
Cadmium	0.01
Chromium	0.10
Cobalt	0.05
Copper	0.20
Fluoride	1.00
Iron	5.00
Lead	5.00
Lithium	2.50
Manganese	0.20
Molybdenum	0.01
Nickel	0.20
Selenium	0.02
Vanadium	0.10
Zinc	2.00

D. GROUND WATER LIMITATIONS[A]

(Compliance with ground water limitations shall be determined by statistical evaluation of ground water data collected from upgradient and downgradient monitoring wells.)

1. The discharge shall not contain taste or odor producing substances that adversely affect ground water beneficial uses.

2. The discharge shall not cause concentration of phenol in the ground water to exceed 1.0 ug/l.

3. The discharge shall not cause concentrations of radionuclides in ground water to exceed limits set forth in California Code of Regulations, Title 22, Chapter 15, Articles 5, Section 64443 and listed below.

Constituents	Maximum Contaminant Level, pCi/l
Combined Radium-226 and Radium 228	5
Gross Alpha particle activity (including Radium-226 but excluding Radon and Uranium)	15
Tritium	20,000
Strontium-90	8
Gross Beta particle activity	50
Uranium	20

4. The discharge shall not cause pH of the ground water to be depressed below 6.5 or raised above 8.3.

5. The discharge shall not cause concentrations of pesticides or herbicides in excess of the limiting concentrations set forth in California Code of Regulations, Title 22, Chapter 15, Article 5.5, Section 64444.5, Table 5 and listed below.

Constituents	Maximum Contaminant Level (mg/l)
Chlorinated Hydrocarbons	
Endrin	0.0002
Lindane	0.004
Methoxychlor	0.1
Toxaphene	0.005
Chlorophenoxys	
2,4-D	0.1
2,4,5-TP Silvex	0.01
Synthetics	
Atrazine	0.003
Bentazon	0.018
Benzene	0.001
Carbon Tetrachloride	0.0005
1,4-Dichlorobenzene	0.005
1,2-Dichloroethane	0.0005
1,1-Dichloroethylene	0.006
1,3-Dichloropropene	0.0005
Ethylbenzene	0.680
Ethylene Dibromide	0.00002
Molinate	0.02
Monochlorobenzene	0.03
Simazine	0.01
1,1,2,2-Tetrachloroethane	0.001
Thiobencarb	0.07
1,1,1-Trichloroethane	0.2
1,1,2-Trichloroethane	0.032
Trichloroethylene	0.005
Vinyl Chloride	0.0005
Xylenes	1.750*

*MCL is for either single isomer or the sum of the isomers.

6. The discharge shall cause concentrations of chemical constituents in ground water to exceed limits specified in Title 22, Chapter 15, Article 4, Section 64435, of the California Code of Regulations as listed below[A].

Constituents	Maximum Contaminant Level (mg/l)
Fluoride*	
53.7 and below	2.4
53.8 to 58.3	2.2
58.4 to 63.8	2.0
63.9 to 70.6	1.8
70.7 to 79.2	1.6
79.3 to 90.5	1.4
Aluminum	1.0
Arsenic	0.05
Barium	1
Cadmium	0.01
Chromium	0.05
Lead	0.05
Mercury	0.002
Nitrate (as NO_3)	45
Selenium	0.01
Silver	0.05

* Annual average of Maximum Daily Air Temperature, ^0F based on temperature data obtained for a minimum of five years.

E. PROVISIONS

1. Order No. 83-28, "Waste Discharge Requirements and Water Reclamation Requirements for Davenport County Sanitation District, Davenport Wastewater Treatment Facility, Santa Cruz County" adopted by the Board on July 15, 1983 is hereby rescinded.

2. Discharger shall comply with "Monitoring and Reporting Program No. 95-27", and any amendments thereto, as specified by the Executive Officer (EO).

3. The Discharger shall comply with all items of the attached "Standard Provisions and Reporting Requirements for Waste Discharge Requirements" dated January, 1984; except Item Nos. A.8., and 11.

4. An **Engineering Report** as specified by Section 60323, Title 22, of the California Code of Regulations must be submitted and approved by the EO before reclaimed water use is initiated except for use at RMC Lonestar conditioning tower.

5. Pursuant to Title 23, Division 3, Chapter 9, of the California Code of Regulations, the Discharger must submit a written report to the EO not later than October 1, 1999, addressing:

   a. Whether there will be changes in the continuity, character, location, or volume of the discharge; and,

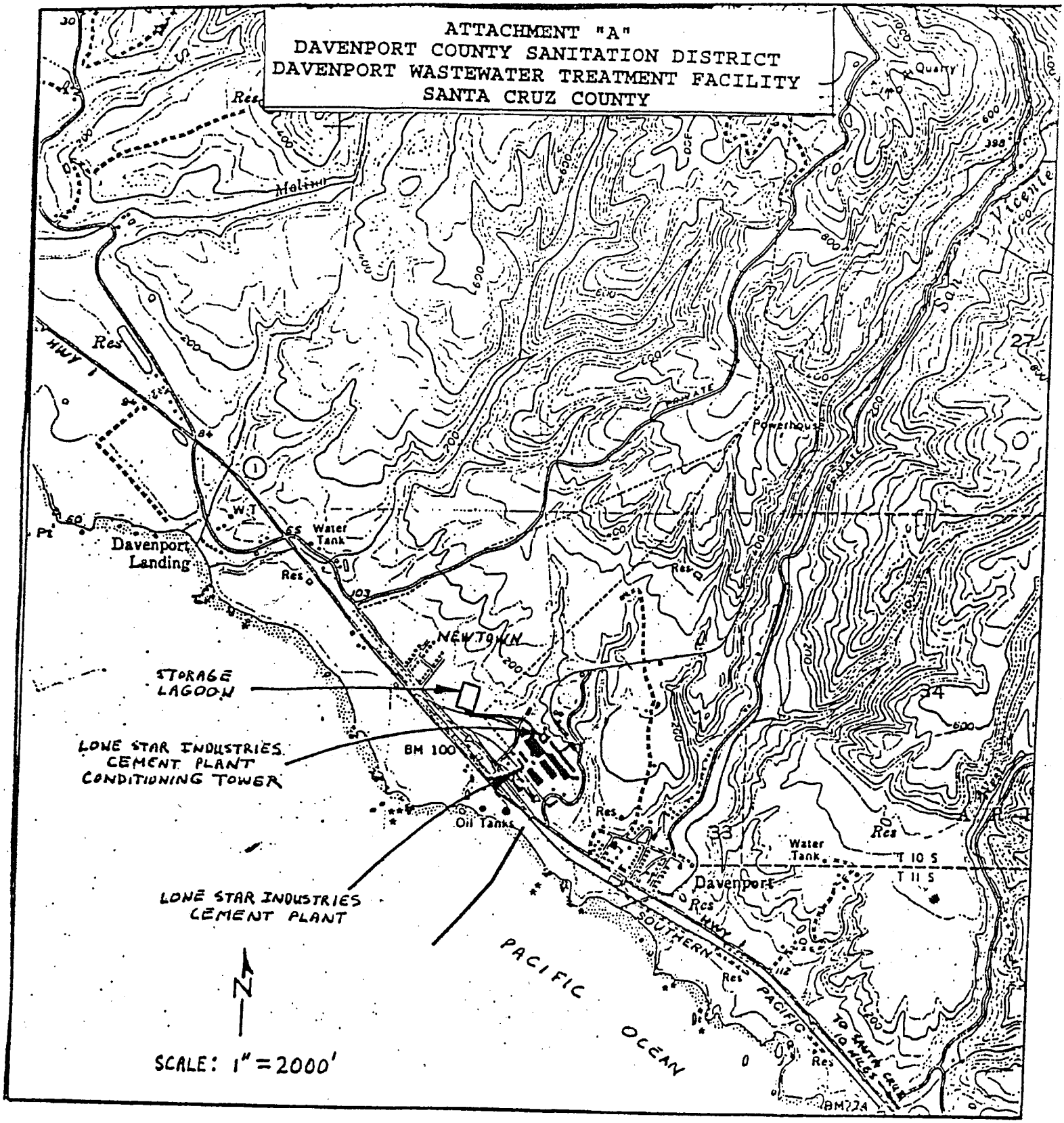
   b. Whether, in their opinion, there is any portion of the Order that is incorrect, obsolete, or otherwise in need of revision.

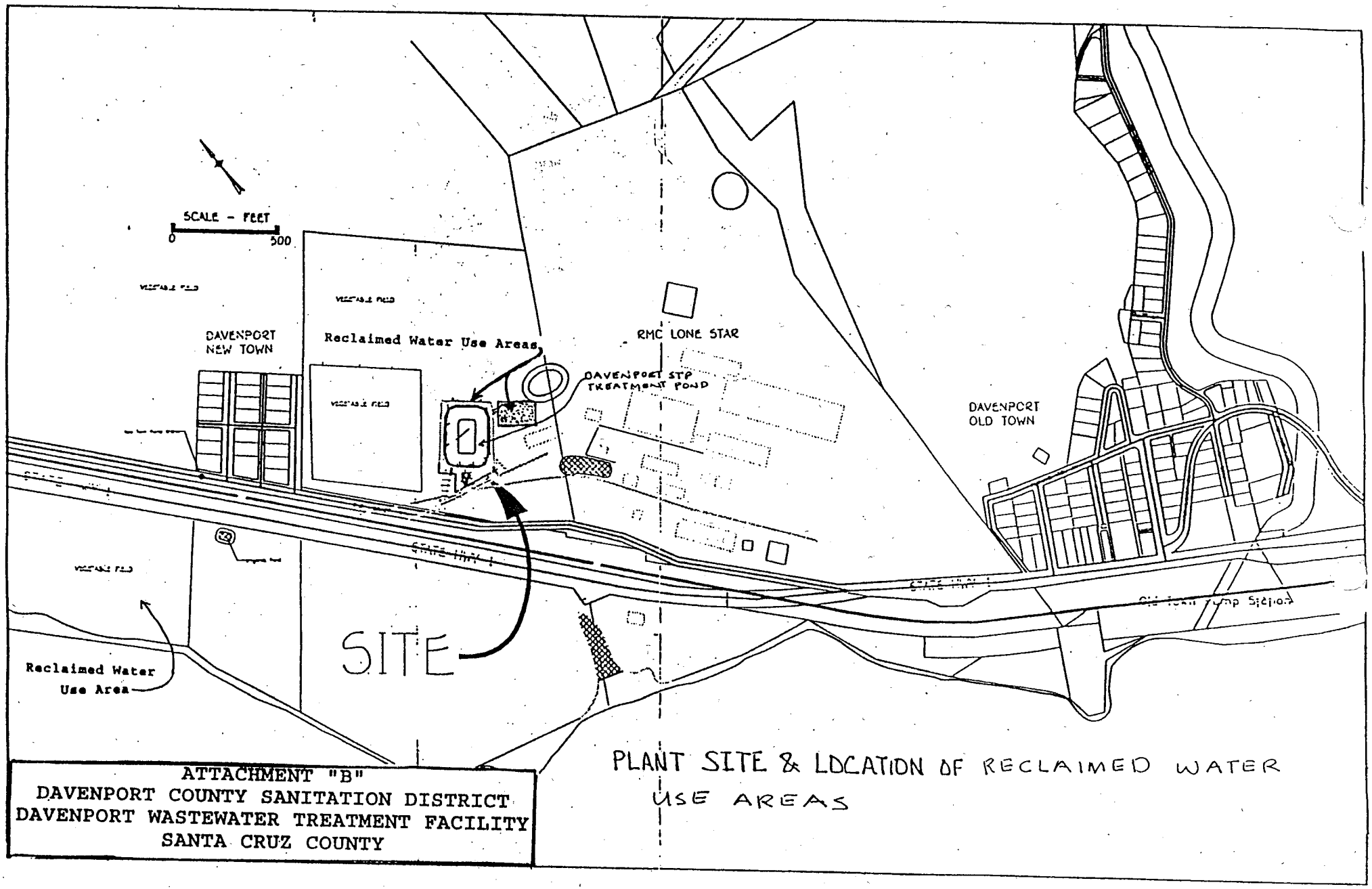
I, ROGER W. BRIGGS, Executive Officer, do hereby certify the foregoing is a full, true, and correct copy of an Order adopted by the California Regional Water Quality Control Board, Central Coast Region, on April 14, 1995.

Executive Officer

AJM9/95-27.wdr/AW

ATTACHMENT "A"
DAVENPORT COUNTY SANITATION DISTRICT
DAVENPORT WASTEWATER TREATMENT FACILITY
SANTA CRUZ COUNTY





ATTACHMENT "B"
DAVENPORT COUNTY SANITATION DISTRICT
DAVENPORT WASTEWATER TREATMENT FACILITY
SANTA CRUZ COUNTY

PLANT SITE & LOCATION OF RECLAIMED WATER USE AREAS

CALIFORNIA REGIONAL WATER QUALITY CONTROL BOARD
CENTRAL COAST REGION

MONITORING AND REPORTING PROGRAM NO. 95-27
DAVENPORT COUNTY SANITATION DISTRICT
DAVENPORT WASTEWATER TREATMENT FACILITY
SANTA CRUZ COUNTY

Influent Flow Monitoring

The Discharger shall record the daily influent flow from Newtown, Oldtown, and RMC Lonestar. Each of these influent lines shall have a totalizing flow meter such that daily influent flows are measured and recorded. The average daily monthly influent flow data shall be reported quarterly by the **30th day of January, April, July, and October.**

Effluent Monitoring*

Representative samples shall be collected from the tertiary plant effluent. **Effluent monitoring is required only when effluent is used for reclaimed water uses other than at the RMC Lonestar conditioning tower.** When effluent is used at the conditioning tower, only the average daily monthly effluent flow has to be measured and reported. The effluent monitoring program shall be in accordance with **Table 1** below.

Table 1

Constituent	Units	Type of Sample	Sampling and Analyzing Frequency
Flow	gallons/day	Measured daily	Monthly
Total Coliform	MPN/100 ml	Grab	Daily
Turbidity	NTU	Continuous	Daily when required by reclaimed water use.
Total Dissolved Solids	mg/l	Composite	Quarterly (March, June,Sept.,Dec.
Sodium	mg/l	"	"
Chloride	mg/l	"	"
BOD_5	mg/l	"	"
Total Nitrogen (kjeldahl + ammonia +nitrate + nitrite)	mg/l	"	"
Nitrate (as N)	mg/l	"	"

pH	units	Grab	"
Fluoride	mg/l	Composite	Annually in June*
Aluminum	mg/l	"	"
Arsenic	mg/l	"	"
Barium	mg/l	"	"
Cadmium	mg/l	"	"
Chromium	mg/l	"	"
Lead	mg/l	"	"
Mercury	mg/l	"	"
Selenium	mg/l	"	"
Silver	mg/l	"	"
Beryllium	mg/l	"	"
Boron	mg/l	"	"
Cobalt	mg/l	"	"
Copper	mg/l	"	"
Iron	mg/l	"	"
Lithium	mg/l	"	"
Manganese	mg/l	"	"
Molybdenum	mg/l	"	"
Nickel	mg/l	"	"
Vanadium	mg/l	"	"
Zinc	mg/l	"	"
Endrin	mg/l	Grab	"
Lindane	mg/l	"	"
Methoxychlor	mg/l	"	"
Toxaphene	mg/l	"	"
2,4-D	mg/l	"	"
2,4,5-TP Silvex	mg/l	"	"
Atrazine	mg/l	"	"

Bentazon	mg/l	"	"
Benzene	mg/l	"	"
Carbon Tetrachloride	mg/l	"	"
1,4-Dichlorobenzene	mg/l	"	"
1,2-Dichloroethane	mg/l	"	"
1,1-Dichloroethylene	mg/l	"	"
1,3-Dichloropropene	mg/l	"	"
Ethylbenzene	mg/l	"	"
Ethylene Dibromide	mg/l	"	"
Molinate	mg/l	"	"
Monochlorobenzene	mg/l	"	"
Simazine	mg/l	"	"
1,1,2,2-Tetrachloroethane	mg/l	"	"
Thiobencarb	mg/l	"	"
1,1,1-Trichloroethane	mg/l	"	"
1,1,2-Trichloroethane	mg/l	"	"
Trichloroethylene	mg/l	"	"
Vinyl Chloride	mg/l	"	"
Xylenes	mg/l	"	"
Phenol	mg/l	"	"
Gross Alpha Particle Activity	pCi/l	"	"
Gross Beta Particle Activity	pCi/l	"	"

*If any of these constituents are not detected or are below the ground water limitations during initial sampling, annual sampling of these constituents in future years are not needed. However, constituents exceeding ground water limits shall be resampled within 30 days of knowing the result. More frequent sampling and/or corrective actions may be required by the Executive Officer, if needed.

Water Supply Monitoring

Samples shall be collected from the water supply of Newtown, Oldtown and RMC Lonestar and shall be analyzed according to the following:

Constituent	Units	Type of Sample	Sampling and Analyzing Frequency
pH	Units	Grab	Annually in June
Total Dissolved Solids	mg/l	"	"
Sodium	mg/l	"	"
Nitrate as N	mg/l	"	"
Chloride	mg/l	"	"

Ground Water Monitoring

After sufficient data is collected on effluent quality, quantity, and areas of reclaimed water use, the Executive Officer will determine if ground water monitoring wells are needed to determine impact of discharge.

Reporting

Monitoring reports shall be submitted on the **30th of January, April, July, and October** of each year, and shall contain information collected during the previous quarter. The report shall include the quantity of reclaimed water use and the area(s) of use. The **January report shall also include all of the information required by item C.16 of the "Standard Provisions".** In reporting monitoring data, the discharger shall submit all data on a form prescribed by the Executive Officer.

BY _____
Executive Officer

April 14, 1995
Date

Appendix B – Agreement Between Davenport County Sanitation District and Cemex (Lone Star)

ORIGINAL E-103

AMENDED AGREEMENT FILE COPY

THIS AMENDED AGREEMENT made and entered into as of the 8th day of June, 1982, by and between LONE STAR INDUSTRIES, INC., a Delaware corporation ("LONE STAR"), and the DAVENPORT COUNTY SANITATION DISTRICT, the ("DISTRICT");

WITNESSETH:

WHEREAS, the DISTRICT presently operates and maintains a sewage treatment facility for the Old Town portion of Davenport; and

WHEREAS, the wastewater of the New Town portion of Davenport is presently treated in a septic tank; and

WHEREAS, the DISTRICT desires to construct a new sewage treatment facility for the residents of the Old Town and New Town portions of Davenport; and

WHEREAS, the County of Santa Cruz has issued to LONE STAR its Planned Development Permit 76-606-PD and its Planned Development Permit 78-819-PD (collectively the Permits) in connection with the increase by LONE STAR of the productive capacity at its Davenport cement plant and the conversion of such plant to the use of coal as its primary energy source; and

WHEREAS, as required by the Permits, prior to the operation of the new kiln at the expanded plant and the use of coal for production purposes, LONE STAR entered into an agreement, dated February 12, 1980, (the Agreement) with the DISTRICT, relating to the construction of a new sewage transmission and treatment facility (the Facility) to serve the Old Town and New Town portions of Davenport; and

WHEREAS, LONE STAR and the DISTRICT desire to amend the Agreement;

NOW, THEREFORE, IT IS AGREED AS FOLLOWS:

LONE STAR and the DISTRICT agree that the Agreement is hereby amended to read as follows:

1. LONE STAR shall perform all the conditions and requirements of the Permits.

2. a. Attached hereto and initialled by the parties are the Preliminary Plans for the Facility dated February 18, 1982 (the Plans). Based on a review of the plans by LONE STAR and on

assurances by the DISTRICT that the Facility is eligible for Federal and State grants, LONE STAR has agreed to enter into this Amended Agreement (this Agreement) to serve the area within the Davenport County Sanitation District, as that District existed on February 12, 1982, including existing buildings and buildings which could be constructed in such areas within such District on existing lots at zoning densities in effect on February 12, 1980. The estimated total project cost of the Facility is $845,000 (the Estimated Cost). Details of the Estimated Cost and of anticipated Federal and State grants to be obtained by the DISTRICT in connection with the construction of the Facility are set out in Schedule A attached hereto. The Plans may be changed by the DISTRICT in accordance with recommendations or requirements of State or Federal agencies.

2. b. LONE STAR agrees to contribute to the cost of constructing the Facility the sum of $80,000, of which $50,000 has already been paid to the DISTRICT.

In addition, LONE STAR agrees that $50,000 previously committed to planting trees, as provided in the use permit for the Santa Cruz Cement Plant, will, if cancelled as a condition of the use permit, be paid to the DISTRICT, if no longer required to be spent in accordance with terms of the use permit.

2. c. Should the Estimated Cost be exceeded, LONE STAR agrees to pay an additional amount to the DISTRICT, not to exceed one-eighth of 10% of the Estimated Cost (i.e. $10,562.50).

2. d. Should the Facility cost less than the Estimated Cost, LONE STAR will be credited in the amount of any reduction in the share of local costs of the Facility following the Federal and State final audit.

2. e. LONE STAR shall cooperate with the DISTRICT in connection with the DISTRICT's applications for Federal and State grants and shall furnish to the DISTRICT, upon the request of the DISTRICT, all reports and materials possessed by LONE STAR which the DISTRICT determines may be useful for such purposes.

2. f. The DISTRICT and LONE STAR shall cooperate in order to reduce the costs of the Facility and the costs to be paid by the DISTRICT and LONE STAR in connection with the construction, operation and maintenance of the Facility and to gain the maximum Federal and State grants for the Facility.

2. g. As shown on the Plans, treated wastewater (effluent) from the Facility shall be processed in LONE STAR's plant. After operations begin, should LONE STAR present evidence establishing to the DISTRICT and State Water Quality Control Board that it is not feasible to continue to dispose of the effluent in LONE STAR's plant, an alternative method of disposing of the effluent from the Facility will be jointly investigated and LONE STAR shall cooperate with DISTRICT to provide an alternative method to dispose of such effluent, acceptable to DISTRICT.

3. a. Commencing six months from the date of the commencement of operations of the Facility and thereafter at six-month intervals, LONE STAR agrees to pay to the DISTRICT, 50% of the DISTRICT's operating and maintenance costs for the prior six-month period.

3. b. For purposes of this Agreement, "operating and maintenance costs" shall mean only those costs associated with the normal operation and maintenance of the Facility, including any operational costs borne by LONE STAR on the DISTRICT's behalf and approved by the DISTRICT (for which LONE STAR shall receive credit against its 50% obligation) computed in accordance with generally accepted accounting principles consistently applied, and shall not include (i) any capital costs of the Facility, (ii) any overhead allocation in excess of the percentage charge made to any other County Sanitation District, nor (iii) any amounts for which the DISTRICT receives reimbursement from other governmental bodies or agencies.

4. a. All payments by LONE STAR to the DISTRICT contemplated by this Agreement shall be made within 30 days of written request of the DISTRICT for payment indicating that payment is called for by this Agreement and accompanied by a statement setting out in reasonable details the basis for the requested payment.

4. b. If LONE STAR objects to the payment of any amount listed on any statement furnished to it by the DISTRICT, such amount shall be paid by LONE STAR, but such payment shall not preclude LONE STAR's right to dispute such claim in any manner that it deems appropriate. Any amount due back to LONE STAR shall be refunded within 30 days.

5. a. LONE STAR agrees to make available to the DISTRICT, whenever and wherever reasonable, assistance, easements, or other rights over LONE STAR's property, as any of such may be needed for the construction and operation of the Facility, at no cost to the DISTRICT.

5. b. LONE STAR will be allowed to discharge only its sanitary wastewater to the treatment pond without fee either by pumping into a separate force main in the same trench as the DISTRICT's force main, or by a separate force main in an alternate route to the Inlet Manhole shown on the Plans.

5. c. LONE STAR may elect, at its option, to terminate all or part of its wastewater discharge to the DISTRICT system, and to resume its own treatment and disposal of the wastewater. LONE STAR shall provide the DISTRICT with 60 days prior notice of such action.

5. d. LONE STAR shall have the right to receive the DISTRICT's treated wastewater at no cost and on a first-use basis, notwithstanding Condition 2.g. above.

5. e. After new transmission and treatment facilities and the infiltration/inflow program are operational, LONE STAR will not be legally or financially responsible for any expansion or major reconstruction of facilities to correct any problems due to inadequate design or construction of the Facilities, nuisance conditions, excessive infiltration/inflow in the DISTRICT's collection system, lack of system capacity to handle existing or new DISTRICT connections, or negligence on the part of the DISTRICT.

6. The DISTRICT shall hold LONE STAR harmless from any and all costs (including attorney's fees) claims or liabilities arising out of the construction or operation of the Facility except for (i) costs and liabilities of LONE STAR expressly provided for in this Agreement and (ii) such costs, claims or liabilities as may become due as a result of negligence, willful misconduct, or reckless disregard for the health and safety of the residents of the DISTRICT by LONE STAR or its agents.

7. This Agreement shall be effective as of the date of this Agreement and shall continue in effect for 20 years from the date the Facility commences operation or for the useful life of the Facility, whichever is longer. LONE STAR and the DISTRICT agree that should the Facility become permanently inoperative due to a casualty or any cause for which LONE STAR is not responsible, this Agreement shall terminate.

8. This Agreement shall be binding on the successors and assigns of LONE STAR and upon any governmental or other body or agency which operates the Facility.

9. The DISTRICT agrees that it is responsible for obtaining all necessary permits for the construction and operation of the Facility. LONE STAR agrees to cooperate with the DISTRICT in connection with the DISTRICT's applications for such permits.

10. LONE STAR shall not be required to take any action under this Agreement, or in connection with the Facility to the extent and for such period of time as it is prevented from doing so by any events beyond its control, including without limitation, earthquakes, fires, floods, other acts of God, strikes, failure of suppliers, governmental actions, slides, storms, civil or military authority, riots, explosions, failure of water supply, or inability on the part of any party hereto to carry out its obligation under this Agreement on account of any other cause not reasonably within the control of such party.

11. LONE STAR shall not incur any liability to the DISTRICT, other than as expressly provided for herein, if in the exercise of its business judgment it ceases operation of its Davenport cement plant.

12. This Agreement may not be modified or amended orally and shall be construed and interpreted according to the laws of the State of California.

13. All notices, requests, demands and other communications hereunder shall be in writing and shall be deemed to have been duly given if delivered by hand or mailed, certified or registered mail with first-class postage prepaid,

(a) if to LONE STAR: Mr. DENNIS KASH, PRESIDENT
Lone Star Industries, Inc.
Pacific Region
2800 Campus Drive
San Mateo, CA 94403

(b) if to the DISTRICT: DISTRICT ENGINEER
Davenport County Sanitation District
701 Ocean Street
Room No. 410-G
Santa Cruz, CA 95060

IN WITNESS WHEREOF, the authorized officers of the parties hereto have caused this Agreement to be executed as of the day first above written.

DAVENPORT COUNTY SANITATION DISTRICT

By _____
Chairman, Board of Directors

LONE STAR INDUSTRIES, INC.

By _____

Approved as to form:

_____
DWIGHT L. HERR
Chief Deputy County Counsel

I HEREBY CERTIFY THAT THE FOREGOING INSTRUMENT IS A CORRECT COPY OF THE ORIGINAL ON FILE IN THIS OFFICE. ATTEST MY HAND AND SEAL THIS 8TH DAY OF June 19 82
GEORGE T NEWELL, COUNTY ADMINISTRATIVE OFFICER AND EX-OFFICIO CLERK OF THE BOARD OF SUPERVISORS OF THE COUNTY OF SANTA CRUZ, CALIFORNIA
BY _____ DEPUTY

DISTRIBUTION: CAO
Auditor
County Counsel
Public Works
Lone Star Industries, Inc.

FILE COPY

ORIGINAL 6/27

AGREEMENT

THIS AGREEMENT made and entered into this 12 day of February, 1980, by and between LONE STAR INDUSTRIES, INC., a California Corporation, hereinafter referred to as "LONE STAR" and DAVENPORT COUNTY SANITATION DISTRICT, hereinafter referred to as "DISTRICT";

WITNESSETH:

WHEREAS, DISTRICT operates and maintains a sewage treatment facility which treats the Old Town portion of Davenport; and

WHEREAS, the wastewater of the New Town portion of Davenport is treated in a septic tank; and

WHEREAS, there is a need to upgrade the existing sewage treatment facilities for the residents of Davenport by the construction of a new sewage treatment facility;

NOW, THEREFORE, IT IS AGREED AS FOLLOWS:

1. LONE STAR agrees to perform all the conditions and requirements of its Planned Development Permit #76-606-PD, issued on February 28, 1978, including, but not limited to, the following:

a. LONE STAR shall pay to DISTRICT amounts equaling the local shares required to be paid by DISTRICT in connection with Clean Water Act grants for Steps I, II and III of a new sewage treatment facility to serve the Davenport and New Town areas, including existing dwellings and dwellings which could be constructed in such areas on existing lots, and the area required to be included by the State Division of Water

Quality, at present zoning densities. Payment to DISTRICT shall be made as DISTRICT incurs liability for payment of said local shares.

b. LONE STAR shall make available to DISTRICT all reports and materials possessed by LONE STAR which may be useful to DISTRICT in connection with DISTRICT'S application for Clean Water grants.

c. In no event shall LONE STAR be required to pay more than $50,000 in connection with the obligations imposed by Paragraph 1.a. hereof. DISTRICT shall cooperate with LONE STAR to reduce the costs to be borne by LONE STAR to the smallest possible amount, and to gain reimbursement for LONE STAR'S credit if possible, for consulting and other fees already advanced by it.

d. LONE STAR shall pay 50% of the DISTRICT'S operating costs of the new wastewater facilities from the date that the improved system begins to incur additional costs throughout the useful life of the new facilities.

e. LONE STAR shall make available to DISTRICT any other facilities or easements needed for the completion of the new sewage treatment facility project at no cost to the DISTRICT.

f. LONE STAR shall have the opportunity to review and comment on the proposed project and its design. DISTRICT shall respond in writing to all questions and concerns raised by LONE STAR. However, final decisions shall be made by the DISTRICT in the event of disagreements that cannot be resolved by discussion and conciliation.

g. LONE STAR shall provide to DISTRICT all necessary assistance to bring the project to completion.

2. DISTRICT agrees to hold LONE STAR harmless from any and all claims or liabilities arising out of the operation of the new sewage treatment facilities except such claims or liabilities as may be due to any willful misconduct or due to any reckless disregard for the health and safety of the residents of the DISTRICT by LONE STAR or its agents.

3. This Agreement shall be in effect from and after the date first written above, and shall continue in effect for the reasonable life of the new sewage treatment facilities.

4. This Agreement shall be binding on the heirs, successors and assigns of the parties hereto.

IN WITNESS WEHREOF, the authorized officers of the parties hereto have caused this Agreement to be executed on the day first above written.

DAVENPORT COUNTY SANITATION DISTRICT

By _____
Vice-Chairman, Board of Directors

LONE STAR INDUSTRIES, INC.

By _____

Approved as to form:

_____
County Counsel

Distribution: CAO
County Counsel
Auditor
Public Works
Contractor
Planning

I HEREBY CERTIFY THAT THE FOREGOING INSTRUMENT IS A CORRECT COPY OF THE ORIGINAL ON FILE IN THIS OFFICE ATTEST MY HAND AND SEAL THIS 16th DAY June 19 80
[illegible] ADMINISTRATIVE OFFICER AND CLERK OF THE BOARD OF SUPERVISORS COUNTY OF SANTA CRUZ, CALIFORNIA
BY _____ DEPUTY

AMENDMENTS TO
DAVENPORT WATER SYSTEM AGREEMENT,
DAVENPORT SEWER SYSTEM AGREEMENT,
and
OTHER AGREEMENTS BETWEEN THE PARTIES

This Agreement is made between RMC PACIFIC MATERIALS, a Delaware corporation ("RMC"), and the Davenport County Sanitation District, a California special district ("District").

WHEREAS, the District presently operates and maintains a water treatment and sewer system for the Town of Davenport (both Old and New Town, herein collectively "Davenport"); and

WHEREAS, RMC has historically provided payment to the District to offset capital, operational, and maintenance costs of the systems; and

WHEREAS, RMC has for a number of years provided water to Davenport on a voluntary basis and without payment of any kind and agrees to continue to do so; and

WHEREAS, RMC and the District wish to resolve certain disputes that have arisen between them; and

WHEREAS, RMC and the District agree that the original Water Agreement of February 5, 1979, and amended agreements and amendments dated July 30, 1982, February 20, 1990, and May 21, 2008, should be further amended; and

WHEREAS, RMC and the District agree that the original Sewer Agreement of February 12, 1980, and the amended agreement dated June 8, 1982, should be further amended.

Now, therefore, the parties agree as follows:

I AMENDMENT TO WATER AGREEMENT

Section 5 of the May 21, 2008, agreement is hereby voided in its entirety and replaced with the following Section 5:

5.A Commencing January 1, 2009, at six-month intervals, RMC shall pay to the DISTRICT an amount equal to twenty-five percent

II AMENDMENT TO SEWER AGREEMENT

The sewer agreement between the parties dated February 12, 1980, is hereby voided in its entirety, and Section 3.a. of the sewer agreement dated June 8, 1982, is hereby voided in its entirety, and replaced with the following Section 3.a:

> 3.a Commencing January 1, 2009, at six-month intervals, RMC (as successor in interest to LONE STAR) shall pay to the DISTRICT an amount equal to twenty-five percent of the operating and maintenance costs for the DISTRICT's sewer system in Davenport for the prior six-month period. If the cement plant either begins production of cement, or ships cement, then RMC's contribution shall from the time of such production or shipping increase to fifty percent of the DISTRICT's operating and maintenance costs, provided, however, that RMC's shipping of previously produced cement that was on-site in August 2009 shall not cause RMC's contribution rate to increase.

Section 5.a. of the sewer agreement between the parties dated June 8, 1982, is hereby voided in its entirety, and replaced with the following Section 5.a:

> 5.a RMC agrees to make available to the DISTRICT any easements needed for the sewage treatment facility. Easements granted to the District for access to sewer facilities shall survive the termination of this agreement.

Section 7 of the sewer agreement between the parties dated June 8, 1982, is hereby voided in its entirety, and replaced with the following Section 7:

> 7. This Agreement shall be in effect from and after the date first written above, and shall continue in effect for as long as the sewage treatment facility is in operation, or until RMC, or its successors or assigns, ceases to operate the cement manufacturing facility at Davenport. In either case, this Agreement shall terminate and RMC's capital improvement contributions, its operations and maintenance contributions, and any other financial obligations shall terminate as of the date of cessation of operations. RMC and the DISTRICT further agree that should the sewage treatment facility become permanently inoperative due to a casualty or any cause for which RMC is not responsible, this Agreement shall terminate.

Approved as to form.

11-4-09

District Counsel

RMC PACIFIC MATERIALS, INC.

By: Julie A White

Its: : General Counsel, Asst. Secretary

Appendix C - Stakeholder Notice and Questionnaire

County of Santa Cruz

DAVENPORT COUNTY SANITATION DISTRICT

701 OCEAN STREET, ROOM 410, SANTA CRUZ, CA 95060-4070
(831) 454-2160 FAX (831) 454-2385 TDD (831) 454-2123

JOHN J. PRESLEIGH
DISTRICT ENGINEER

January 24, 2014

SECOND NOTICE

SUBJECT: DAVENPORT COUNTY SANITATION DISTRICT RECYCLED WATER FEASIBILITY STUDY

Dear Potential Stakeholder:

The Davenport County Sanitation District (District) is undertaking a feasibility study to evaluate water reuse in the community of Davenport and the surrounding area. Water reuse has several potential benefits including increased potable water reliability, preserving groundwater resources, landscape and agriculture irrigation, industrial reuse, and watershed enhancement.

The purpose of this letter is for the District to share information regarding the study with potential stakeholders, and for the District to receive questions and comments from you as a stakeholder. You have been identified as a potential stakeholder because you meet at least one of the following criteria:

- You are a property owner or lessor within the Study Area.
- You have expressed an interest in recycled water to the District.

Enclosed for your review is a questionnaire. We would like to determine the level of interest for the use of recycled water in Davenport and the surrounding area. Responding to the questionnaire is important for completing the study, but in no way does it represent a commitment on your part to use recycled water if it becomes available to you. In the future the District will host a meeting to provide information to the public regarding the Recycled Water Feasibility Study.

The District will need to perform field studies of the biological and cultural resources within the study area in January 2014. We request your permission to access your property for these brief field studies. Please acknowledge your permission for access to complete the field studies by signing and returning the attached Permission to Access Property form, along with your completed questionnaire to the address below by January 31, 2014. Please keep a copy of both documents for your records.

Rachel Lather
Davenport County Sanitation District
701 Ocean Street, Room 410
Santa Cruz, CA 95060-4070

Thank you for your time and assistance by helping us complete a thorough study of the potential options and benefits associated with water reuse in the Davenport area. If you have any questions regarding this project, please contact Ana Maria Rebelo at (831) 454-2160.

Yours truly,

JOHN J. PRESLEIGH
Director of Public Works

AMR:mh

Enclosures

County of Santa Cruz

DAVENPORT COUNTY SANITATION DISTRICT

701 OCEAN STREET, ROOM 410, SANTA CRUZ, CA 95060-4070
(831) 454-2160 FAX (831) 454-2385 TDD (831) 454-2123

JOHN J. PRESLEIGH
DISTRICT ENGINEER

Febrero 3, 2014

Sr. (a) propietario (a)

TEMA: ESTUDIO DE VIABILIDAD DE AGUA RECLIDADA PARA EL CONDADO DE SANIDAD DE DAVENPORT

Estimado Propietario:

El Distrito de Sanidad del Condado de Davenport (Distrito) está investigando la posibilidad del reuso de agua en su area. El reuso de agua tiene muchos beneficios incluyendo agua fiable, preservación de recursos de agua, irrigación de jardines y agricultura, uso industrial y el mejoramiento de cuencas.

El propósito de esta carta es para informarle acerca de este studio y para que ud. haga preguntas acerca del proyecto. Nos estamos comunicando con ud. porque ud:

- Es un propietario dentro del area de studio
- Ud. ha expresado interes en el uso de agua reciclada

El Distrito esta tratando de entender el nivel de interes para el uso de agua reciclada en Davenport. Es importante para el Distrito que ud. nos ayude a obtener esta información.

El Distrito va a coordinar una serie de juntas para proveer información pública acerca del uso de agua reciclada y el resultado de la investigacion. Si ud. no puede atender la junta pero tiene preguntas, por favor contacte a Rachél Lather, Ingeniero Civil, al (831) 454-2160.

También el Distrito tiene que conducir investigaciones biológicas y de recursos culturales en su area. Quisieramos pedir permiso de aceso a su propiedad para estudiar su propiedad. Por favor dejenos saber si es posible estudiar su propiedad.

Gracias por su tiempo y asistencia al Distrito Condado de Sanidad de Davenport.

Sinceramente,

JOHN J. PRESLEIGH
Ingeniero de Distrito

AMR:yv

daveportletterto_stakeholders2062014yv.doc

Davenport County Sanitation District Recycled Water Study
Land Owner Questionnaire

PLEASE RETURN YOUR COMPLETED QUESTIONNAIRE TO:

Rachél Lather, Senior Civil Engineer, Davenport County Sanitation District, 701 Ocean Avenue, #410, Santa Cruz, CA 95060, or Rachél.lather@co.santa-cruz.ca.us

Land Owner/Lessor Name: _____

Parcel Nos. (please list all that apply and mark with and "X" on the attached Study Area map):
_____

Current water sources for drinking/household uses:
Groundwater well: YES _____NO_____ Stream/surface: YES _____NO_____
Public water supply: YES _____NO_____

Current water sources for irrigation/other uses:
Groundwater well: YES _____NO_____ Stream/surface: YES _____NO_____
Public water supply: YES _____NO_____

Irrigated items (vines, turf, landscaping, pasture, crop type, etc.): _____
_____

Existing irrigated acreage: _____acres

Planned additional irrigated acreage: _____acres

Total existing and planned irrigated acreage: _____acres

What months do you need to irrigate? _____

What times of day you typically irrigate? _____

What application rate do you use for irrigating? _____gallons per minute

What is your total annual application for irrigating? _____inches per year

What other potential uses do you have for recycled water? _____
_____

What amount and application rate would be needed for other uses? Explain: _____
_____

Do you have storage for non-potable water? YES _____NO_____
On-stream storage: _____A-F Off-stream storage: _____A-F

Do you plan to add more storage? YES _____NO_____
Additional storage to be added: _____A-F

Are you interested in using recycled water? YES _____NO_____

How would you use the recycled water and how much would you need? Explain:

_____
_____
_____

Do you have any concerns or issues with using recycled water? Please check all that apply:

_____Cost of recycled water delivered
_____Fixed meter charges for delivery system
_____Quality of recycled water delivered
_____Availability of recycled water (seasonally, diurnally, etc.)
_____Reliability of recycled water deliveries
_____Pressure of recycled water supply
_____Other (please list)

_____
_____
_____
_____
_____

Thank you for your help and participation in this very important study. We welcome your participation and input throughout the planning process.

DAVENPORT COUNTY SANITATION DISTRICT

Appendix D – Water Balance Models

DRY WEATHER YEAR SCENARIO

ALTERNATIVE 1

Truck Fill = **0.003** MG

Average Percolation Rate= **0.162** MG

		INFLOWS				OUTFLOW							STORAGE		
Date	**Days**	**Total Wastewater Inflow (MG)**	**Precipitation (in)**	**Precipitation Inflow to the Lagoon (in)**	**Total Inflows (MG)**	**Pan Evaporation (in)**	**Evaporation from the Lagoon (MG)**	**Truck Fill Station (MG)**	**Average Percolation from the Pond (MG)**	**Evaporation from the the Pond (MG) [8]**	**Outflow to Spray Field (MG) [9]**	**Total outflow (MG) [5]+[6]+[7]+ [8]+[9]**	**Incremental Storage Volume (MG) [4]-[10]**	**Volume (MG)**	**Volume (MG)**
Jan	31.000	0.710	3.280	0.110	0.820	1.020	0.026	0.000	0.162	0.026	0.000	0.214	0.606	1.183	1.183
Feb	28.000	0.540	2.745	0.092	0.632	1.450	0.037	0.000	0.162	0.037	0.000	0.236	0.396	1.579	1.579
Mar	31.000	0.800	2.170	0.073	0.873	2.480	0.064	0.000	0.162	0.064	0.000	0.290	0.583	2.162	2.162
Apr	30.000	0.675	1.070	0.036	0.711	3.580	0.092	0.000	0.162	0.092	0.370	0.716	-0.005	2.157	2.157
May	31.000	0.590	0.660	0.022	0.613	4.950	0.128	0.000	0.162	0.128	0.370	0.787	-0.174	1.983	1.983
Jun	30.000	0.476	0.200	0.007	0.482	6.480	0.167	0.012	0.162	0.167	0.370	0.878	-0.395	1.588	1.588
Jul	31.000	0.416	0.080	0.003	0.418	7.350	0.189	0.012	0.162	0.189	0.370	0.923	-0.504	1.083	1.083
Aug	31.000	0.423	0.090	0.003	0.426	6.640	0.171	0.012	0.162	0.171	0.370	0.886	-0.460	0.623	0.623
Sep	30.000	0.446	0.340	0.011	0.457	5.030	0.130	0.012	0.162	0.130	0.370	0.803	-0.346	0.277	0.277
Oct	31.000	0.460	0.635	0.021	0.481	3.030	0.078	0.012	0.162	0.078	0.370	0.700	-0.218	**0.059**	0.059
Nov	30.000	0.382	1.930	0.065	0.447	1.650	0.043	0.000	0.059	0.043	0.000	0.144	0.303	0.000	0.000
Dec	31.000	0.532	2.815	0.094	0.626	0.940	0.024	0.000	0.000	0.024	0.000	0.048	0.578	0.578	0.578
Total		6.450	16.015	0.537	6.987	44.600	1.150	0.060	1.676	1.150	2.590	6.625	0.362	13.274	**13.274**
Max		0.800	3.280	0.110	0.873	7.350	0.189	0.012	0.162	0.189	0.370	0.923	0.606	2.162	**2.162**

Total Max

Annual Water Reuse (AF): 0.184

DRY WEATHER YEAR SCENARIO

ALTERNATIVE 2

Irrigation Area **26.230** acres
Irrigation Efficiency **0.800**

Irrigation Area **21.310** acres
Irrigation Efficiency **0.800**

Truck Fill = **0.003** MG
Average Percolation Rate= **0.000** MG

		INFLOWS				Brussel Sprouts						Artichokes						OUTFLOW							STORAGE		
Date	Days	Total Wastewater Inflow (MG)	Precipitation (in)	Precipitation Inflow to the Lagoon (in)	Total Inflows (MG)	Intermediate effective rainfall calculation (in)	Effective Rainfall (in)	Evapotranspiration (in)	*Etc=Eto*Kc* (in)	Net Irrigation Potential (MG)	Gross Irrigation Potential for reuse (MG)	Intermediate effective rainfall calculation (in)	Effective Rainfall (in)	Evapotranspiration (in)	*Etc=Eto*Kc* (in)	Net Irrigation Potential (MG)	Gross Irrigation Potential for reuse (MG)	Pan Evaporation (in)	Evaporation from the Lagoon (MG)	Truck Fill Station (MG)	Average Percolation from the Pond (MG)	Evaporation from the the Pond (MG)	Outflow to Spray Field (MG)	Total outflow (MG)	Incremental Storage Volume (MG)	Volume (MG)	Volume (MG)
Jan	31.000	0.710	3.280	0.110	0.820	1.757	1.757	0.930	0.977	0.000	0.000	1.889	1.889	0.930	0.930	0.000	0.000	1.020	0.026	0.000	0.000	0.026	0.000	0.053	0.767	1.345	1.345
Feb	28.000	0.540	2.745	0.092	0.632	1.544	1.544	1.400	1.470	0.000	0.000	1.657	1.657	1.400	1.400	0.000	0.000	1.450	0.037	0.000	0.000	0.037	0.000	0.075	0.558	1.903	1.903
Mar	31.000	0.800	2.170	0.073	0.873	1.333	1.333	2.480	2.604	0.905	1.132	1.427	1.427	2.480	2.480	0.610	0.762	2.480	0.064	0.000	0.000	0.064	0.000	2.022	-1.149	0.754	0.754
Apr	30.000	0.675	1.070	0.036	0.711	0.723	0.723	3.300	3.465	1.953	2.442	0.772	0.772	3.300	3.300	1.463	1.829	3.580	0.092	0.000	0.000	0.092	0.000	4.455	-3.744	-2.990	0.000
May	31.000	0.590	0.660	0.022	0.613	0.461	0.461	4.030	4.232	2.685	3.357	0.492	0.492	4.030	4.030	2.048	2.559	4.950	0.128	0.000	0.000	0.128	0.000	6.171	-5.559	-5.559	0.000
Jun	30.000	0.476	0.200	0.007	0.482	0.089	0.089	4.500	4.725	3.302	4.128	0.095	0.095	4.500	4.500	2.549	3.187	6.480	0.167	0.012	0.000	0.167	0.000	7.661	-7.178	-7.178	0.000
Jul	31.000	0.416	0.080	0.003	0.418	-0.033	0.000	4.650	4.883	3.478	4.347	-0.036	0.000	4.650	4.650	2.691	3.364	7.350	0.189	0.012	0.000	0.189	0.000	8.102	-7.684	-7.684	0.000
Aug	31.000	0.423	0.090	0.003	0.426	-0.022	0.000	4.030	4.232	3.014	3.768	-0.023	0.000	4.030	4.030	2.332	2.915	6.640	0.171	0.012	0.000	0.171	0.000	7.037	-6.611	-6.611	0.000
Sep	30.000	0.446	0.340	0.011	0.457	0.200	0.200	3.300	3.465	2.325	2.907	0.214	0.214	3.300	3.300	1.786	2.232	5.030	0.130	0.012	0.000	0.130	0.000	5.410	-4.953	-4.953	0.000
Oct	31.000	0.460	0.635	0.021	0.481	0.404	0.404	2.480	2.604	1.567	1.959	0.433	0.433	2.480	2.480	1.185	1.481	3.030	0.078	0.012	0.000	0.078	0.000	3.608	-3.126	**-3.126**	0.000
Nov	30.000	0.382	1.930	0.065	0.447	1.112	1.112	1.200	1.260	0.106	0.132	1.194	1.194	1.200	1.200	0.003	0.004	1.650	0.043	0.000	0.000	0.043	0.000	0.221	0.226	0.000	0.000
Dec	31.000	0.532	2.815	0.094	0.626	1.508	1.508	0.620	0.651	0.000	0.000	1.623	1.623	0.620	0.620	0.000	0.000	0.940	0.024	0.000	0.000	0.024	0.000	0.048	0.578	0.578	0.578
Total		6.450	16.015	0.537	6.987	9.076	9.131	32.920	34.566	19.336	24.170	9.737	9.795	32.920	32.920	14.666	18.333	44.600	1.150	0.060	0.000	1.150	0.000	44.863	-37.876	-33.523	**4.579**	Total
Max		0.800	3.280	0.110	0.873	1.757	1.757	4.650	4.883	3.478	4.347	1.889	1.889	4.650	4.650	2.691	3.364	7.350	0.189	0.012	0.000	0.189	0.000	8.102	0.767	1.903	**1.903**	Max

Annual Water Reuse (AF): 14.391

DRY WEATHER YEAR SCENARIO

ALTERNATIVE 3

Irrigation Area **26.230** acres
Irrigation Efficiency **0.800**

Irrigation Area **21.310** acres
Irrigation Efficiency **0.800**

Irrigation Area **1.160** acres
Irrigation Efficiency **0.800**

Truck Fill = **0.003** MG
Average Percolation Rate= **0.000** MG

		INFLOWS				Brussel Sprouts						Artichokes						Turf						OUTFLOW							STORAGE		
Date	Days	Total Wastewater Inflow (MG)	Precipitation (in)	Precipitation Inflow to the Lagoon (in)	Total Inflows (MG)	Intermediate effective rainfall calculation (in)	Effective Rainfall (in)	Evapotranspiration (in)	*Etc=Eto*Kc* (in)	Net Irrigation Potential (MG)	Gross Irrigation Potential for reuse (MG)	Intermediate effective rainfall calculation (in)	Effective Rainfall (in)	Evapotranspiration (in)	*Etc=Eto*Kc* (in)	Net Irrigation Potential (MG)	Gross Irrigation Potential for reuse (MG)	Intermediate effective rainfall calculation (in)	EffecSive Rainfall (in)	Evapotranspiration (in)	*Etc=Eto*Kc* (in)	Net Irrigation Potential (MG)	Gross Irrigation Potential for reuse (MG)	Pan Evaporation (in)	Evaporation from the Lagoon (MG)	Truck Fill Station (MG)	Average Percolation from the Pond (MG)	Evaporation from the the Pond (MG)	Outflow to Spray Field (MG)	Total outflow (MG)	Incremental Storage Volume (MG)	Volume (MG)	Volume (MG)
Jan	31.000	0.710	3.280	0.110	0.820	1.757	1.757	0.930	0.977	0.000	0.000	1.889	1.889	0.930	0.930	0.000	0.000	1.884	1.884	0.930	0.884	0.000	0.000	1.020	0.026	0.000	0.000	0.026	0.000	0.053	0.767	1.325	1.325
Feb	28.000	0.540	2.745	0.092	0.632	1.544	1.544	1.400	1.470	0.000	0.000	1.657	1.657	1.400	1.400	0.000	0.000	1.610	1.610	0.930	0.884	0.000	0.000	1.450	0.037	0.000	0.000	0.037	0.000	0.075	0.558	1.883	1.883
Mar	31.000	0.800	2.170	0.073	0.873	1.333	1.333	2.480	2.604	0.905	1.132	1.427	1.427	2.480	2.480	0.610	0.762	1.338	1.338	1.400	1.330	0.000	0.000	2.480	0.064	0.000	0.000	0.064	0.000	1.022	-1.149	0.734	0.734
Apr	30.000	0.675	1.070	0.036	0.711	0.723	0.723	3.300	3.465	1.953	2.442	0.772	0.772	3.300	3.300	1.463	1.829	0.732	0.732	2.480	2.356	0.051	0.064	3.580	0.092	0.000	0.000	0.092	0.000	4.519	-3.808	-3.074	0.000
May	31.000	0.590	0.660	0.022	0.613	0.461	0.461	4.030	4.232	2.685	3.357	0.492	0.492	4.030	4.030	2.048	2.559	0.468	0.468	3.300	3.135	0.084	0.105	4.950	0.128	0.000	0.000	0.128	0.000	6.276	-5.664	-5.664	0.000
Jun	30.000	0.476	0.200	0.007	0.482	0.089	0.089	4.500	4.725	3.302	4.128	0.095	0.095	4.500	4.500	2.549	3.187	0.091	0.091	4.030	3.829	0.118	0.147	6.480	0.167	0.012	0.000	0.167	0.000	7.808	-7.326	-7.326	0.000
Jul	31.000	0.416	0.080	0.003	0.418	-0.033	0.000	4.650	4.883	3.478	4.347	-0.036	0.000	4.650	4.650	2.691	3.364	-0.035	0.000	4.500	4.275	0.135	0.168	7.350	0.189	0.012	0.000	0.189	0.000	8.270	-7.852	-7.852	0.000
Aug	31.000	0.423	0.090	0.003	0.426	-0.022	0.000	4.030	4.232	3.014	3.768	-0.023	0.000	4.030	4.030	2.332	2.915	-0.023	0.000	4.650	4.418	0.139	0.174	6.640	0.171	0.012	0.000	0.171	0.000	7.211	-6.785	-6.785	0.000
Sep	30.000	0.446	0.340	0.011	0.457	0.200	0.200	3.300	3.465	2.325	2.907	0.214	0.214	3.300	3.300	1.786	2.232	0.221	0.221	4.030	3.829	0.114	0.142	5.030	0.130	0.012	0.000	0.130	0.000	5.552	-5.095	-5.095	0.000
Oct	31.000	0.460	0.635	0.021	0.481	0.404	0.404	2.480	2.604	1.567	1.959	0.433	0.433	2.480	2.480	1.185	1.481	0.449	0.449	3.300	3.135	0.085	0.106	3.030	0.078	0.012	0.000	0.078	0.000	3.714	-3.232	**-3.232**	0.000
Nov	30.000	0.382	1.930	0.065	0.447	1.112	1.112	1.200	1.260	0.106	0.132	1.194	1.194	1.200	1.200	0.003	0.004	1.274	1.274	2.480	2.356	0.034	0.043	1.650	0.043	0.000	0.000	0.043	0.000	0.264	0.184	0.000	0.000
Dec	31.000	0.532	2.815	0.094	0.626	1.508	1.508	0.620	0.651	0.000	0.000	1.623	1.623	0.620	0.620	0.000	0.000	0.386	0.386	0.930	0.884	0.016	0.020	0.940	0.024	0.000	0.000	0.024	0.000	0.068	0.558	0.558	0.558
Total		6.450	16.015	0.537	6.987	9.076	9.131	32.920	34.566	19.336	24.170	9.737	9.795	32.920	32.920	14.666	18.333	8.394	8.453	32.960	31.312	0.775	0.968	44.600	1.150	0.060	0.000	1.150	0.000	45.831	-38.944	-34.527	**4.501**	Total
Max		0.800	3.280	0.110	0.873	1.757	1.757	4.650	4.883	3.478	4.347	1.889	1.889	4.650	4.650	2.691	3.364	1.884	1.884	4.650	4.418	0.139	0.174	7.350	0.189	0.012	0.000	0.189	0.000	8.270	0.767	1.883	**1.883**	Max

Annual Water Reuse (AF): **14.391**

DRY WEATHER YEAR SCENARIO

ALTERNATIVE 4

Irrigation Area **26.230** acres
Irrigation Efficiency **0.800**

Irrigation Area **21.310** acres
Irrigation Efficiency **0.800**

Irrigation Area **8.000** acres
Irrigation Efficiency **0.800**

Truck Fill = **0.003** MG
Average Percolation Rate= **0.000** MG

		INFLOWS				Brussel Sprouts						Artichokes						Berries						OUTFLOW							STORAGE		
Date	Days	Total Wastewater Inflow (MG) [1]	Precipitation (in)	Precipitation Inflow to the Lagoon (in) [3]	Total Inflows (MG) [1]+[3]	Intermediate effective rainfall calculation (in)	Effective Rainfall (in)	Evapotranspiration (in)	*Etc=Eto*Kc* (in)	Net Irrigation Potential (MG)	Gross Irrigation Potential for reuse (MG) [10]	Intermediate effective rainfall calculation (in)	Effective Rainfall (in)	Evapotranspiration (in)	*Etc=Eto*Kc* (in)	Net Irrigation Potential (MG)	Gross Irrigation Potential for reuse (MG) [16]	Intermediate effective rainfall calculation (in)	Effective Rainfall (in)	Evapotranspiration (in)	*Etc=Eto*Kc* (in)	Net Irrigation Potential (MG)	Gross Irrigation Potential for reuse (MG) [16]	Pan Evaporation (in)	Evaporation from the Lagoon (MG) [18]	Truck Fill Station (MG) [19]	Average Percolation from the Pond (MG) [20]	Evaporation from the the Pond (MG) [21]	Outflow to Spray Field (MG) [22]	Total outflow (MG) [10]+[16]+[18] +[19]+[20]+ [21]+[22]	Incremental Storage Volume (MG) [4]-[23]	Volume (MG)	Volume (MG)
Jan	31.000	0.710	3.280	0.110	0.820	1.757	1.757	0.930	0.977	0.000	0.000	1.889	1.889	0.930	0.930	0.000	0.000	1.472	1.472	0.930	0.791	0.000	0.000	1.020	0.026	0.000	0.000	0.026	0.000	0.053	0.767	1.345	1.345
Feb	28.000	0.540	2.745	0.092	0.632	1.544	1.544	1.400	1.470	0.000	0.000	1.657	1.657	1.400	1.400	0.000	0.000	1.291	1.291	1.400	1.190	0.000	0.000	1.450	0.037	0.000	0.000	0.037	0.000	0.075	0.558	1.903	1.903
Mar	31.000	0.800	2.170	0.073	0.873	1.333	1.333	2.480	2.604	0.905	1.132	1.427	1.427	2.480	2.480	0.610	0.762	1.112	1.112	2.480	2.108	0.216	0.271	2.480	0.064	0.000	0.000	0.064	0.000	2.292	-1.420	0.483	0.483
Apr	30.000	0.675	1.070	0.036	0.711	0.723	0.723	3.300	3.465	1.953	2.442	0.772	0.772	3.300	3.300	1.463	1.829	0.601	0.601	3.300	2.805	0.479	0.598	3.580	0.092	0.000	0.000	0.092	0.290	5.343	-4.632	-4.149	0.000
May	31.000	0.590	0.660	0.022	0.613	0.461	0.461	4.030	4.232	2.685	3.357	0.492	0.492	4.030	4.030	2.048	2.559	0.383	0.383	4.030	3.426	0.661	0.826	4.950	0.128	0.000	0.000	0.128	0.290	7.288	-6.675	-6.675	0.000
Jun	30.000	0.476	0.200	0.007	0.482	0.089	0.089	4.500	4.725	3.302	4.128	0.095	0.095	4.500	4.500	2.549	3.187	0.074	0.074	4.500	3.825	0.815	1.019	6.480	0.167	0.012	0.000	0.167	0.290	8.970	-8.487	-8.487	0.000
Jul	31.000	0.416	0.080	0.003	0.418	-0.033	0.000	4.650	4.883	3.478	4.347	-0.036	0.000	4.650	4.650	2.691	3.364	-0.028	0.000	4.650	3.953	0.859	1.073	7.350	0.189	0.012	0.000	0.189	0.290	9.465	-9.047	-9.047	0.000
Aug	31.000	0.423	0.090	0.003	0.426	-0.022	0.000	4.030	4.232	3.014	3.768	-0.023	0.000	4.030	4.030	2.332	2.915	-0.018	0.000	4.030	3.426	0.744	0.930	6.640	0.171	0.012	0.000	0.171	0.290	8.257	-7.832	-7.832	0.000
Sep	30.000	0.446	0.340	0.011	0.457	0.200	0.200	3.300	3.465	2.325	2.907	0.214	0.214	3.300	3.300	1.796	2.232	0.167	0.167	3.300	2.805	0.573	0.716	5.030	0.130	0.012	0.000	0.130	0.290	6.417	-5.960	-5.960	0.000
Oct	31.000	0.460	0.635	0.021	0.481	0.404	0.404	2.480	2.604	1.567	1.959	0.433	0.433	2.480	2.480	1.185	1.481	0.337	0.337	2.480	2.108	0.385	0.481	3.030	0.078	0.012	0.000	0.078	0.290	4.379	-3.897	**-3.897**	0.000
Nov	30.000	0.382	1.930	0.065	0.447	1.112	1.112	1.200	1.260	0.106	0.132	1.194	1.194	1.200	1.200	0.003	0.004	0.931	0.931	1.200	1.020	0.019	0.024	1.650	0.043	0.000	0.000	0.043	0.000	0.245	0.202	0.000	0.000
Dec	31.000	0.537	2.815	0.094	0.636	1.508	1.508	0.620	0.651	0.000	0.000	1.623	1.623	0.620	0.620	0.000	0.000	1.264	1.264	0.620	0.527	0.000	0.000	0.940	0.024	0.000	0.000	0.024	0.000	0.048	0.578	0.578	0.578
Total		6.450	18.015	0.537	6.987	9.076	9.131	32.920	34.566	19.336	24.170	9.737	9.795	32.920	32.920	14.666	18.333	7.585	7.831	32.920	27.982	4.751	5.939	44.600	1.150	0.060	0.000	1.150	2.030	52.832	-45.845	-41.736	**4.308**	Total
Max		0.800	3.280	0.110	0.873	1.757	1.757	4.650	4.883	3.478	4.347	1.889	1.889	4.650	4.650	2.691	3.364	1.472	1.472	4.650	3.953	0.859	1.073	7.350	0.189	0.012	0.000	0.189	0.290	9.465	0.767	1.903	**1.903**	Max

Annual Water Reuse (AF): **14.391**

NORMAL WEATHER YEAR SCENARIO

ALTERNATIVE 1

Truck Fill = **0.003** MG

Average Percolation Rate= **0.162** MG

		INFLOWS				OUTFLOW							STORAGE		
Date	Days	Total Wastewater Inflow (MG)	Precipitation (in)	Precipitation Inflow to the Lagoon (in)	Total Inflows (MG)	Pan Evaporation (in)	Evaporation from the Lagoon (MG)	Truck Fill Station (MG)	Average Percolation from the Pond (MG)	Evaporation from the the Pond (MG)	Outflow to Spray Field (MG)	Total outflow (MG)	Incremental Storage Volume (MG)	Volume (MG)	Volume (MG)
Jan	31.000	0.947	6.560	0.220	1.167	1.020	0.026	0.000	0.162	0.026	0.000	0.214	0.952	1.802	1.802
Feb	28.000	0.721	5.490	0.184	0.905	1.450	0.037	0.000	0.162	0.037	0.000	0.236	0.668	2.470	2.470
Mar	31.000	1.067	4.340	0.145	1.212	2.480	0.064	0.000	0.162	0.064	0.000	0.290	0.923	3.392	3.392
Apr	30.000	0.900	2.140	0.072	0.972	3.580	0.092	0.000	0.162	0.092	0.594	0.940	0.032	3.424	3.424
May	31.000	0.590	0.660	0.022	0.613	4.950	0.128	0.000	0.162	0.128	0.594	1.011	-0.398	3.026	3.026
Jun	30.000	0.476	0.200	0.007	0.482	6.480	0.167	0.012	0.162	0.167	0.594	1.102	-0.619	2.406	2.406
Jul	31.000	0.416	0.080	0.003	0.418	7.350	0.189	0.012	0.162	0.189	0.594	1.147	-0.728	1.678	1.678
Aug	31.000	0.423	0.090	0.003	0.426	6.640	0.171	0.012	0.162	0.171	0.594	1.110	-0.684	0.994	0.994
Sep	30.000	0.446	0.340	0.011	0.457	5.030	0.130	0.012	0.162	0.130	0.594	1.027	-0.570	0.424	0.424
Oct	31.000	0.460	1.270	0.043	0.503	3.030	0.078	0.012	0.162	0.078	0.594	0.924	-0.421	**0.003**	0.003
Nov	30.000	0.510	3.860	0.129	0.639	1.650	0.043	0.000	0.003	0.043	0.000	0.088	0.551	0.000	0.000
Dec	31.000	0.709	5.630	0.189	0.898	0.940	0.024	0.000	0.000	0.024	0.000	0.048	0.849	0.849	0.849
Total		7.664	30.660	1.027	8.691	44.600	1.150	0.060	1.620	1.150	4.158	8.137	0.554	20.467	**20.467**
Max		1.067	6.560	0.220	1.212	7.350	0.189	0.012	0.162	0.189	0.594	1.147	0.952	3.424	**3.424**

Total

Max

Annual Water Reuse (AF): 0.184

NORMAL WEATHER YEAR SCENARIO

ALTERNATIVE 2

Irrigation Area **26.230** acres
Irrigation Efficiency **0.800**

Irrigation Area **21.310** acres
Irrigation Efficiency **0.800**

Truck Fill = **0.003** MG
Average Percolation Rate= **0.000** MG

		INFLOWS				Brussel Sprouts						Artichokes						OUTFLOW							STORAGE		
Date	Days	Total Wastewater Inflow (MG)	Precipitation (in)	Precipitation Inflow to the Lagoon (in)	Total Inflows (MG)	Intermediate effective rainfall calculation (in)	Effective Rainfall (in)	Evapotranspiration (in)	*Etc=Eto*Kc* (in)	Net Irrigation Potential (MG)	Gross Irrigation Potential for reuse (MG)	Intermediate effective rainfall calculation (in)	Effective Rainfall (in)	Evapotranspiration (in)	*Etc=Eto*Kc* (in)	Net Irrigation Potential (MG)	Gross Irrigation Potential for reuse (MG)	Pan Evaporation (in)	Evaporation from the Lagoon (MG)	Truck Fill Station (MG)	Average Percolation from the Pond (MG)	Evaporation from the the Pond (MG)	Outflow to Spray Field (MG)	Total outflow (MG)	Incremental Storage Volume (MG)	Volume (MG)	Volume (MG)
Jan	31.000	0.947	6.560	0.220	1.167	3.199	3.199	0.930	0.977	0.000	0.000	3.440	3.440	0.930	0.930	0.000	0.000	1.020	0.026	0.000	0.000	0.026	0.000	0.053	1.114	1.963	1.963
Feb	28.000	0.721	5.490	0.184	0.905	2.824	2.824	1.400	1.470	0.000	0.000	3.032	3.032	1.400	1.400	0.000	0.000	1.450	0.037	0.000	0.000	0.037	0.000	0.075	0.830	2.793	2.793
Mar	31.000	1.067	4.340	0.145	1.212	2.456	2.456	2.480	2.604	0.105	0.131	2.630	2.630	2.480	2.480	0.000	0.000	2.480	0.064	0.000	0.000	0.064	0.000	0.259	0.953	3.746	3.746
Apr	30.000	0.900	2.140	0.072	0.972	1.381	1.381	3.300	3.465	1.484	1.856	1.475	1.475	3.300	3.300	1.056	1.320	3.580	0.092	0.000	0.000	0.092	0.000	3.360	-2.388	1.358	1.358
May	31.000	0.590	0.660	0.022	0.613	0.461	0.461	4.030	4.232	2.685	3.357	0.492	0.492	4.030	4.030	2.048	2.559	4.950	0.128	0.000	0.000	0.128	0.000	6.171	-5.559	-4.201	0.000
Jun	30.000	0.476	0.200	0.007	0.482	0.089	0.089	4.500	4.725	3.302	4.128	0.095	0.095	4.500	4.500	2.549	3.187	6.480	0.167	0.012	0.000	0.167	0.000	7.661	-7.178	-7.178	0.000
Jul	31.000	0.416	0.080	0.003	0.418	-0.033	0.000	4.650	4.883	3.478	4.347	-0.036	0.000	4.650	4.650	2.691	3.364	7.350	0.189	0.012	0.000	0.189	0.000	8.102	-7.684	-7.684	0.000
Aug	31.000	0.423	0.090	0.003	0.426	-0.022	0.000	4.030	4.232	3.014	3.768	-0.023	0.000	4.030	4.030	2.332	2.915	6.640	0.171	0.012	0.000	0.171	0.000	7.037	-6.611	-6.611	0.000
Sep	30.000	0.446	0.340	0.011	0.457	0.200	0.200	3.300	3.465	2.325	2.907	0.214	0.214	3.300	3.300	1.786	2.232	5.030	0.130	0.012	0.000	0.130	0.000	5.410	-4.953	-4.953	0.000
Oct	31.000	0.460	1.270	0.043	0.503	0.812	0.812	2.480	2.604	1.276	1.595	0.870	0.870	2.480	2.480	0.932	1.165	3.030	0.078	0.012	0.000	0.078	0.000	2.928	-2.426	**-2.426**	0.000
Nov	30.000	0.510	3.860	0.129	0.639	2.058	2.058	1.200	1.260	0.000	0.000	2.211	2.211	1.200	1.200	0.000	0.000	1.650	0.043	0.000	0.000	0.043	0.000	0.085	0.554	0.000	0.000
Dec	31.000	0.709	5.630	0.189	0.898	2.756	2.756	0.620	0.651	0.000	0.000	2.966	2.966	0.620	0.620	0.000	0.000	0.940	0.024	0.000	0.000	0.024	0.000	0.048	0.849	0.849	0.849
Total		7.664	30.660	1.027	8.691	16.183	16.238	32.920	34.566	17.671	22.089	17.365	17.423	32.920	32.920	13.394	16.742	44.600	1.150	0.060	0.000	1.150	0.000	41.191	-32.499	-22.344	**10.709**	Total
Max		1.067	6.560	0.220	1.212	3.199	3.199	4.650	4.883	3.478	4.347	3.440	3.440	4.650	4.650	2.691	3.364	7.350	0.189	0.012	0.000	0.189	0.000	8.102	1.114	3.746	**3.746**	Max

Annual Water Reuse (AF): 19.622

NORMAL WEATHER YEAR SCENARIO

ALTERNATIVE 3

Irrigation Area **26.230** acres
Irrigation Efficiency **0.800**

Irrigation Area **21.310** acres
Irrigation Efficiency **0.800**

Irrigation Area **1.160** acres
Irrigation Efficiency **0.800**

Truck Fill = **0.003** MG
Average Percolation Rate= **0.000** MG

		INFLOWS				Brussel Sprouts						Artichokes						Turf						OUTFLOW							STORAGE		
Date	Days	Total Wastewater Inflow (MG)	Precipitation (in)	Precipitation Inflow to the Lagoon (in)	Total Inflows (MG)	Intermediate effective rainfall calculation (in)	Effective Rainfall (in)	Evapotranspiration (in)	Etc=Eto*Kc (in)	Net Irrigation Potential (MG)	Gross Irrigation Potential for reuse (MG)	Intermediate effective rainfall calculation (in)	Effective Rainfall (in)	Evapotranspiration (in)	Etc=Eto*Kc (in)	Net Irrigation Potential (MG)	Gross Irrigation Potential for reuse (MG)	Intermediate effective rainfall calculation (in)	Effective Rainfall (in)	Evapotranspiration (in)	Etc=Eto*Kc (in)	Net Irrigation Potential (MG)	Gross Irrigation Potential for reuse (MG)	Pan Evaporation (in)	Evaporation from the Lagoon (MG)	Truck Fill Station (MG)	Average Percolation from the Pond (MG)	Evaporation from the the Pond (MG)	Outflow to Spray Field (MG)	Total outflow (MG)	Incremental Storage Volume (MG)	Volume (MG)	Volume (MG)
Jan	31.000	0.947	6.560	0.220	1.167	3.199	3.199	0.930	0.977	0.000	0.000	3.440	3.440	0.930	0.930	0.000	0.000	3.431	3.431	0.930	0.884	0.000	0.000	1.020	0.026	0.000	0.000	0.026	0.000	0.053	1.114	1.944	1.944
Feb	28.000	0.721	5.490	0.184	0.905	2.824	2.824	1.400	1.470	0.000	0.000	3.032	3.032	1.400	1.400	0.000	0.000	2.946	2.946	0.930	0.884	0.000	0.000	1.450	0.037	0.000	0.000	0.037	0.000	0.075	0.830	2.773	2.773
Mar	31.000	1.067	4.340	0.145	1.212	2.456	2.456	2.480	2.604	0.105	0.131	2.630	2.630	2.480	2.480	0.000	0.000	2.466	2.466	1.400	1.330	0.000	0.000	2.480	0.064	0.000	0.000	0.064	0.000	0.259	0.953	3.726	3.726
Apr	30.000	0.900	2.140	0.072	0.972	1.381	1.381	3.300	3.465	1.484	1.856	1.475	1.475	3.300	3.300	1.056	1.320	1.399	1.399	2.480	2.356	0.030	0.038	3.580	0.092	0.000	0.000	0.092	0.000	3.398	-2.426	1.300	1.300
May	31.000	0.590	0.660	0.022	0.613	0.461	0.461	4.030	4.232	2.685	3.357	0.492	0.492	4.030	4.030	2.048	2.559	0.468	0.468	3.300	3.135	0.084	0.105	4.950	0.128	0.000	0.000	0.128	0.000	6.276	-5.664	-4.364	0.000
Jun	30.000	0.476	0.200	0.007	0.482	0.089	0.089	4.500	4.725	3.302	4.128	0.095	0.095	4.500	4.500	2.549	3.187	0.091	0.091	4.030	3.829	0.118	0.147	6.480	0.167	0.012	0.000	0.167	0.000	7.808	-7.326	-7.326	0.000
Jul	31.000	0.416	0.080	0.003	0.418	-0.033	0.000	4.650	4.883	3.478	4.347	-0.036	0.000	4.650	4.650	2.691	3.364	-0.035	0.000	4.500	4.275	0.135	0.168	7.350	0.189	0.012	0.000	0.189	0.000	8.270	-7.852	-7.852	0.000
Aug	31.000	0.423	0.090	0.003	0.426	-0.022	0.000	4.030	4.232	3.014	3.768	-0.023	0.000	4.030	4.030	2.332	2.915	-0.023	0.000	4.650	4.418	0.139	0.174	6.640	0.171	0.012	0.000	0.171	0.000	7.211	-6.785	-6.785	0.000
Sep	30.000	0.446	0.340	0.011	0.457	0.200	0.200	3.300	3.465	2.325	2.907	0.214	0.214	3.300	3.300	1.786	2.232	0.221	0.221	4.030	3.829	0.114	0.142	5.030	0.130	0.012	0.000	0.130	0.000	5.552	-5.095	-5.095	0.000
Oct	31.000	0.460	1.270	0.043	0.503	0.812	0.812	2.480	2.604	1.276	1.595	0.870	0.870	2.480	2.480	0.932	1.165	0.902	0.902	3.300	3.135	0.070	0.088	3.030	0.078	0.012	0.000	0.078	0.000	3.016	-2.514	**-2.514**	0.000
Nov	30.000	0.510	3.860	0.129	0.639	2.058	2.058	1.200	1.260	0.000	0.000	2.211	2.211	1.200	1.200	0.000	0.000	2.359	2.359	2.480	2.356	0.000	0.000	1.650	0.043	0.000	0.000	0.043	0.000	0.085	0.554	0.000	0.000
Dec	31.000	0.729	5.630	0.189	0.888	2.756	2.756	0.620	0.651	0.000	0.000	2.868	2.868	0.620	0.620	0.000	0.000	0.386	0.386	0.930	0.884	0.016	0.000	0.940	0.024	0.000	0.000	0.024	0.000	0.068	0.830	0.830	0.830
Total		7.664	30.660	1.027	8.691	16.183	16.238	32.920	34.566	17.671	22.089	17.365	17.423	32.920	32.920	13.394	16.742	14.609	14.667	32.960	31.312	0.705	0.882	44.600	1.150	0.060	0.000	1.150	0.000	42.072	-33.381	-23.362	**10.573**	Total
Max		1.067	6.560	0.220	1.212	3.199	3.199	4.650	4.883	3.478	4.347	3.440	3.440	4.650	4.650	2.691	3.364	3.431	3.431	4.650	4.418	0.139	0.174	7.350	0.189	0.012	0.000	0.189	0.000	8.270	1.114	3.726	**3.726**	Max

Annual Water Reuse (AF): **19.622**

NORMAL WEATHER YEAR SCENARIO

ALTERNATIVE 4

Irrigation Area **26.230** acres
Irrigation Efficiency **0.800**

Irrigation Area **21.310** acres
Irrigation Efficiency **0.800**

Irrigation Area **8.000** acres
Irrigation Efficiency **0.800**

Truck Fill = **0.003** MG
Average Percolation Rate= **0.000** MG

		INFLOWS				Brussel Sprouts						Artichokes						Berries						OUTFLOW							STORAGE		
Date	Days	Total Wastewater Inflow (MG)	Precipitation (in)	Precipitation Inflow to the Lagoon (in)	Total Inflows (MG)	Intermediate effective rainfall calculation (in)	Effective Rainfall (in)	Evapotranspiration (in)	*Etc=Eto*Kc* (in)	Net Irrigation Potential (MG)	Gross Irrigation Potential for reuse (MG)	Intermediate effective rainfall calculation (in)	Effective Rainfall (in)	Evapotranspiration (in)	*Etc=Eto*Kc* (in)	Net Irrigation Potential (MG)	Gross Irrigation Potential for reuse (MG)	Intermediate effective rainfall calculation (in)	Effective Rainfall (in)	Evapotranspiration (in)	*Etc=Eto*Kc* (in)	Net Irrigation Potential (MG)	Gross Irrigation Potential for reuse (MG)	Pan Evaporation (in)	Evaporation from the Lagoon (MG)	Truck Fill Station (MG)	Average Percolation from the Pond (MG)	Evaporation from the the Pond (MG)	Outflow to Spray Field (MG)	Total outflow (MG)	Incremental Storage Volume (MG)	Volume (MG)	Volume (MG)
Jan	31.000	0.947	6.560	0.220	1.167	3.199	3.199	0.930	0.977	0.000	0.000	3.440	3.440	0.930	0.930	0.000	0.000	2.680	2.680	0.930	0.791	0.000	0.000	1.020	0.026	0.000	0.000	0.026	0.000	0.053	1.114	1.963	1.963
Feb	28.000	0.721	5.490	0.184	0.905	2.824	2.824	1.400	1.470	0.000	0.000	3.032	3.032	1.400	1.400	0.000	0.000	2.362	2.362	1.400	1.190	0.000	0.000	1.450	0.037	0.000	0.000	0.037	0.000	0.075	0.830	2.793	2.793
Mar	31.000	1.067	4.340	0.145	1.212	2.456	2.456	2.480	2.604	0.105	0.131	2.630	2.630	2.480	2.480	0.000	0.000	2.049	2.049	2.480	2.108	0.013	0.016	2.480	0.064	0.000	0.000	0.064	0.000	0.275	0.937	3.730	3.730
Apr	30.000	0.900	2.140	0.072	0.972	1.381	1.381	3.300	3.465	1.464	1.856	1.475	1.475	3.300	3.300	1.056	1.320	1.149	1.149	3.300	2.805	0.360	0.450	3.580	0.092	0.000	0.000	0.092	0.000	3.810	-2.838	0.892	0.892
May	31.000	0.590	0.660	0.022	0.613	0.461	0.461	4.030	4.232	2.685	3.357	0.492	0.492	4.030	4.030	2.048	2.559	0.383	0.383	4.030	3.426	0.661	0.826	4.950	0.128	0.000	0.000	0.128	0.000	6.998	-6.385	-5.493	0.000
Jun	30.000	0.476	0.200	0.007	0.482	0.089	0.089	4.500	4.725	3.302	4.128	0.095	0.095	4.500	4.500	2.549	3.187	0.074	0.074	4.500	3.825	0.815	1.019	6.480	0.167	0.012	0.000	0.167	0.000	8.680	-8.197	-8.197	0.000
Jul	31.000	0.416	0.080	0.003	0.418	-0.033	0.000	4.650	4.883	3.478	4.347	-0.036	0.000	4.650	4.650	2.691	3.364	-0.028	0.000	4.650	3.953	0.859	1.073	7.350	0.189	0.012	0.000	0.189	0.000	9.175	-8.757	-8.757	0.000
Aug	31.000	0.423	0.090	0.003	0.426	-0.022	0.000	4.030	4.232	3.014	3.768	-0.023	0.000	4.030	4.030	2.332	2.915	-0.018	0.000	4.030	3.426	0.744	0.930	6.640	0.171	0.012	0.000	0.171	0.000	7.967	-7.542	-7.542	0.000
Sep	30.000	0.446	0.340	0.011	0.457	0.200	0.200	3.300	3.465	2.325	2.907	0.214	0.214	3.300	3.300	1.796	2.232	0.167	0.167	3.300	2.805	0.573	0.716	5.030	0.130	0.012	0.000	0.130	0.000	6.127	-5.670	-5.670	0.000
Oct	31.000	0.460	1.270	0.043	0.503	0.812	0.812	2.480	2.604	1.276	1.595	0.870	0.870	2.480	2.480	0.932	1.165	0.677	0.677	2.480	2.108	0.311	0.388	3.030	0.078	0.012	0.000	0.078	0.000	3.317	-2.814	**-2.814**	0.000
Nov	30.000	0.510	3.860	0.129	0.639	2.058	2.058	1.200	1.260	0.000	0.000	2.211	2.211	1.200	1.200	0.000	0.000	1.723	1.723	1.200	1.020	0.000	0.000	1.650	0.043	0.000	0.000	0.043	0.000	0.085	0.554	0.000	0.000
Dec	31.000	0.709	5.630	0.189	0.898	2.756	2.756	0.620	0.651	0.000	0.000	2.866	2.866	0.620	0.620	0.000	0.000	2.311	2.311	0.620	0.527	0.000	0.000	0.940	0.024	0.000	0.000	0.024	0.000	0.048	0.849	0.849	0.849
Total		7.664	30.660	1.027	8.691	16.183	16.238	32.920	34.566	17.671	22.089	17.365	17.423	32.920	32.920	13.394	16.742	13.528	13.573	32.920	27.982	4.335	5.419	44.600	1.150	0.060	0.000	1.150	0.000	46.610	-37.918	-28.246	**10.227**	Total
Max		1.067	6.560	0.220	1.212	3.199	3.199	4.650	4.883	3.478	4.347	3.440	3.440	4.650	4.650	2.691	3.364	2.680	2.680	4.650	3.953	0.859	1.073	7.350	0.189	0.012	0.000	0.189	0.000	9.175	1.114	3.730	**3.730**	Max

Annual Water Reuse (AF): **19.622**

WET WEATHER YEAR SCENARIO

ALTERNATIVE 1

Truck Fill = **0.003** MG

Percolation Rate= **0.162** MG

		INFLOWS				OUTFLOW							STORAGE		
Date	Days	Total Wastewater Inflow (MG)	Precipitation (in)	Precipitation Inflow to the Lagoon (in)	Total Inflows (MG)	Pan Evaporation (in)	Evaporation from the Lagoon (MG)	Truck Fill Station (MG)	Average Percolation from the Pond (MG)	Evaporation from the the Pond (MG)	Outflow to Spray Field (MG)	Total outflow (MG)	Incremental Storage Volume (MG)	Volume (MG)	Volume (MG)
Jan	31.000	1.183	9.840	0.330	1.513	1.020	0.026	0.000	0.162	0.026	0.000	0.214	1.299	2.420	2.420
Feb	28.000	0.901	8.235	0.276	1.177	1.450	0.037	0.000	0.162	0.037	0.000	0.236	0.940	3.360	3.360
Mar	31.000	1.333	6.510	0.218	1.551	2.480	0.064	0.000	0.162	0.064	0.000	0.290	1.262	4.622	4.622
Apr	30.000	1.126	3.210	0.108	1.233	3.580	0.092	0.000	0.162	0.092	0.807	1.153	0.080	4.702	4.702
May	31.000	0.590	0.660	0.022	0.613	4.950	0.128	0.000	0.162	0.128	0.807	1.224	-0.611	4.090	4.090
Jun	30.000	0.476	0.200	0.007	0.482	6.480	0.167	0.012	0.162	0.167	0.807	1.315	-0.832	3.258	3.258
Jul	31.000	0.416	0.080	0.003	0.418	7.350	0.189	0.012	0.162	0.189	0.807	1.360	-0.941	2.317	2.317
Aug	31.000	0.423	0.090	0.003	0.426	6.640	0.171	0.012	0.162	0.171	0.807	1.323	-0.897	1.420	1.420
Sep	30.000	0.446	0.340	0.011	0.457	5.030	0.130	0.012	0.162	0.130	0.807	1.240	-0.783	0.637	0.637
Oct	31.000	0.460	1.270	0.043	0.503	3.030	0.078	0.012	0.162	0.078	0.807	1.137	-0.634	**0.002**	0.002
Nov	30.000	0.637	5.790	0.194	0.831	1.650	0.043	0.000	0.002	0.043	0.000	0.087	0.744	0.000	0.000
Dec	31.000	0.886	8.445	0.283	1.169	0.940	0.024	0.000	0.000	0.024	0.000	0.048	1.121	1.121	1.121
Total		8.877	44.670	1.497	10.374	44.600	1.150	0.060	1.619	1.150	5.649	9.628	0.746	27.948	**27.948**
Max		1.333	9.840	0.330	1.551	7.350	0.189	0.012	0.162	0.189	0.807	1.360	1.299	4.702	**4.702**

Total Max

Annual Water Reuse (AF): 0.184

WET WEATHER YEAR SCENARIO

ALTERNATIVE 2

Irrigation Area **26.230** acres
Irrigation Efficiency **0.800**

Irrigation Area **21.310** acres
Irrigation Efficiency **0.800**

Truck Fill = **0.003** MG
Percolation Rate= **0.000** MG

		INFLOWS				Brussel Sprouts						Artichokes						OUTFLOW							STORAGE		
Date	Days	Total Wastewater Inflow (MG)	Precipitation (in)	Precipitation Inflow to the Lagoon (in)	Total Inflows (MG)	Intermediate effective rainfall calculation (in)	Effective Rainfall (in)	Evapotranspiration (in)	*Etc=Eto*Kc* (in)	Net Irrigation Potential (MG)	Gross Irrigation Potential for reuse (MG)	Intermediate effective rainfall calculation (in)	Effective Rainfall (in)	Evapotranspiration (in)	*Etc=Eto*Kc* (in)	Net Irrigation Potential (MG)	Gross Irrigation Potential for reuse (MG)	Pan Evaporation (in)	Evaporation from the Lagoon (MG)	Truck Fill Station (MG)	Average Percolation from the Pond (MG)	Evaporation from the the Pond (MG)	Outflow to Spray Field (MG)	Total outflow (MG)	Incremental Storage Volume (MG)	Volume (MG)	Volume (MG)
Jan	31.000	1.183	9.840	0.330	1.513	4.514	4.514	0.930	0.977	0.000	0.000	4.853	4.853	0.930	0.930	0.000	0.000	1.020	0.026	0.000	0.000	0.026	0.000	0.053	1.461	2.581	2.581
Feb	28.000	0.901	8.235	0.276	1.177	3.991	3.991	1.400	1.470	0.000	0.000	4.285	4.285	1.400	1.400	0.000	0.000	1.450	0.037	0.000	0.000	0.037	0.000	0.075	1.102	3.683	3.683
Mar	31.000	1.333	6.510	0.218	1.551	3.481	3.481	2.480	2.604	0.000	0.000	3.726	3.726	2.480	2.480	0.000	0.000	2.480	0.064	0.000	0.000	0.064	0.000	0.128	1.424	5.107	5.107
Apr	30.000	1.126	3.210	0.108	1.233	1.981	1.981	3.300	3.465	1.057	1.321	2.116	2.116	3.300	3.300	0.685	0.856	3.580	0.092	0.000	0.000	0.092	0.000	2.362	-1.129	3.978	3.978
May	31.000	0.590	0.660	0.022	0.613	0.461	0.461	4.030	4.232	2.685	3.357	0.492	0.492	4.030	4.030	2.048	2.559	4.950	0.128	0.000	0.000	0.128	0.000	6.171	-5.559	-1.581	0.000
Jun	30.000	0.476	0.200	0.007	0.482	0.089	0.089	4.500	4.725	3.302	4.128	0.095	0.095	4.500	4.500	2.549	3.187	6.480	0.167	0.012	0.000	0.167	0.000	7.661	-7.178	-7.178	0.000
Jul	31.000	0.416	0.080	0.003	0.418	-0.033	0.000	4.650	4.883	3.478	4.347	-0.036	0.000	4.650	4.650	2.691	3.364	7.350	0.189	0.012	0.000	0.189	0.000	8.102	-7.684	-7.684	0.000
Aug	31.000	0.423	0.090	0.003	0.426	-0.022	0.000	4.030	4.232	3.014	3.768	-0.023	0.000	4.030	4.030	2.332	2.915	6.640	0.171	0.012	0.000	0.171	0.000	7.037	-6.611	-6.611	0.000
Sep	30.000	0.446	0.340	0.011	0.457	0.200	0.200	3.300	3.465	2.325	2.907	0.214	0.214	3.300	3.300	1.786	2.232	5.030	0.130	0.012	0.000	0.130	0.000	5.410	-4.953	-4.953	0.000
Oct	31.000	0.460	1.270	0.043	0.503	0.812	0.812	2.480	2.604	1.276	1.595	0.870	0.870	2.480	2.480	0.932	1.165	3.030	0.078	0.012	0.000	0.078	0.000	2.928	-2.426	**-2.426**	0.000
Nov	30.000	0.637	5.790	0.194	0.831	2.921	2.921	1.200	1.260	0.000	0.000	3.138	3.138	1.200	1.200	0.000	0.000	1.650	0.043	0.000	0.000	0.043	0.000	0.085	0.746	0.000	0.000
Dec	31.000	0.886	8.445	0.283	1.169	3.895	3.895	0.620	0.651	0.000	0.000	4.191	4.191	0.620	0.620	0.000	0.000	0.940	0.024	0.000	0.000	0.024	0.000	0.048	1.121	1.121	1.121
Total		8.877	44.670	1.497	10.374	22.291	22.346	32.920	34.566	17.138	21.423	23.921	23.979	32.920	32.920	13.023	16.279	44.600	1.150	0.060	0.000	1.150	0.000	40.061	-29.687	-13.963	**16.470**	Total
Max		1.333	9.840	0.330	1.551	4.514	4.514	4.650	4.883	3.478	4.347	4.853	4.853	4.650	4.650	2.691	3.364	7.350	0.189	0.012	0.000	0.189	0.000	8.102	1.461	5.107	**5.107**	Max

Annual Water Reuse (AF): 24.789

WET WEATHER YEAR SCENARIO

ALTERNATIVE 3

Irrigation Area **26.230** acres
Irrigation Efficiency **0.800**

Irrigation Area **21.310** acres
Irrigation Efficiency **0.800**

Irrigation Area **1.160** acres
Irrigation Efficiency **0.800**

Truck Fill = **0.003** MG
Percolation Rate= **0.000** MG

		INFLOWS				Brussel Sprouts						Artichokes						Turf						OUTFLOW							STORAGE		
Date	Days	Total Wastewater Inflow (MG)	Precipitation (in)	Precipitation Inflow to the Lagoon (in)	Total Inflows (MG)	Intermediate effective rainfall calculation (in)	Effective Rainfall (in)	Evapotranspiration (in)	Etc=Eto*Kc (in)	Net Irrigation Potential (MG)	Gross Irrigation Potential for reuse (MG)	Intermediate effective rainfall calculation (in)	Effective Rainfall (in)	Evapotranspiration (in)	Etc=Eto*Kc (in)	Net Irrigation Potential (MG)	Gross Irrigation Potential for reuse (MG)	Intermediate effective rainfall calculation (in)	Effective Rainfall (in)	Evapotranspiration (in)	Etc=Eto*Kc (in)	Net Irrigation Potential (MG)	Gross Irrigation Potential for reuse (MG)	Pan Evaporation (in)	Evaporation from the Lagoon (MG)	Truck Fill Station (MG)	Average Percolation from the Pond (MG)	Evaporation from the the Pond (MG)	Outflow to Spray Field (MG)	Total outflow (MG)	Incremental Storage Volume (MG)	Volume (MG)	Volume (MG)
Jan	31.000	1.183	9.840	0.330	1.513	4.514	4.514	0.930	0.977	0.000	0.000	4.853	4.853	0.930	0.930	0.000	0.000	4.841	4.841	0.930	0.884	0.000	0.000	1.020	0.026	0.000	0.000	0.026	0.000	0.053	1.461	2.562	2.562
Feb	28.000	0.901	8.235	0.276	1.177	3.991	3.991	1.400	1.470	0.000	0.000	4.285	4.285	1.400	1.400	0.000	0.000	4.163	4.163	0.930	0.884	0.000	0.000	1.450	0.037	0.000	0.000	0.037	0.000	0.075	1.102	3.664	3.664
Mar	31.000	1.333	6.510	0.218	1.551	3.481	3.481	2.480	2.604	0.000	0.000	3.726	3.726	2.480	2.480	0.000	0.000	3.494	3.494	1.400	1.330	0.000	0.000	2.480	0.064	0.000	0.000	0.064	0.000	0.128	1.424	5.087	5.087
Apr	30.000	1.126	3.210	0.108	1.233	1.981	1.981	3.300	3.465	1.057	1.321	2.116	2.116	3.300	3.300	0.685	0.856	2.007	2.007	2.480	2.356	0.011	0.014	3.580	0.092	0.000	0.000	0.092	0.000	2.276	-1.143	3.945	3.945
May	31.000	0.590	0.660	0.022	0.613	0.461	0.461	4.030	4.232	2.685	3.357	0.492	0.492	4.030	4.030	2.048	2.559	0.468	0.468	3.300	3.135	0.084	0.105	4.950	0.128	0.000	0.000	0.128	0.000	6.276	-5.664	-1.719	0.000
Jun	30.000	0.476	0.200	0.007	0.482	0.089	0.089	4.500	4.725	3.302	4.128	0.095	0.095	4.500	4.500	2.549	3.187	0.091	0.091	4.030	3.829	0.118	0.147	6.480	0.167	0.012	0.000	0.167	0.000	7.808	-7.326	-7.326	0.000
Jul	31.000	0.416	0.080	0.003	0.418	-0.033	0.000	4.650	4.883	3.478	4.347	-0.036	0.000	4.650	4.650	2.691	3.364	-0.035	0.000	4.500	4.275	0.135	0.168	7.350	0.189	0.012	0.000	0.189	0.000	8.270	-7.852	-7.852	0.000
Aug	31.000	0.423	0.090	0.003	0.426	-0.022	0.000	4.030	4.232	3.014	3.768	-0.023	0.000	4.030	4.030	2.332	2.915	-0.023	0.000	4.650	4.418	0.139	0.174	6.640	0.171	0.012	0.000	0.171	0.000	7.211	-6.785	-6.785	0.000
Sep	30.000	0.446	0.340	0.011	0.457	0.200	0.200	3.300	3.465	2.325	2.907	0.214	0.214	3.300	3.300	1.786	2.232	0.221	0.221	4.030	3.829	0.114	0.142	5.030	0.130	0.012	0.000	0.130	0.000	5.552	-5.095	-5.095	0.000
Oct	31.000	0.460	1.270	0.043	0.503	0.812	0.812	2.480	2.604	1.276	1.595	0.870	0.870	2.480	2.480	0.932	1.165	0.902	0.902	3.300	3.135	0.070	0.088	3.030	0.078	0.012	0.000	0.078	0.000	3.016	-2.514	**-2.514**	0.000
Nov	30.000	0.637	5.790	0.194	0.831	2.921	2.921	1.200	1.260	0.000	0.000	3.138	3.138	1.200	1.200	0.000	0.000	3.347	3.347	2.480	2.356	0.000	0.000	1.650	0.043	0.000	0.000	0.043	0.000	0.085	0.746	0.000	0.000
Dec	31.000	0.886	8.445	0.283	1.169	3.895	3.895	0.620	0.651	0.000	0.000	4.181	4.181	0.620	0.620	0.000	0.000	0.386	0.386	0.930	0.884	0.016	0.000	0.940	0.024	0.000	0.000	0.024	0.000	0.048	1.101	1.101	1.101
Total		8.877	44.870	1.497	10.374	22.291	22.346	32.920	34.566	17.138	21.423	23.921	23.979	32.920	32.920	13.023	16.279	19.882	19.920	32.960	31.312	0.686	0.858	44.600	1.150	0.060	0.000	1.150	0.000	40.919	-30.545	-14.932	**16.359**	Total
Max		1.333	9.840	0.330	1.551	4.514	4.514	4.650	4.883	3.478	4.347	4.853	4.853	4.650	4.650	2.691	3.364	4.841	4.841	4.650	4.418	0.139	0.174	7.350	0.189	0.012	0.000	0.189	0.000	8.270	1.461	5.087	**5.087**	Max

Annual Water Reuse (AF): **24.789**

WETE WEATHER YEAR SCENARIO

ALTERNATIVE 4

Irrigation Area **26.230** acres
Irrigation Efficiency **0.800**

Irrigation Area **21.310** acres
Irrigation Efficiency **0.800**

Irrigation Area **8.000** acres
Irrigation Efficie **0.800**

Truck Fill = **0.003** MG
Percolation Rate= **0.000** MG

		INFLOWS				Brussel Sprouts						Artichokes						Strawberries						OUTFLOW							STORAGE		
Date	Days	Total Wastewater Inflow (MG)	Precipitation (in)	Precipitation Inflow to the Lagoon (in)	Total Inflows (MG)	Intermediate effective rainfall calculation (in)	Effective Rainfall (in)	Evapotranspiration (in)	*Etc=Eto*Kc* (in)	Net Irrigation Potential (MG)	Gross Irrigation Potential for reuse (MG)	Intermediate effective rainfall calculation (in)	Effective Rainfall (in)	Evapotranspiration (in)	*Etc=Eto*Kc* (in)	Net Irrigation Potential (MG)	Gross Irrigation Potential for reuse (MG)	Intermediate effective rainfall calculation (in)	Effective Rainfall (in)	Evapotranspiration (in)	*Etc=Eto*Kc* (in)	Net Irrigation Potential (MG)	Gross Irrigation Potential for reuse (MG)	Pan Evaporation (in)	Evaporation from the Lagoon (MG)	Truck Fill Station (MG)	Average Percolation from the Pond (MG)	Evaporation from the the Pond (MG)	Outflow to Spray Field (MG)	Total outflow (MG)	Incremental Storage Volume (MG)	Volume (MG)	Volume (MG)
Jan	31.000	1.183	9.840	0.330	1.513	4.514	4.514	0.930	0.977	0.000	0.000	4.853	4.853	0.930	0.930	0.000	0.000	3.781	3.781	0.930	0.791	0.000	0.000	1.020	0.026	0.000	0.000	0.026	0.000	0.053	1.461	2.581	2.581
Feb	28.000	0.901	8.235	0.276	1.177	3.991	3.991	1.400	1.470	0.000	0.000	4.285	4.285	1.400	1.400	0.000	0.000	3.338	3.338	1.400	1.190	0.000	0.000	1.450	0.037	0.000	0.000	0.037	0.000	0.075	1.102	3.683	3.683
Mar	31.000	1.333	6.510	0.218	1.551	3.481	3.481	2.480	2.604	0.000	0.000	3.726	3.726	2.480	2.480	0.000	0.000	2.903	2.903	2.480	2.108	0.000	0.000	2.480	0.064	0.000	0.000	0.064	0.000	0.128	1.424	5.107	5.107
Apr	30.000	1.126	3.210	0.108	1.233	1.981	1.981	3.300	3.465	1.057	1.321	2.116	2.116	3.300	3.300	0.685	0.856	1.648	1.648	3.300	2.805	0.251	0.314	3.580	0.092	0.000	0.000	0.092	0.000	2.676	-1.443	3.664	3.664
May	31.000	0.590	0.660	0.022	0.613	0.461	0.461	4.030	4.232	2.685	3.357	0.492	0.492	4.030	4.030	2.048	2.559	0.383	0.383	4.030	3.426	0.661	0.826	4.950	0.128	0.000	0.000	0.128	0.000	6.998	-6.385	-2.721	0.000
Jun	30.000	0.476	0.200	0.007	0.482	0.089	0.089	4.500	4.725	3.302	4.128	0.095	0.095	4.500	4.500	2.549	3.187	0.074	0.074	4.500	3.825	0.815	1.019	6.480	0.167	0.012	0.000	0.167	0.000	8.680	-8.197	-8.197	0.000
Jul	31.000	0.418	0.080	0.003	0.418	-0.033	0.000	4.650	4.883	3.478	4.347	-0.036	0.000	4.650	4.650	2.691	3.364	-0.028	0.000	4.650	3.953	0.859	1.073	7.350	0.189	0.012	0.000	0.189	0.000	9.175	-8.757	-8.757	0.000
Aug	31.000	0.423	0.090	0.003	0.426	-0.022	0.000	4.030	4.232	3.014	3.768	-0.023	0.000	4.030	4.030	2.332	2.915	-0.018	0.000	4.030	3.426	0.744	0.930	6.640	0.171	0.012	0.000	0.171	0.000	7.967	-7.542	-7.542	0.000
Sep	30.000	0.446	0.340	0.011	0.457	0.200	0.200	3.300	3.465	2.325	2.907	0.214	0.214	3.300	3.300	1.786	2.232	0.167	0.167	3.300	2.805	0.573	0.716	5.030	0.130	0.012	0.000	0.130	0.000	6.127	-5.670	-5.670	0.000
Oct	31.000	0.460	1.270	0.043	0.503	0.812	0.812	2.480	2.604	1.276	1.595	0.870	0.870	2.480	2.480	0.932	1.165	0.677	0.677	2.480	2.108	0.311	0.388	3.030	0.078	0.012	0.000	0.078	0.000	3.317	-2.814	**-2.814**	0.000
Nov	30.000	0.637	5.790	0.194	0.831	2.921	2.921	1.200	1.260	0.000	0.000	3.138	3.138	1.200	1.200	0.000	0.000	2.445	2.445	1.200	1.020	0.000	0.000	1.650	0.043	0.000	0.000	0.043	0.000	0.085	0.746	0.000	0.000
Dec	31.000	0.888	8.445	0.281	1.169	3.895	3.895	0.620	0.651	0.000	0.000	4.191	4.191	0.620	0.620	0.000	0.000	3.265	3.265	0.620	0.527	0.000	0.000	0.840	0.024	0.000	0.000	0.024	0.000	0.048	1.121	1.121	1.121
Total		8.877	44.870	1.487	10.374	22.291	22.346	32.920	34.566	17.138	21.423	23.921	23.979	32.920	32.920	13.023	16.279	18.636	18.681	32.920	27.982	4.214	5.267	44.600	1.150	0.060	0.000	1.150	0.000	45.328	-34.954	-19.544	**16.156**	Total
Max		1.333	9.840	0.330	1.551	4.514	4.514	4.650	4.883	3.478	4.347	4.853	4.853	4.650	4.650	2.691	3.364	3.781	3.781	4.650	3.953	0.859	1.073	7.350	0.189	0.012	0.000	0.189	0.000	9.175	1.461	5.107	**5.107**	Max

Annual Water Reuse (AF): **24.789**

Appendix E – Cost Estimates

DAVENPORT COUNTY SANITATION DISTRICT
RECYCLED WATER STUDY

ESTIMATE OF PROBABLE COSTS (Class 5, ENR CCI 10,895)
ALTERNATIVE 1

Description	Quantity	Units	Unit Cost	Total Cost
Aerated Lagoon:				
Dredge Pond	1	LS	$ 400,000	$ 400,000
Replace/add pumps, alarms, controls	1	LS	$ 150,000	$ 150,000
Storage Pond:				
Site Preparation/Grading	3	Acre	$ 1,500	$ 4,000
Import Fill	750	CY	$ 30	$ 23,000
Excavate Pond/Construct Berm	20,000	CY	$ 25	$ 500,000
Pond Liner	0	SF	$ 2	$ -
Install Inlet & Outlet	1	LS	$ 50,000	$ 50,000
Pump Stations:				
Pumps/Piping to Storage	1	LS	$ 300,000	$ 300,000
Pump Station to Customers	0	LS	$ 150,000	$ -
Truck Fill Station	1	LS	$ 100,000	$ 100,000
Pipeline to Agriculture Land:				
Open Cut, Unpaved, 6" PVC	0	LF	$ 100	$ -
Jack & Bore 12" Steel Casing	0	LF	$ 400	$ -
Discharge to Irrigation Ponds	0	EA	$ 2,500	$ -
Pipeline to New Town:				
Open Cut, Concrete Paving, 6" PVC	0	LF	$ 175	$ -
Open Cut, Asphalt Paving, 6" PVC	0	LF	$ 150	$ -
Services/Blowoffs	0	EA	$ 2,500	$ -
Pipeline to Old Town:				
Open Cut, Concrete Paving, 6" PVC	0	LF	$ 175	$ -
Open Cut, Asphalt Paving, 6" PVC	0	LF	$ 150	$ -
Services/Blowoffs	0	EA	$ 2,500	$ -
			Subtotal - Construction Costs	**$ 1,527,000**
Engineering, Admin & Legal (35%)	1	LS	$ 534,450	$ 534,000
Contingency (20%)	1	LS	$ 305,400	$ 305,000
			TOTAL CAPITAL COSTS	**$ 2,366,000**

Annual Operation & Maintenance				
Storage Pond:				
Maintenance	1	LS	$ 10,000	$ 10,000
Pump Stations:				
Maintenance	1	LS	$ 10,000	$ 10,000
Power	3,015	kW-Hrs	$ 0.13	$ -
Pipelines:				
Maintenance	0	LF	$ 1	$ -
			ANNUAL O&M	**$ 20,000**

PRESENT WORTH VALUE (20 yrs @ 3%) $ 2,664,000

DAVENPORT COUNTY SANITATION DISTRICT
RECYCLED WATER STUDY

ESTIMATE OF PROBABLE COSTS (Class 5, ENR CCI 10,895)
ALTERNATIVE 2

Description	Quantity	Units	Unit Cost	Total Cost
Aerated Lagoon:				
Dredge Pond	1	LS	$ 400,000	$ 400,000
Replace/add pumps, alarms, controls	1	LS	$ 150,000	$ 150,000
Storage Pond:				
Site Preparation/Grading	3	Acre	$ 1,500	$ 4,000
Import Fill	750	CY	$ 30	$ 23,000
Excavate Pond/Construct Berm	22,500	CY	$ 25	$ 563,000
Pond Liner	65,000	SF	$ 2	$ 130,000
Install Inlet & Outlet	1	LS	$ 50,000	$ 50,000
Pump Stations:				
Pumps/Piping to Storage	1	LS	$ 300,000	$ 300,000
Pump Station to Customers	1	LS	$ 150,000	$ 150,000
Truck Fill Station	1	LS	$ 100,000	$ 100,000
Pipeline to Agriculture Land:				
Open Cut, Unpaved, 6" PVC	2,600	LF	$ 100	$ 260,000
Jack & Bore 12" Steel Casing	170	LF	$ 400	$ 68,000
Discharge to Irrigation Ponds	2	EA	$ 2,500	$ 5,000
Pipeline to New Town:				
Open Cut, Concrete Paving, 6" PVC	2,040	LF	$ 175	$ 357,000
Open Cut, Asphalt Paving, 6" PVC	0	LF	$ 150	$ -
Services/Blowoffs	0	EA	$ 2,500	$ -
Pipeline to Old Town:				
Open Cut, Concrete Paving, 6" PVC	0	LF	$ 175	$ -
Open Cut, Asphalt Paving, 6" PVC	0	LF	$ 150	$ -
Services/Blowoffs	0	EA	$ 2,500	$ -
			Subtotal - Construction Costs	**$ 2,560,000**
Engineering, Admin & Legal (35%)	1	LS	$ 896,000	$ 896,000
Contingency (20%)	1	LS	$ 512,000	$ 512,000
			TOTAL CAPITAL COSTS	**$ 3,968,000**

Annual Operation & Maintenance				
Storage Pond:				
Maintenance	1	LS	$ 15,000	$ 15,000
Pump Stations:				
Maintenance	1	LS	$ 10,000	$ 10,000
Power	5,313	kW-Hrs	$ 0.13	$ 1,000
Pipelines:				
Maintenance	3,250	LF	$ 1	$ 3,000
			ANNUAL O&M	**$ 29,000**

PRESENT WORTH VALUE (20 yrs @ 3%) $ 4,399,000

DAVENPORT COUNTY SANITATION DISTRICT
RECYCLED WATER STUDY

ESTIMATE OF PROBABLE COSTS (Class 5, ENR CCI 10,895)
ALTERNATIVE 3

Description	Quantity	Units	Unit Cost	Total Cost
Aerated Lagoon:				
Dredge Pond	1	LS	$ 400,000	$ 400,000
Replace/add pumps, alarms, controls	1	LS	$ 150,000	$ 150,000
Storage Pond:				
Site Preparation/Grading	3	Acre	$ 1,500	$ 4,000
Import Fill	750	CY	$ 30	$ 23,000
Excavate Pond/Construct Berm	22,500	CY	$ 25	$ 563,000
Pond Liner	65,000	SF	$ 2	$ 130,000
Install Inlet & Outlet	1	LS	$ 50,000	$ 50,000
Pump Stations:				
Pumps/Piping to Storage	1	LS	$ 300,000	$ 300,000
Pump Station to Customers	1	LS	$ 150,000	$ 150,000
Truck Fill Station	1	LS	$ 100,000	$ 100,000
Pipeline to Agriculture Land:				
Open Cut, Unpaved, 6" PVC	2,600	LF	$ 100	$ 260,000
Jack & Bore 12" Steel Casing	170	LF	$ 400	$ 68,000
Discharge to Irrigation Ponds	2	EA	$ 2,500	$ 5,000
Pipeline to New Town:				
Open Cut, Concrete Paving, 6" PVC	2,040	LF	$ 175	$ 357,000
Open Cut, Asphalt Paving, 6" PVC	920	LF	$ 150	$ 138,000
Services/Blowoffs	2	EA	$ 2,500	$ 5,000
Pipeline to Old Town:				
Open Cut, Concrete Paving, 6" PVC	2,350	LF	$ 175	$ 411,000
Open Cut, Asphalt Paving, 6" PVC	1,600	LF	$ 150	$ 240,000
Services/Blowoffs	4	EA	$ 2,500	$ 10,000
			Subtotal - Construction Costs	**$ 3,364,000**
Engineering, Admin & Legal (35%)	1	LS	$ 1,177,400	$ 1,177,000
Contingency (20%)	1	LS	$ 672,800	$ 673,000
			TOTAL CAPITAL COSTS	**$ 5,214,000**

Annual Operation & Maintenance				
Storage Pond:				
Maintenance	1	LS	$ 15,000	$ 15,000
Pump Stations:				
Maintenance	1	LS	$ 10,000	$ 10,000
Power	5,823	kW-Hrs	$ 0.13	$ 1,000
Pipelines:				
Maintenance	9,000	LF	$ 1	$ 9,000
			ANNUAL O&M	**$ 35,000**

PRESENT WORTH VALUE (20 yrs @ 3%) $ 5,735,000

DAVENPORT COUNTY SANITATION DISTRICT
RECYCLED WATER STUDY

ESTIMATE OF PROBABLE COSTS (Class 5, ENR CCI 10,895)
ALTERNATIVE 4

Description	Quantity	Units	Unit Cost	Total Cost
Aerated Lagoon:				
Dredge Pond	1	LS	$ 400,000	$ 400,000
Replace/add pumps, alarms, controls	1	LS	$ 150,000	$ 150,000
Storage Pond:				
Site Preparation/Grading	3	Acre	$ 1,500	$ 4,000
Import Fill	750	CY	$ 30	$ 23,000
Excavate Pond/Construct Berm	22,500	CY	$ 25	$ 563,000
Pond Liner	65,000	SF	$ 2	$ 130,000
Install Inlet & Outlet	1	LS	$ 50,000	$ 50,000
Pump Stations:				
Pumps/Piping to Storage	1	LS	$ 300,000	$ 300,000
Pump Station to Customers	1	LS	$ 150,000	$ 150,000
Truck Fill Station	1	LS	$ 100,000	$ 100,000
Pipeline to Agriculture Lands:				
Open Cut, Unpaved, 6" PVC	2,600	LF	$ 100	$ 260,000
Jack & Bore 12" Steel Casing	170	LF	$ 400	$ 68,000
Discharge to Irrigation Ponds	2	EA	$ 2,500	$ 5,000
Pipeline to New Town:				
Open Cut, Concrete Paving, 6" PVC	2,040	LF	$ 175	$ 357,000
Open Cut, Asphalt Paving, 6" PVC	0	LF	$ 150	$ -
Services/Blowoffs	0	EA	$ 2,500	$ -
Pipeline to Old Town:				
Open Cut, Concrete Paving, 6" PVC	0	LF	$ 175	$ -
Open Cut, Asphalt Paving, 6" PVC	0	LF	$ 150	$ -
Services/Blowoffs	0	EA	$ 2,500	$ -
			Subtotal - Construction Costs	**$ 2,560,000**
Engineering, Admin & Legal (35%)	1	LS	$ 896,000	$ 896,000
Contingency (20%)	1	LS	$ 512,000	$ 512,000
			TOTAL CAPITAL COSTS	**$ 3,968,000**

Annual Operation & Maintenance				
Storage Pond:				
Maintenance	1	LS	$ 15,000	$ 15,000
Pump Stations:				
Maintenance	1	LS	$ 10,000	$ 10,000
Power	8,012	kW-Hrs	$ 0.13	$ 1,000
Pipelines:				
Maintenance	3,250	LF	$ 1	$ 3,000
			ANNUAL O&M	**$ 29,000**

PRESENT WORTH VALUE (20 yrs @ 3%) $ 4,399,000

Appendix F – Draft User Agreement

AGREEMENT BETWEEN THE DAVENPORT COUNTY SANITATION DISTRICT AND _____ FOR THE PURCHASE AND SALE OF RECYCLED WATER

THIS AGREEMENT (the Agreement) is entered into as of _____, 20__ among THE DAVENPORT COUNTY SANITATION DISTRICT, a special district (Producer) and _____ also known as the "Recycled Water User" (User), at the Community of Davenport in Santa Cruz County, California.

RECITALS

This Agreement is entered into with reference to the following facts:

A. Producer owns and operates a wastewater treatment plant in Santa Cruz County, California, which is in the Central Coast Region of the California Regional Water Quality Control Board (the Regional Board), and collects and treats wastewater at its treatment facility in Davenport. The treated water meets requirements for "disinfected tertiary" water according to Title 22 of the California Code of Regulations.

B. User's Parcels.

1. User leases __ parcels of real property (the "Parcel" or "Parcels") consisting of approximately ____ acres in Santa Cruz County, California from Owner, commonly known as APNs _____, respectively, more particularly described in Exhibits "A" and "B" attached hereto and incorporated herein by reference, which land has been improved with a _____ and related improvements.

2. The User, a California corporation, owns __ parcel(s) of real property (the "Parcel" or "Parcels") consisting of approximately ____ acres in Santa Cruz County, California, commonly known as APN _____. The parcels are more particularly described in Exhibits "A" and "B" attached hereto and incorporated herein by reference. The _____ Parcels have been improved with a _____, and related improvements.

C. Producer employs water reclamation as a means of reducing the discharge of treated wastewater to the spray fields. Producer accordingly desires to have additional agricultural sites for irrigation with recycled water, such as those provided by the Parcels.

D. Producer is authorized to irrigate with recycled water those uses identified in General Water Reuse Order 95-27, adopted by the Regional Board in March 1996. As used in this Agreement, the term "Order" shall mean Order 95-27 as it is now and as it may be amended or replaced with another order of the Regional Board which the parties acknowledge they will become subject to upon authorization to irrigate the Parcels with recycled water.

AGREEMENT

In consideration of the foregoing and other valuable consideration, the parties agree as follows:

1. **Term**. This Agreement shall become effective on the date set forth above and, except as provided in Section 22, shall remain in effect until _____, 20__. Any extended term shall be subject to all terms and conditions of this Agreement.

2. **Delivery of Recycled Water**.

2.1. Amount of Recycled Water Delivered. For each calendar year of the term of this Agreement, Producer shall deliver no less than _____ AF of recycled water to User at the maximum delivery rate of _____ gallons per minute (gpm). Of the total water delivered in the calendar year, the amount Producer shall be obligated to deliver during the months of May through October shall be no less than ____ AF and no more than ____ AF of recycled water to User at a maximum rate of ____ gpm.

2.2. Delivery Schedule. Producer aims to deliver to User a percentage of the total available recycled water in a given month according to the schedule below in this Paragraph 2.2. User acknowledges and agrees, however, that the actual amount of recycled water delivered pursuant to this Agreement may fluctuate due to variable availability of recycled water, which is dependent on several factors including population served, water conservation practices, condition of the wastewater collection infrastructure and rainfall within the service area.

Month	Recycled Water Delivery Schedule for Average Weather Year		
	Percent of Available RW	Approximate Delivery (A-F)	Comments
Jan	0%	0	
Feb	0%	0	
Mar	0%	0	
Apr	0%	0	
May	0%	0	
Jun	0%	0	
Jul	0%	0	

Aug	0%	0	
Sep	0%	0	
Oct	0%	0	
Nov	0%	0	
Dec	0%	0	
Total	**0%**	**0**	**Average Weather Year Totals**

Producer shall deliver water to User at a minimum pressure of __ psi. Producer does not guarantee that water delivered pursuant to this Agreement will be delivered at a pressure suitable for User's irrigation needs.

2.3. Notification of Delivery Needs. User agrees to cooperate with Producer in establishing reasonable and mutually agreeable delivery schedules for the recycled water within the limits set forth in paragraphs 2.1 and 2.2. User shall notify Producer no later than the 20th of each month of User's anticipated water needs for the remainder of the month and the subsequent month so that Producer may optimize the delivery of recycled water to its users.

2.4. Regulatory Compliance. User acknowledges and understands that Producer's delivery of recycled water is subject to Producer's compliance with the Order and the waste discharge requirements imposed by the Regional Board, as such may be amended from time to time, as well as local, State and federal laws, regulations and policies.

2.5. Interruption of Service. The parties acknowledge that Producer's supply and delivery of recycled water and User's ability to take delivery of the water may occasionally be interrupted or curtailed due to acts of God, power failures, accident, fire, strikes, riots, war, facility failures, facility improvements, inspection, maintenance and repairs of plant and equipment, action or decisions by a governmental agency (other than Producer), or any other condition outside of a party's control. Neither party shall be liable to the other for damages arising out of interruption or curtailment of service for these reasons, so long as the affected party has made best efforts to avoid or minimize the effect of the intervening circumstance. To the extent feasible, the party whose performance is affected by such condition shall give the other party at least 72 hours advance notice of a temporary discontinuance or reduction in its delivery (in the case of Producer) or in its acceptance (in the case of User) of recycled water,

except in the case of emergency, in which case notice shall be given as soon as possible. In the event of such discontinuance or reduction, the parties shall deliver or accept, as appropriate, upon resumption of service and as nearly as may be feasible, the quantity of recycled water that would have been delivered or accepted in the absence of such discontinuance or reduction.

3. Price for Recycled Water.

3.1. Use charge. In addition to the monthly meter charge, User shall pay a use charge to Producer in the amount of $3.28 for every hundred cubic feet ($1,427.00 per acre foot), or portion thereof, of recycled water satisfying water quality standards established by the Order. The use charge shall be payable monthly within 30 days of billing by Producer.

3.2. Adjustments for Changed Requirements**.** If, in accordance with paragraph 4.2, changed requirements and conditions are imposed on Producer by the Regional Board or other authority that result in increased costs to Producer of operation, treatment, maintenance and capital costs, Producer may impose an increase in the use charge for the percentage increase in costs of operation, treatment, maintenance and capital costs attributable to the changed requirements and conditions imposed by the Regional Board. Increases in costs unrelated to operation, treatment, maintenance, and capital costs (e.g. costs associated with adding new users to the system), or other costs that are not related to treating or delivering recycled water to User, or do not actually increase costs to Producer (e.g. when improvements are paid for by grant funds) shall not result in the Producer increasing the use charge.

4. Compliance with Order and Requirements of Producer.

4.1. Regional Water Quality Control Board Order. Producer and User shall comply with all the provisions and requirements of the Order described in Recital D. User acknowledges to Producer that User is aware that the water sold pursuant to this Agreement is wastewater that has been recycled as a result of sewerage treatment operations, and is suitable only for those uses, and in those areas specified in the Order. User is familiar with and understands all of the provisions and requirements contained in the Order and that those provisions and requirements are reasonable. User covenants and warrants that it shall comply with all the provisions and requirements of the Order in the purchase and use of the recycled water.

4.2. Changed Requirements and Conditions Imposed on Producer. During the term of this Agreement, the Regional Board may impose changed requirements and conditions, including new or amended recycled water orders, may be imposed on Producer by the Regional Board, or any other department, authority, or agency having legal jurisdiction over Producer, which may cause Producer to change the terms and conditions of this Agreement regarding the purchase and usage of recycled water by User. User, except as otherwise provided in this paragraph, agrees to such changes, and agrees that Producer shall be held harmless from any liabilities arising from such changes. Producer agrees to make its best efforts to minimize the impact on User of such changed requirements and conditions. If, however, any such changes result in the inability of User to use the recycled water for crop irrigation, User shall have the option, upon 120 days written notice to Producer, to terminate this Agreement. If the Order is revoked by the Regional Board, Producer agrees to use its best efforts to reinstate the Order. If such reinstatement is denied, this Agreement shall terminate on the date identified in Producer's written notice of termination.

4.3. Performance Conditioned Upon Procurement of Order**.** The parties understand that the obligation of each to perform under this Agreement is based upon the Producer obtaining an Order from the Regional Board authorizing Producer to sell recycled water to the User and authorizing the User to irrigate User's land with such recycled water. If Producer or User is unable to obtain the necessary authorization from the Regional Board or if the Order imposes a hardship that severely compromises the purpose or scope of this Agreement, this Agreement shall terminate at the election of any party, upon written notice.

5. Quality of Recycled Water Sold. The quality of the recycled water provided pursuant to this Agreement shall comply in all respects with the quality criteria established by the Order and the most current regulations promulgated by the Department of Health Services in the California Code of Regulations Title 22, Division 4, Chapter 3, Sections 60301-60355 (as amended from time to time), although the recycled water's quality may vary within those criteria. The Producer produces disinfected tertiary water. Producer shall test the recycled water as required by the Regional Board and the California Department of Public Health to ensure that it meets the quality criteria set forth in the Order. The results of this testing program shall be made available upon User's request. User is under no obligation to accept water that does not meet the quality criteria set forth in the Order. The foregoing provisions notwithstanding, User

is responsible for assuring itself that the recycled water is fit for User's particular purposes. Producers shall notify User if water does not satisfy the quality criteria as set forth in the Order and shall discontinue pumping. Producer shall be responsible for submitting all reports required by the Regional Board involving the distribution and use of such recycled water. Producer shall use best efforts to minimize the amount of algae content and ensure that the ph level of water delivered to User be between a level of 6 and 8.

6. **Installation and Maintenance of Capital Improvements**. Producer will deliver the recycled water to User through a pipeline from Producer's treatment and reclamation site located in Davenport, California, to a delivery point on the Parcel(s) shown on the site plan included in Exhibit "C" attached hereto and incorporated herein by this reference (the Delivery Point). Subject to permit approval, User shall provide, at User's cost, adequate storage and/or distribution facilities on the Parcels to accommodate Producer's delivery method and equipment. In addition, User shall be responsible at User's cost, for the installation, operation, maintenance and repair of the pipeline transporting the recycled water from the Delivery Point to User's places of use. Producer shall be responsible for the installation, operation, maintenance and repair of the pipeline transporting recycled water from the treatment site to the Delivery Point. User shall provide access in the areas indicated and described in easements included in Exhibit "E".

7. **Measurement of Recycled Water**. All recycled water delivered pursuant to this Agreement shall be measured by the Producer at the flow meter to be located adjacent to the Producer's storage pond. Producer shall own, install, inspect, operate, maintain, repair and replace the measuring equipment and any required regulating valves for control of recycled water delivery. Where measurements of recycled water require Producer to exercise its discretion to make determinations, Producer shall exercise its discretion in good faith. Upon request by User, the accuracy of a measurement shall be investigated by the Producer and any error appearing therein shall be adjusted. User may inspect such measuring equipment for the purpose of determining the accuracy thereof.

8. **User's Rights to Recycled Water Nontransferable**. Except as provided in Section 20 of this Agreement, User's rights to recycled water deliveries hereunder are not transferable or assignable, including sale or gifts, without the prior written consent of Producer.

Apart from Owner, or any assignee of the lease referred to in Recital B, User shall not sell, give, transfer or distribute any of the recycled water purchased by it pursuant to this Agreement to any other person or entity for any use, User shall be the sole party using the recycled water, and the recycled water shall be used solely on the properties described in Exhibit "A".

9. Hold Harmless and Indemnification. User will indemnify and hold harmless Producer, its officers, directors, agents and employees from, and defend Producer against, any and all costs, loss, damage, liability, claim or damage of any nature whatsoever, including but not limited to property damage, personal injury or death arising out of or in any way connected with User's use of the recycled water in any fashion not authorized by the Order or this Agreement or with User's disposal of recycled water on any of the properties indicated on Exhibits "A" or on any properties to which rights hereunder are transferred pursuant to paragraph 8. Producer will indemnify and hold harmless User, its officers, directors, agents and employees from and defend User against any and all costs, loss, damage, liability, claim or damage of any nature whatsoever, including but not limited to property damage, personal injury or death arising out of or in any way connected with Producer's actions related to providing the recycled water hereunder or to Producer's use of that water in any fashion not authorized by the Order or this Agreement; provided, however, that Producer shall be liable to User for all costs, loss, damage, liability, claim or damage of any nature whatsoever, including but not limited to property damage, groundwater pollution, soil contamination, crop loss, personal injury or death caused by the quality of the recycled water delivered hereunder if the water does not meet the quality criteria set forth in the Order and this Agreement.

10. Notices. Any notice, action, or demand by either party to the other in connection with this Agreement shall be deemed to have been fully given or made when such notice, action, or demand is written and deposited in a sealed envelope postage prepaid, and addressed as follows:

Producer: District Engineer
Davenport County Sanitation District
701 Ocean Street, Room 410
Santa Cruz, CA 95060

User: _____
_____
_____

_____

Owner: _____
_____
_____

Either party may change its address by giving the other party written notice of its new address as herein provided.

11. **Amendments**. This Agreement may not be amended except by a written instrument that is signed by all parties.

12. **Construction**. Each party has reviewed and contributed to the drafting of this Agreement and the rule of construction of Section 1654 of the California Civil Code to the effect that any ambiguities are to be resolved against the drafting party shall not be employed in the construction or interpretation of this Agreement or any amendments or exhibits hereto.

13. **Interpretation**. Subject to paragraph 12 above, this Agreement shall be construed, interpreted, and applied according to the laws of the State of California.

14. **Successors**. This Agreement shall be binding upon and inure to the benefit of the respective successors and assigns of the parties; provided that User has complied with paragraph 8 hereof.

15. **Attorneys' Fees**. If any party commences an action at law or in equity, arbitration or other proceeding against another party to enforce or interpret this Agreement, the prevailing party shall be entitled to recover from the losing party reasonable attorneys' fees and costs of such proceeding, in addition to any other amounts which may be awarded.

16. **Memorandum of Agreement**. The parties agree to execute and Producer shall record with the County recorder a Memorandum of Agreement substantially in the form attached hereto as Exhibit "D".

17. **Severability**. If any clause or provision of the Agreement is or becomes illegal, invalid, or unenforceable because of present or future laws, or any rules or regulations of any governmental body or entity, effective during its term, the intention of the parties is that the remaining parts of this Agreement shall remain in full force and effect if the fundamental purpose of the Agreement is not destroyed.

18. Mediation. No party shall commence any suit, arbitration, administrative action, civil action or any other legal action arising out of or in any way relating to the parties' rights and obligations under the terms of this Agreement without first submitting the dispute to mediation by a neutral mediator acceptable to both parties. Failure or refusal to mediate shall result in the refusing party's forfeiture of recovery of legal expenses, including attorneys' fees and costs, in any subsequent action, as detailed above, regardless of whether that party is deemed the prevailing party in that action.

19. Cooperation and Further Assurances. The parties agree that they shall execute and deliver all further documents and do all further acts necessary and desirable to carry out the purposes of this Agreement, or to comply with any laws, rules, or regulations.

20. Covenants Running with the Land. User, Owner and Producer declare that this Agreement shall constitute a covenant running with and benefiting the land within the meaning of California Civil Code Section 1468, shall benefit the treatment works and lands of Producer, User and Owner, and shall burden and benefit the real property described in Exhibits "A" and "B" attached hereto and incorporated herein by reference.

21. Joint Liability. User and Owner shall be jointly and severally responsible to perform the obligations of User, pursuant to the terms of this Agreement.

22. Performance Conditioned on Easement Extensions. The parties understand that Producer's ability to perform this Agreement is dependent on Producer's continued ability to use the easements for pipelines which it currently enjoys over lands between Producer's treatment plant and User's Property. Should Producer be unable to obtain an extension of such easements on substantially the same terms and conditions as the existing easements, Producer's duty to perform pursuant to this Agreement shall be excused during the period that Producer is unable to obtain such extensions.

23. Entire Agreement. This Agreement shall constitute the entire agreement between the parties relating to the rights granted and obligations assumed in this Agreement. Any oral representations or modifications concerning this Agreement shall be of no force and effect unless contained in a subsequent written modification signed by both parties.

THE FOREGOING IS AGREED TO BY:

Davenport County Sanitation District

Date: _____, 20__ By:_____

John J. Presleigh, District Engineer

"Recycled Water User"
A California Corporation

Date: _____, 20__ By:_____

Title:

"Recycled Water User"
A California Corporation

Date: _____, 20__ By:_____

Title:

"Recycled Water User"
A California Corporation

Date: _____, 20__ By:_____

Title:

APPROVED AS TO FORM:

By: _____
_____
_____
Attorneys for Producer

EXHIBIT "A"

Legal Description of _____ Parcels

PARCEL #:

Parcel One, as shown on the map entitled "map of the lands of _____", filed _____, ____ in book ____ of Parcel Map at Page _____ in the office of the County Recorder of said Santa Cruz County.

APN _____

PARCEL #:

Parcel Two, as shown on the map entitled "Map of the lands of _____ filed _____, ____ in Book ___ of Parcel Map at Page ____ in the offices of the County Recorder of said Santa Cruz County.

APN _____

EXHIBIT "B"

Legal Descriptions of _____

Commencing at the Northwest corner of Parcel "B" as shown on Map No _____ recorded June 21, 1972 in Book ____ of Parcel Maps at Page ____, Santa Cruz County Records; thence long the Northwest line of said Parcel "B" North 56º 53' 15" East _____ feet to the Northeast corner thereof; thence along the Northeast line of said parcel "B South 26º 59' 08" East _____ feet to the Southeast corner thereof; thence along the Southeast line of said Parcel "B" South 74º 14' 21" West _____ feet; thence North 16º 25' 48" West 244.56 feet; thence South 74º 50' 26" West _____ feet; thence South 15º 22' 10" East 314.92 feet to a point on the southeast line of sad Parcel "B"; thence along the Southwest line of said Parcel "B" North 34º 06' 00" West _____ feet to the point of commencement.

APN _____

Commencing at the Southwest corner of Parcel "A" as shown on Map No. 2217 recorded June 21, 1972 in Book _____ of Parcel Maps at Page _____, Santa Cruz County Records; thence along the South line of said Parcel "A" South 88º 04' 16" East _____ feet to the most Southern corner thereof; thence along the Eastern lines of said Parcel "A" North 15º 19' 30" East _____ feet and North 26º 59' 08" West _____ feet to the Northeast corner of said Parcel "A"; thence along the Northern line of said Parcel "A" South 74º 14' 21" West _____ feet; thence leaving said Northern line North 20º 35' 30" West _____ feet; thence South 74º 14' 21" West _____ feet; thence North 16º 25' 48" West _____ feet; thence South 74º 50' 26" West _____ feet; thence south 15º 22' 10" East _____ feet to a point on the Northern line of said Parcel "A"; thence along said Northern line South 74º 14' 21" West _____ feet to the Northwest corner of said Parcel "A"; thence along the West line of said Parcel "A" South 34º 06' 00" East _____ feet to the point of commencement.

APN _____

EXHIBIT "C"

Site Plan/Delivery Point

EXHIBIT "D"

RECORDING REQUESTED BY AND
WHEN RECORDED RETURN TO:

Davenport County Sanitation District
701 Ocean Street, Room 410
Santa Cruz, CA 95060

Exempt from Recording Fees
Government Code Section 6103

APNs _____, _____, _____

MEMORANDUM OF RECYCLED WATER AGREEMENT

THIS MEMORANDUM, made as of_____, 20__, by and between the Davenport County Sanitation District (District, also referred to herein as "Producer") and _____, a California corporation and _____, a California corporation (collectively User); and _____ (Owner), at Davenport, California:

1. Producer, User and Owner are the Producer, User and Owner, respectively, under that certain "Agreement between the Davenport County Sanitation District and - _____ for the Purchase and Sale of Recycled Water" (the Agreement) dated _____, 20__, whereby Producer owns and operates a wastewater treatment plant in Davenport, Santa Cruz County, California, which benefits certain property owned and/or leased by User and Owner, described in Exhibits A and B. The Agreement was approved by the County Board of Supervisors of Producer by Resolution _____.

2. In consideration of the mutual promises set forth in the Agreement, the parties have conferred upon each other certain rights and confirmed certain matters, all as is more fully set forth in the Agreement.

3. Such rights shall take effect as of the date of the Agreement and shall continue in effect until _____, 20__, (unless terminated earlier under certain conditions).

4. Reference is made to the executed "Agreement with _____ for the Purchase and Sale of Recycled Water" in the possession of the parties hereto for all of its provisions. Those provisions are incorporated and made a part of this Memorandum as though fully set forth herein.

5. This Memorandum of Agreement may be executed in one or more counterparts, each of which when executed, shall be deemed an original, but all of which together shall be deemed to be one and the same instrument.

WITNESS the following signatures:

Davenport County Sanitation District

Date: _____, 20__ By:_____
John J. Presleigh, District Engineer

"Recycled Water User"
A California Corporation

Date: _____, 20__ By:_____

Title:

"Recycled Water User"
A California Corporation

Date: _____, 20__ By:_____

Title:

"Recycled Water User"
A California Corporation

Date: _____, 20__ By:_____

Title:

State of California)
) ss.
County of Santa Cruz)

On _____, 20__, before me, _____, a notary public for the State of California, personally appeared _____, personally known to me (or proved to me on the basis of satisfactory evidence) to be the persons whose names are subscribed to the within instrument and acknowledged to me that he/she executed the same in his/her authorized capacities, and that by his/her signature on the instrument the person, or the entity upon behalf of which the person acted, executed the instrument.

WITNESS my hand and official seal.

_____
Notary Public

State of California)
) ss.
County of Santa Cruz)

On _____, 20__, before me, _____, a notary public for the State of California, personally appeared _____, personally known to me (or proved to me on the basis of satisfactory evidence) to be the persons whose names are subscribed to the within instrument and acknowledged to me that he/she executed the same in his/her authorized capacities, and that by his/her signature on the instrument the person, or the entity upon behalf of which the person acted, executed the instrument.

WITNESS my hand and official seal.

_____
Notary Public

EXHIBIT "E"

Easements

Appendix G – Letters of Intent

Coast Dairies & Land Co.
101 Montgomery Street, Suite 1100
San Francisco, CA 94104
Phone: (415) 495-5660
Fax: (415) 442-0487

February 25, 2015
VIA US Mail

Ms. T. Brooke Miller, Assistant County Counsel
County of Santa Cruz
Office of the County Counsel
701 Ocean Street, Suite 505
Santa Cruz, CA 95060-4068

RE: Letter of Intent to Negotiate Easement for Placement of Recycled Water Pond on a Portion of APN 058-020-211 and Agreement for Sale of Recycled Water

Dear Brooke,

I refer to your letter of February 17, 2015, regarding the contemplated construction of a water storage pond and associated infrastructure (the "Project") by the Davenport Sanitation District (the "District"), and the District's interest in siting the storage pond on agricultural land owned by Coast Dairies & Land Co. ("CDLC").

This letter confirms that CDLC intends to negotiate with the District to allow the siting of the Project on the portion of CDLC land designated as Agricultural Lot 2. The legal arrangement to site and operate the water storage facility on CDLC land may take the form of either a term easement or a long-term lease of not less than 30 years. CDLC also intends to negotiate with the District for the purchase of the recycled water for agricultural use on such terms as may be agreeable to the parties.

We believe that the Project is a worthwhile undertaking to assure much-needed water supply for agriculture in this part of the County and we look forward to working with the District.

Very Truly Yours,
Coast Dairies & Land Co.

Tily Shue, President

Appendix H – Environmental Document

County of Santa Cruz

PLANNING DEPARTMENT
701 OCEAN STREET, 4TH FLOOR, SANTA CRUZ, CA 95060
(831) 454-2580 FAX: (831) 454-2131 TDD: (831) 454-2123
KATHLEEN MOLLOY PREVISICH, PLANNING DIRECTOR
www.sccoplanning.com

NOTICE OF INTENT TO ADOPT A MITIGATED NEGATIVE DECLARATION

NOTICE OF PUBLIC REVIEW AND COMMENT PERIOD

Pursuant to the California Environmental Quality Act, the following project has been reviewed by the County Environmental Coordinator to determine if it has a potential to create significant impacts to the environment and, if so, how such impacts could be solved. A Negative Declaration is prepared in cases where the project is determined not to have any significant environmental impacts. Either a Mitigated Negative Declaration or Environmental Impact Report (EIR) is prepared for projects that may result in a significant impact to the environment.

Public review periods are provided for these Environmental Determinations according to the requirements of the County Environmental Review Guidelines. The environmental document is available for review at the County Planning Department located at 701 Ocean Street, in Santa Cruz. You may also view the environmental document on the web at www.sccoplanning.com under the Planning Department menu. If you have questions or comments about this Notice of Intent, please contact Matt Johnston of the Environmental Review staff at (831) 454-3201

The County of Santa Cruz does not discriminate on the basis of disability, and no person shall, by reason of a disability, be denied the benefits of its services, programs or activities. If you require special assistance in order to review this information, please contact Bernice Shawver at (831) 454-3137 (TDD number (831) 454-2123 or (831) 763-8123) to make arrangements.

PROJECT: Davenport Recycled Water Project

APP #: 151029

APN(S): 058-021-03 and -07, 058-022-11, 058-071-04, and 058-072-01

PROJECT DESCRIPTION: The proposed project would include treatment plant upgrades consisting of: (1) Dredging the treatment lagoon of accumulated solids; (2) Installing alarms for the filtration and disinfection processes; and (3) Adding redundancy for coagulant and hypochlorite dosing. The District proposes to construct a storage pond within the Coast Dairies Agricultural Parcel Two located to the northwest of New Town Davenport to store treated water. A pump station and truck fill station would be constructed adjacent to the storage pond. Distribution piping would be constructed to provide recycled water to two irrigation ponds on the seaward side of Highway 1 across from the treatment plant. This new pipeline would include jacking and boring a casing pipe under Highway 1 and the railroad right-of-way (See Figure 2 in Initial Study).

PROJECT LOCATION: Located in the unsectioned portion of the Arroyo de la Laguna Rancheria in the south central portion of the Davenport 7.5-minute topographic quadrangle, within Township 10 South and Range 3 West.

EXISTING ZONE DISTRICT: CA, CA (Preserve), County Right-of-Way
APPLICANT: County of Santa Cruz Department of Public Works
OWNER: Public Right-of-Way, and Coast Dairies & Land Co., & Lonestar
PROJECT PLANNER: Todd Sexauer
EMAIL: Todd.Sexauer@santacruzcounty.us
ACTION: Negative Declaration with Mitigations
REVIEW PERIOD: February 23, 2015 through March 24, 2015 This project will be considered administratively by the Project Planner at the conclusion of the review period.

COUNTY OF SANTA CRUZ

PLANNING DEPARTMENT
701 OCEAN STREET, 4TH FLOOR, SANTA CRUZ, CA 95060
(831) 454-2580 FAX: (831) 454-2131 TDD: (831) 454-2123
KATHLEEN MOLLOY PREVISICH, PLANNING DIRECTOR
http://www.sccoplanning.com/

MITIGATED NEGATIVE DECLARATION

Project: Davenport Recycled Water Project

APN(S): 058-021-03 and -07, 058-022-11, 058-071-04, and 058-072-01

Project Description: The proposed project would include treatment plant upgrades consisting of: (1) Dredging the treatment lagoon of accumulated solids; (2) Installing alarms for the filtration and disinfection processes; and (3) Adding redundancy for coagulant and hypochlorite dosing. The District proposes to construct a storage pond within the Coast Dairies Agricultural Parcel Two located to the northwest of New Town Davenport to store treated water. A pump station and truck fill station would be constructed adjacent to the storage pond. Distribution piping would be constructed to provide recycled water to two irrigation ponds on the seaward side of Highway 1 across from the treatment plant. This new pipeline would include jacking and boring a casing pipe under Highway 1 and the railroad right-of-way (See Figure 2 in Initial Study).

Project Location: Located in the unsectioned portion of the Arroyo de la Laguna Rancheria in the south central portion of the Davenport 7.5-minute topographic quadrangle, within Township 10 South and Range 3 West.

Owner: Public Right-of-Way, and Coast Dairies & Land Co., & Lonestar

Applicant: County of Santa Cruz Department of Public Works

Staff Planner: Todd Sexauer

Email: todd.sexauer@santacruzcounty.us

This project will be considered administratively by the Project Planner at the completion of the review period.

California Environmental Quality Act Mitigated Negative Declaration Findings:

Find, that this Mitigated Negative Declaration reflects the decision-making body's independent judgment and analysis, and; that the decision-making body has reviewed and considered the information contained in this Mitigated Negative Declaration and the comments received during the public review period; and, that revisions in the project plans or proposals made by or agreed to by the project applicant would avoid the effects or mitigate the effects to a point where clearly no significant effects would occur; and, on the basis of the whole record before the decision-making body (including this Mitigated Negative Declaration) that there is no substantial evidence that the project as revised will have a significant effect on the environment. The expected environmental impacts of the project are documented in the attached Initial Study on file with the County of Santa Cruz Clerk of the Board located at 701 Ocean Street, 5th Floor, Santa Cruz, California.

Review Period Ends: March 24, 2015

Date: _____

_____
TODD SEXAUER, Environmental Coordinator
(831) 454-3511

County of Santa Cruz

PLANNING DEPARTMENT
701 OCEAN STREET, 4TH FLOOR, SANTA CRUZ, CA 95060
(831) 454-2580 FAX: (831) 454-2131 TDD: (831) 454-2123
KATHLEEN MOLLOY PREVISICH, PLANNING DIRECTOR
www.sccoplanning.com

CALIFORNIA ENVIRONMENTAL QUALITY ACT (CEQA)
INITIAL STUDY/ENVIRONMENTAL CHECKLIST

Date: February 17, 2015 **Application Number:** 151029

Project Name: Davenport Recycled Water Project **Staff Planner:** Todd Sexauer

I. OVERVIEW AND ENVIRONMENTAL DETERMINATION

APPLICANT: County of Santa Cruz Department of Public Works **APN(s):** 058-021-03 and 07, 058-022-11, 058-071-04, and 058-072-01

OWNER: Public Right-of-Way, and Coast Dairies & Land Co., & Lonestar **SUPERVISORAL DISTRICT:** 3

PROJECT LOCATION: The Davenport Recycled Water project is situated within the Town of Davenport in Santa Cruz County, California (Figure 1). The project area is located in the unsectioned portion of the Arroyo de la Laguna Rancheria in the south central portion of the Davenport 7.5-minute topographic quadrangle, within Township 10 South and Range 3 West. Surrounding land uses consist of mainly agriculture, residential and pastures. The County of Santa Cruz is bounded on the north by San Mateo County, on the south by Monterey and San Benito counties, on the east by Santa Clara County, and on the south and west by the Monterey Bay and the Pacific Ocean.

SUMMARY PROJECT DESCRIPTION:

The proposed project would include treatment plant upgrades consisting of: (1) Dredging the treatment lagoon of accumulated solids; (2) Installing alarms for the filtration and disinfection processes; and (3) Adding redundancy for coagulant and hypochlorite dosing. The District proposes to construct a storage pond within the Coast Dairies Agricultural Parcel Two located to the northwest of New Town Davenport to store treated water. A pump station and truck fill station would be constructed adjacent to the storage pond. Distribution piping would be constructed to provide recycled water to two irrigation ponds on the seaward side of Highway 1 across from the treatment plant. This new pipeline would include jacking and boring a casing pipe under Highway 1 and the railroad right-of-way (See Figure 2).

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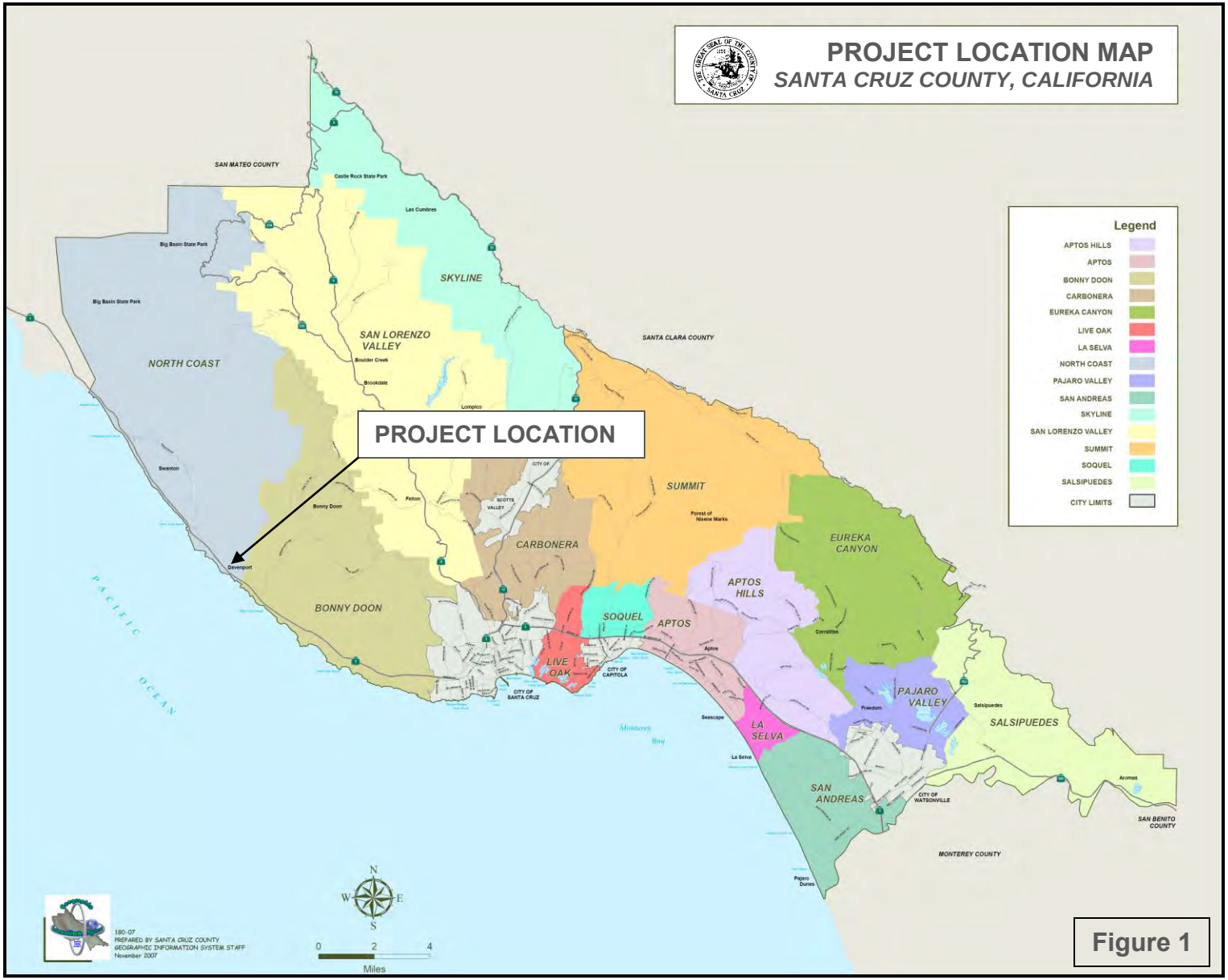
PROJECT LOCATION MAP
SANTA CRUZ COUNTY, CALIFORNIA
PROJECT LOCATION
Legend
APTOS HILLS
APTOS
BONNY DOON
CARBONERA
EUREKA CANYON
LIVE OAK
LA SELVA
NORTH COAST
PAJARO VALLEY
SAN ANDREAS
SKYLINE
SAN LORENZO VALLEY
SUMMIT
SOQUEL
SALSIPUEDES
CITY LIMITS
SAN MATEO COUNTY
SANTA CLARA COUNTY
MONTEREY COUNTY
SAN BENITO COUNTY
PACIFIC OCEAN
Monterey Bay
Miles
Figure 1

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Project Site Plan

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ENVIRONMENTAL FACTORS POTENTIALLY AFFECTED: *All of the following potential environmental impacts are evaluated in this Initial Study. Categories that are marked have been analyzed in greater detail based on project specific information.*

- ☒ Aesthetics and Visual Resources
- ☒ Agriculture and Forestry Resources
- ☐ Air Quality
- ☒ Biological Resources
- ☒ Cultural Resources
- ☐ Geology and Soils
- ☐ Greenhouse Gas Emissions
- ☒ Hazards and Hazardous Materials
- ☒ Hydrology/Water Supply/Water Quality
- ☐ Land Use and Planning
- ☐ Mineral Resources
- ☒ Noise
- ☐ Population and Housing
- ☐ Public Services
- ☐ Recreation
- ☐ Transportation/Traffic
- ☐ Utilities and Service Systems
- ☐ Mandatory Findings of Significance

DISCRETIONARY APPROVAL(S) BEING CONSIDERED:

- ☐ General Plan Amendment
- ☐ Land Division
- ☐ Rezoning
- ☐ Development Permit
- ☐ Sewer Connection Permit
- ☒ Coastal Development Permit
- ☐ Grading Permit
- ☐ Riparian Exception
- ☐ LAFCO Annexation
- ☐ Other:

OTHER PUBLIC AGENCIES WHOSE APPROVAL IS REQUIRED (e.g., permits, financing approval, or participation agreement):

Permit Type/Action	Agency
• Waste Discharge Requirement 95-27 amendment	Regional Water Quality Control Board
• Encroachment Permit	California Department of Transportation
• Coastal Development Permit	California Coastal Commission

DETERMINATION:

On the basis of this initial evaluation:

- ☐ I find that the proposed project COULD NOT have a significant effect on the environment, and a NEGATIVE DECLARATION will be prepared.
- ☒ I find that although the proposed project could have a significant effect on the environment, there will not be a significant effect in this case because revisions in the project have been made or agreed to by the project proponent. A MITIGATED NEGATIVE DECLARATION will be prepared.
- ☐ I find that the proposed project MAY have a significant effect on the environment, and an ENVIRONMENTAL IMPACT REPORT is required.

☐ I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

Todd Sexauer

TODD SEXAUER, Environmental Coordinator

2/20/15

Date

☐ I find that the proposed project MAY have a "potentially significant impact" or "potentially significant unless mitigated" impact on the environment, but at least one effect 1) has been adequately analyzed in an earlier document pursuant to applicable legal standards, and 2) has been addressed by mitigation measures based on the earlier analysis as described on attached sheets. An ENVIRONMENTAL IMPACT REPORT is required, but it must analyze only the effects that remain to be addressed.

☐ I find that although the proposed project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier EIR or NEGATIVE DECLARATION pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier EIR or NEGATIVE DECLARATION, including revisions or mitigation measures that are imposed upon the proposed project, nothing further is required.

TODD SEXAUER, Environmental Coordinator _____ Date

II. BACKGROUND INFORMATION

EXISTING SITE CONDITIONS:

Parcel Size (acres):	058-021-03 (8.89); 058-021-07 (49.92); 058-022-11 (210.60); 058-071-04 (109.15); 058-072-01 (36.93)
Existing Land Use:	Residential, Commercial, Heavy Industrial, and Agricultural
Vegetation:	Primarily developed with landscaping and non-native grasses
Slope in area affected by project:	☒ 0 - 30% ☐ 31 – 100% ☐ N/A
Nearby Watercourse:	San Vicente Creek, Stream 102, and Agua Puera Creek
Distance To:	Within study area

ENVIRONMENTAL RESOURCES AND CONSTRAINTS:

Water Supply Watershed:	No	Fault Zone:	No
Groundwater Recharge:	No	Scenic Corridor:	Yes
Timber or Mineral:	No	Historic:	No
Agricultural Resource:	Yes (portion)	Archaeology:	Yes
Biologically Sensitive Habitat:	Yes	Noise Constraint:	No
Fire Hazard:	No	Electric Power Lines:	Yes
Floodplain:	No	Solar Access:	N/A
Erosion:	No	Solar Orientation:	N/A
Landslide:	No	Hazardous Materials:	No
Liquefaction:	Yes	Other:	

SERVICES:

Fire Protection:	CalFire	Drainage District:	Zone 8
School District:	San Lorenzo Valley USD Pacific Elementary	Project Access:	via Highway 1 & Cement Plant Road
Sewage Disposal:	Davenport CSD	Water Supply:	Davenport CSD

PLANNING POLICIES:

Zone District:	Commercial Agriculture, Commercial Agriculture (Preserve), County Right-of-way	Special Designation:	None
General Plan:	Agriculture, County Right-of-way		
Urban Services Line:	☐ Inside	☒ Outside	
Coastal Zone:	☒ Inside	☐ Outside	

ENVIRONMENTAL SETTING AND SURROUNDING LAND USES:

Natural Environment

Santa Cruz County is uniquely situated along the northern end of Monterey Bay approximately 55 miles south of the City of San Francisco along the Central Coast. The

Pacific Ocean and Monterey Bay to the west and south, the mountains inland, and the prime agricultural lands along both the northern and southern coast of the county create limitations on the style and amount of building that can take place. Simultaneously, these natural features create an environment that attracts both visitors and new residents every year. The natural landscape provides the basic features that set Santa Cruz apart from the surrounding counties and require specific accommodations to ensure building is done in a safe, responsible and environmentally respectful manner.

The California Coastal Zone affects nearly one third of the land in the urbanized area of the unincorporated County with special restrictions, regulations, and processing procedures required for development within that area. Steep hillsides require extensive review and engineering to ensure that slopes remain stable, buildings are safe, and water quality is not impacted by increased erosion. The farmland in Santa Cruz County is among the best in the world, and the agriculture industry is a primary economic generator for the County. Preserving this industry in the face of population growth requires that soils best suited to commercial agriculture remain active in crop production rather than converting to other land uses.

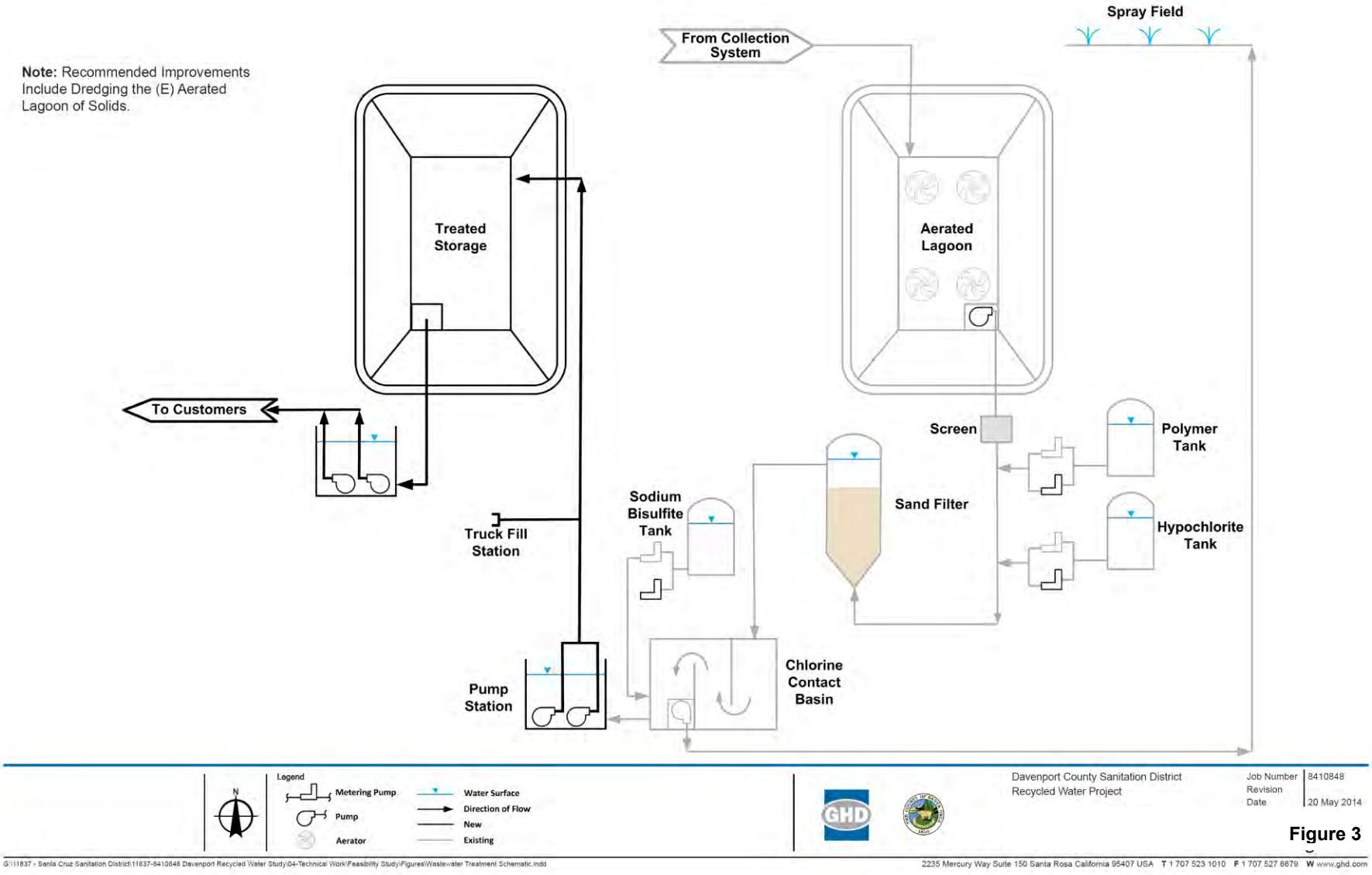
PROJECT BACKGROUND:

The Davenport County Sanitation District (District) owns and operates a wastewater treatment facility serving the community of Davenport, California, which includes a domestic wastewater collection system, influent headworks, aerated lagoon, sand filter, and chlorine contact tank. The District provides service to approximately 97 sewer accounts. The District also provides treated drinking water to the community of Davenport. Prior to its closure in 2008, Cemex cement plant was the primary user of effluent from the wastewater treatment facility.

The existing facility treats about 28 acre-feet of water annually to Title 22 disinfected tertiary level and the treated water is spray irrigated onto un-mowed turf adjacent to the treatment plant. The wastewater is treated in a 4 million gallon capacity aerated lagoon where it undergoes primary and secondary treatment. Coagulant and hypochlorite are added to lagoon effluent prior to tertiary treatment in an up-flow sand filter. The filter has an area of 19 square feet; this equates to a maximum capacity of 95 gpm (136,800 gpd) at the maximum allowable loading rate under Title 22 requirements.

The treated wastewater then passes through a 3,000-gallon chlorine contact chamber for disinfection. For disinfected tertiary quality water Title 22 requires 90 minutes of contact time and a CT of not less than 450 mg-min/L; to meet this requirement the flow rate would need to be no more than 48,000 gpd with a chlorine residual of 5 mg/L.

Sodium bisulfite is injected after the chlorine contact chamber for de-chlorination and the treated effluent is pumped to a spray field adjacent to the plant for application to un-mowed grass. Figure 3 provides a process flow diagram of the existing treatment facilities.



Existing and Proposed Wastewater Treatment Plant Schematic

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The Central Coast Region of the Regional Water Quality Control Board (RWQCB) staff inspected the Davenport Wastewater Treatment Plant on May 25, 2011, and observed several violations to include: 1) the discharge of several thousand gallons of treated wastewater to the Pacific Ocean by runoff from the disposal fields; 2) less than the required two feet of freeboard level in the treatment pond; 3) failure to post signage in areas of water reclamation use, etc.; and 4) failure to investigate and submit a spill report within five days of the discovered spill. This project proposes infrastructure improvements to the existing facility and distribution system that would help the wastewater treatment plant avoid future violations of Title 22 by allowing the reclamation, storage, and reuse of this valuable water supply for the purposes of crop irrigation in the Davenport community.

FEDERAL AND STATE ENVIRONMENTAL COMPLIANCE THROUGH CEQA-PLUS:

Because the proposed project involves funding sources from both state and federal funds, the project must comply with the environmental clearance requirements of the State of California and those of the federal government. Requirement of the State of California are specified by the California Environmental Quality Act (CEQA) and related guidelines (California Code of Regulations Title 14, Division 6, Chapter 3). Federal environmental clearance requirements are those associated with the National Environmental Policy Act (NEPA) and related statutes. To comply with applicable federal statutes and authorities, Environmental Protection Agency (EPA) established specific "CEQA-PLUS" requirements in the Operating Agreement with State Water Resources Control Board (SWRCB) for administering the State Revolving Fund (SRF) Loan Program. Essentially this agreement allows for compliance with CEQA to be functionally equivalent to compliance with NEPA. However, compliance with all other federal requirements is still required. Hence the term CEQA-PLUS refers to a program for meeting both CEQA and additional federal requirements in a coordinated process.

ADDITIONAL FEDERAL REQUIREMENTS OF THE "CEQA-PLUS" PROCESS:

The CEQA-PLUS process also requires compliance with the following federal regulatory requirements:

- Section 7 of the Federal Endangered Species Act (ESA)
- Magnuson-Stevens Fishery Conservation and Management Act, Essential Fish Habitat
- Section 106 of the National Historic Preservation Act (NHPA)
- Federal General Conformity Rule for the Federal Clean Air Act (CAA)
- Coastal Zone Management Act (CZMA)
- Coastal Barriers Resources Act
- Farmland Protection Policy Act (FPPA)
- Floodplain Management
- Migratory Bird Treaty Act (MBTA)
- Protection of Wetlands

- Wild and Scenic Rivers Act
- Safe Drinking Water Act, Sole Source Aquifer Protection
- Environmental Justice

DETAILED PROJECT DESCRIPTION:

The Davenport County Sanitation District (District) owns and operates a wastewater treatment facility serving the community of Davenport, California. The facility treats about 28 acre-feet of water annually to Title 22 disinfected tertiary level and the treated water is spray irrigated onto un-mowed turf adjacent to the treatment plant. This project proposes to reuse this valuable water supply for the purpose of crop irrigation in and adjacent to the community of Davenport

The Davenport County Sanitation District would work with potential users of the recycled water, and construct water storage and treatment infrastructure to deliver recycled water to those users at the time of their need for the water. Figure 2 shows the Study Area boundary for the project. The improvements would include the following:

Treatment Plant Upgrades and Maintenance

Minor upgrades and maintenance would be needed to the treatment plant to meet Title 22 reliability criteria including:

- Dredging the treatment lagoon of accumulated solids
- Installing alarms for the filtration and disinfection processes
- Adding redundancy for coagulant and hypochlorite dosing

Construct New Storage Pond

The District proposes to construct storage for the treated water since water is treated continuously whereas demand for the water would be seasonal and intermittent. The new storage pond location is being proposed on the Coast Dairies Agricultural Parcel Two. The site was formerly a part of the 1,863 acre Coast Dairies property (APN 058-022-11) and is located immediately northwest of New Town Davenport within the fallow agricultural land adjacent to Cement Plant Road. The pond would be constructed by removing vegetation and topsoil, excavating to a depth of about 8 feet, and constructing a perimeter levee from the excavated material to create a 2-acre pond with a usable water depth of 12 feet. Approximately 22,500 cubic yards of grading is proposed with no import or export of material. The pond would be lined with a synthetic liner.

A pump station would be constructed adjacent to the pond consisting of 2 pumps located on a concrete slab at grade next to the pond. A new power pole location off of Cement Plant Road would be required to provide electricity to power the new pump station. The pumps would deliver water from the new storage pond to the recycled water distribution piping. The area around the pond would likely be used as the staging area for all of the construction

for this project. Figure 3 provides a process flow diagram of the existing and proposed treatment facilities.

Construct New Distribution Pipes

Water would be distributed to potential users through small diameter PVC pipe (< 6 inches; see Figure 2). Pipe installation would be accomplished with a backhoe and dump truck. Pipe, excavation spoils and imported bedding material would be stockpiled in the work area as work progresses. Steel plates would cover open excavations when the work is not being performed and the plates would also be stockpiled near the work area. A description of the various pipe segments is provided below.

Pipe installed along Cement Plant Road would be constructed in trenches within the concrete road to avoid potential sensitive resources. This would consist of a trench 4 feet deep by 2 feet wide. Some of the excavated material would be removed to make room for the pipe and imported bedding material. Pipes in or crossing Cement Plant Road would require saw cutting through the cement to create a 2-foot wide trench, and then the concrete would be repaired after installing the pipe.

Pipe crossing Hwy. 1 and the railroad would be installed in 12-inch steel casings which would be installed by jacking and boring under the surface at a depth of about 12 feet. This would require shored jacking and receiving pits on each end of the casing pipes. Jacking pits would be about 10 feet wide by 20 feet long and receiving pits would be about 10 feet by 10 feet. All pits would be about 15 feet deep.

Pipe installed along the west side of Hwy. 1 adjacent to the planted fields would be installed in 4-foot deep by 2-foot wide trenches. Excavated material would be removed to make room for the pipe and imported bedding material. This pipe would have laterals rising above grade and topping over the edge of the existing irrigation ponds (see Figure 2).

Staging Areas and Fueling

Storage areas for contractor equipment and materials would be located at the existing treatment plant and next to the work area. All other staging areas must be approved by the County and would be located away from wetlands, waterways, and other sensitive habitat areas.

Davenport County Sanitation District Code Amendment

Title 3, Water Service District would be amended to allow for the sale and distribution of recycled water to customers located outside of the Davenport County Sanitation District service area. No Local Agency Formation Commission (LAFCO) approval would be required. LAFCO does not regulate the distribution of recycled water.

Avoidance of Wetlands and Waters

To ensure that no wetlands or riparian areas would be impacted, a formal delineation of wetlands and waters of the U.S., waters of the state, and coastal wetlands would be

conducted prior to final project design. The project would be designed to avoid all impacts to wetlands and waters of the U.S., waters of the state, and coastal wetlands.

Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

III. ENVIRONMENTAL REVIEW CHECKLIST

A. AESTHETICS AND VISUAL RESOURCES

Would the project:

1.	*Have a substantial adverse effect on a scenic vista?*	☐	☒	☐	☐

Discussion: The proposed project has the potential to impact scenic resources, as designated in the County's General Plan (1994). Highway 1 is designated as a scenic road under Section 5.10.10 of the County General Plan; and therefore, views from Highway 1 and Cement Plant Road could be significantly impacted with the implementation of the project due to the height of the proposed earthen berm supporting the storage pond. Brief views of the facility would be visible from highway 1 northbound. Some screening would occur due to existing natural vegetation located between Cement Plant Road and the railroad tracks. The site would be visible for a greater period for vehicles travelling southbound on Highway 1, and from Cement Plant Road. Impacts to the scenic area could be mitigated as follows:

AES-1 The north-, south-, and west-facing sides of the storage pond shall be vegetated with Monterey pines (*Pinus radiata*) that are indigenous to the Año Nuevo stands. Fifteen gallon trees shall be planted at 15 feet on center to ensure adequate screening when mature. The trees shall be monitored for a period of five years to ensure success. Dead or dying trees shall be replaced in-kind.

Impacts to scenic resources would be less than significant with implementation of the proposed mitigation.

2.	*Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?*	☐	☒	☐	☐

Discussion: Although the proposed project site is located within the viewshed of Highway 1, a designated scenic highway, the project would not be visible from Highway 1 or any adjacent local roadways (see discussion A-1 above) with the implementation of Mitigation Measure AES-1. No impacts to trees, rock outcroppings, or historic buildings would occur. Impacts would be less than significant with the implementation of mitigation.

3.	*Substantially degrade the existing visual character or quality of the site and its surroundings?*	☐	☒	☐	☐

Discussion: The existing visual setting would not be changed with implementation of the proposed project. All distribution lines would be buried and the proposed 2-acre storage

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

pond would be shielded by vegetation with the incorporation of Mitigation Measure AES-1. As a result, impacts would be less than significant with the incorporation of mitigation.

4.	*Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?*	☐	☐	☐	☒

Discussion: The project does not include a source of light and would not affect either day or nighttime views in the area. No impact would occur.

B. AGRICULTURE AND FORESTRY RESOURCES

In determining whether impacts to agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts to forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment Project; and forest carbon measurement methodology provided in Forest Protocols adopted by the California Air Resources Board. Would the project:

1.	*Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?*	☐	☐	☒	☐

Discussion: The proposed storage pond location (Coast Dairies Agricultural Parcel Two; formerly APN 058-022-11) is currently under a Williamson Act Contract and is mapped as containing Prime Farmland as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency. The parcel is currently not in agricultural production. The proposed project is designed to provide recycled water to farmlands on the north coast in an effort to increase their productivity. Approximately 2 acres of Prime Farmland would be developed into a water storage facility. However, the proposed use would be considered an agricultural use and no conversion of Prime Farmland would occur. As a result, no Prime Farmland, Unique Farmland, Farmland of Statewide or Farmland of Local Importance would be converted to a non-agricultural use. Impacts would be considered less than significant.

2.	*Conflict with existing zoning for agricultural use, or a Williamson Act*	☐	☐	☒	☐

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

contract?

***Discussion*:** Impacts on existing zoning for agricultural use would be less than significant. The proposed storage pond location (Coast Dairies Agricultural Parcel Two; formerly APN 058-022-11) is currently under a Williamson Act Contract and is mapped as containing Prime Farmland as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency. The parcel is currently not in agricultural production. Also see discussions B-1 above and J-2 below. Impacts on existing zoning for agricultural use would be less than significant.

3.	*Conflict with existing zoning for, or cause rezoning of, forest land (as defined in Public Resources Code Section 12220(g)), timberland (as defined by Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g))?*	☐	☐	☐	☒

***Discussion*:** The project is not located near land designated as Timber Resource. The nearest timber harvest area is located approximately 1.7 miles to the northeast. Therefore, the project would not affect the resource or access to harvest the resource in the future. No impact would occur.

4.	*Result in the loss of forest land or conversion of forest land to non-forest use?*	☐	☐	☐	☒

***Discussion*:** No forest land occurs on the project site or in the immediate vicinity. See discussion under B-3 above. No impact is anticipated.

5.	*Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use or conversion of forest land to non-forest use?*	☐	☐	☒	☐

***Discussion*:** See discussions under B-1 and B-3 above. Impacts would be less than significant.

CEQA-Plus Evaluation

Farmland Protection Policy Act: Is any portion of the project site located on important farmland?

☒ No. The project will not affect protected farmland.

Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

☐ Yes. Include information on the acreage that would be converted from important farmland to other uses. Indicate if any portion of the project boundaries is under a Williamson Act Contract and specify the amount of acreage affected:

Discussion: See discussion under B-1 above. Impacts would be considered less than significant.

C. AIR QUALITY

The significance criteria established by the Monterey Bay Unified Air Pollution Control District (MBUAPCD) has been relied upon to make the following determinations. Would the project:

1. Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☒	☐

Discussion: The project would not conflict with or obstruct any long-range air quality plans of the Monterey Bay Unified Air Pollution Control District (MBUAPCD). Because general construction activity related emissions (i.e., temporary sources) are accounted for in the emission inventories included in the plans, impacts to air quality plan objectives are less than significant. See C-2 below.

General estimated basin-wide construction-related emissions are included in the MBUAPCD emission inventory (which, in part, form the basis for the air quality plans cited below) and are not expected to prevent long-term attainment or maintenance of the ozone and particulate matter standards within the North Central Coast Air Basin (NCCAB). Therefore, temporary construction impacts related to air quality plans for these pollutants from the proposed project would be less than significant, and no mitigation would be required, since they are presently estimated and accounted for in the District's emission inventory, as described below. No stationary sources would be constructed that would be long-term permanent sources of emissions.

2. Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☐	☐	☒	☐

Discussion: Santa Cruz County is located within the North Central Coast Air Basin (NCCAB). The NCCAB does not meet state standards for ozone (reactive organic gases [ROGs] and nitrogen oxides [NOx]) and fine particulate matter (PM_{10}). Therefore, the regional pollutants of concern that would be emitted by the project are ozone precursors and PM_{10}.

Ozone is the main pollutant of concern for the NCCAB. The primary sources of ROG within the air basin are on- and off-road motor vehicles, petroleum production and marketing, solvent evaporation, and prescribed burning. The primary sources of NOx are on- and off-road motor vehicles, stationary source fuel combustion, and industrial processes.

In 2010, daily emissions of ROGs were estimated at 63 tons per day. Of this, area-wide sources represented 49 percent, mobile sources represented 36 percent, and stationary sources represented 15 percent. Daily emissions of NOx were estimated at 54 tons per day with 69 percent from mobile sources, 22 percent from stationary sources, and 9 percent from area-wide sources. In addition, the region is "NOx sensitive," meaning that ozone formation due to local emissions is more limited by the availability of NOx as opposed to the availability of ROGs (MBUAPCD, 2013).

PM_{10} is the other major pollutant of concern for the NCCAB. In the NCCAB, highest particulate levels and most frequent violations occur in the coastal corridor. In this area, fugitive dust from various geological and man-made sources combines to exceed the standard. Nearly three quarters of all NCCAB exceedances occur at these coastal sites where sea salt is often the main factor causing exceedance (MBUAPCD, 2005). In 2005 daily emissions of PM_{10} were estimated at 102 tons per day. Of this, entrained road dust represented 35 percent of all PM_{10} emission, windblown dust 20 percent, agricultural tilling operations 15 percent, waste burning 17 percent, construction 4 percent, and mobile sources, industrial processes, and other sources made up 9 percent (MBUAPCD, 2008).

Given the modest amount of new traffic that would be generated by the project there is no indication that new emissions of ROGs or NOx would exceed MBUAPCD thresholds for these pollutants; and therefore, there would not be a significant contribution to an existing air quality violation.

Project construction may result in a short term, localized decrease in air quality due to generation of PM_{10}. However, standard dust control best management practices, such as periodic watering, would be implemented during construction to avoid significant air quality impacts from the generation of PM_{10}. Impacts are expected to be less than significant.

The following Best Management Practices (BMPs) and Best Available Control Technology (BACT) would be implemented during all site excavation and grading.

- AQ-1 Contracted Diesel Control Measures: In addition to the use of Tiered engines and California ultralow sulfur diesel fuel, the following requirements will be incorporated into contract specifications:
    - To minimize potential diesel odor impacts on nearby receptors (pursuant to MBUAPCD Rule 402, Nuisances), construction equipment will be properly tuned. A schedule of tune-ups will be developed and performed for all equipment operating within the project area. A written log of required tune-ups will be maintained and a copy of the log will be submitted to the County of Santa Cruz Department of Public Works (DPW) Planning Director for review every 2,000 service hours.

- Fixed temporary sources of air emissions (such as portable pumps, compressors, generators, etc.) will be electrically powered unless the contractor submits documentation and receives written approval from the County of Santa Cruz DPW that the use of such equipment is not practical, feasible, or available (generally contingent upon power line proximity, capacity, and accessibility). California ultralow sulfur diesel fuel with maximum sulfur content of 15 ppm by weight (ppmw S), or an approved alternative fuel, will be used for on-site fixed equipment not using line power.
- To minimize diesel emission impacts, construction contracts will require off-road compression ignition equipment operators to reduce unnecessary idling with a 2-minute time limit, subject to monitoring and written documentation.
- On-road material hauling vehicles will shut off engines while queuing for loading and unloading for time periods longer than 2 minutes, subject to monitoring and written documentation.
- Off-road diesel equipment will be fitted with verified diesel emission control systems (e.g., diesel oxidation catalysts) to the extent reasonably and economically feasible.
- Utilize alternative fuel equipment (i.e., compressed or liquefied natural gas, biodiesel, electric) to the extent reasonably and economically feasible.

Feasibility will be determined consistent with Best Available Control Technology (BACT) general criteria: 1) achieved in practice; 2) contained in adopted control measures; 3) technologically feasible; and 4) cost-effective.

- Diesel Particulate Matter Emissions Control Measures: In addition, the project will implement the following measures to reduce particulate matter emissions from diesel exhaust:
  - Grid power will be used instead of diesel generators where it is feasible to connect to grid power (generally contingent upon power line proximity, capacity, and accessibility).
  - The project specifications will include 13 CCR Sections 2480 and 2485, which limit the idling of all diesel-fueled commercial vehicles (weighing over 10,000 pounds, both California- or non-California-based trucks) to 30 seconds at a school or 5 minutes at any location. In addition, the use of diesel auxiliary power systems and main engines will be limited to 5 minutes when within 100 feet of homes or schools while the driver is resting.
  - The project specifications will include 17 CCR Section 93115, Airborne Toxic Control Measure for Stationary Compression Ignition Engines, which specifies fuel and fuel additive requirements; emission standards for operation of any

Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

stationary, diesel-fueled, compression-ignition engines; and operation restrictions within 500 feet of school grounds when school is in session.

- A schedule of low-emissions tune-ups will be developed and such tune-ups will be performed on all equipment, particularly for haul and delivery trucks.
- Low-sulfur (≤ 15 ppmw S) fuels will be used in all stationary and mobile equipment.

- Dust Control Measures: The following controls will be implemented at the construction and staging sites as applicable:
  - Water all active construction areas at least twice daily as necessary and indicated by soil and air conditions.
  - Cover all trucks hauling soil, sand, and other loose materials or require all trucks to maintain at least 2 feet of freeboard.
  - Pave, apply water three times daily, or apply (nontoxic) soil stabilizers on all unpaved access roads, parking areas and staging areas at construction sites.
  - Sweep daily (with water sweepers) all paved access roads, parking areas and staging areas at construction sites.
  - Sweep streets daily (with water sweepers) if visible soil material is carried onto adjacent public streets.
  - All disturbed areas, including storage piles, which are not being actively utilized for construction purposes, will be effectively stabilized of dust emissions using water, chemical stabilizer/suppressant, covered with a tarp or other suitable cover or vegetative ground cover.
  - All on-site unpaved roads and off-site unpaved access roads will be effectively stabilized of dust emissions using water or chemical stabilizer/suppressant.
  - All land clearing, grubbing, scraping, excavation, land leveling, grading, cut & fill, and demolition activities will be effectively controlled of fugitive dust emissions utilizing application of water or by presoaking.
  - When materials are transported off site, all material will be covered, or effectively wetted to limit visible dust emissions, and at least 6 inches of freeboard space from the top of the container will be maintained.
  - All operations will limit or expeditiously remove the accumulation of mud or dirt from adjacent public streets at the end of each workday. (The use of dry rotary brushes is expressly prohibited except where preceded or accompanied by sufficient wetting to limit the visible dust emissions. Use of blower devices is expressly forbidden.)
  - Following the addition of materials to, or the removal of materials from, the

Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

surface of outdoor storage piles, said piles will be effectively stabilized of fugitive dust emissions utilizing sufficient water or chemical stabilizer/suppressant.

- Within urban areas, trackout will be immediately removed when it extends 50 or more feet from the site and at the end of each workday.
- Any site with 150 or more vehicle trips per day will prevent carryout and trackout.
- Hydroseed or apply (nontoxic) soil stabilizers to inactive construction areas (previously graded areas inactive for 10 days or more).
- Enclose, cover, water twice daily, or apply (nontoxic) soil binders to exposed stockpiles (dirt, sand, etc.).
- Limit traffic speeds on unpaved roads to 15 miles per hour.
- Install sandbags or other erosion control measures to prevent silt runoff to public roadways from sites with a slope greater than 1 percent.
- Replant vegetation in disturbed areas as quickly as possible.
- Install wheel washers for all exiting trucks, or wash off all trucks and equipment leaving the site.
- Install wind breaks at windward side(s) of construction areas.
- Suspend excavation and grading activity when winds (instantaneous gusts) exceed 20 miles per hour.
- Limit the area subject to excavation, grading, and other construction activity at any one time.

Implementation of the above BMPs and BACT would ensure that emissions of diesel particulate matter (DPM) and fugitive dust from project excavation and grading would be consistent with the MBUAPCD emissions inventories. Impacts would be less than significant.

3. *Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is non-attainment under an applicable federal or state ambient air quality standard (including releasing emissions which exceed quantitative thresholds for ozone precursors)?*	☐	☐	☒	☐

Discussion: Project construction would have a limited and temporary potential to contribute to existing violations of California air quality standards for ozone and PM_{10} primarily through diesel engine exhaust and fugitive dust. However, the Santa Cruz monitoring station has not had any recent violations of federal or state air quality standards mainly through dispersion of construction-related emission sources. BMPs and BACT

described above under C-2 would ensure emissions remain below a level of significance. Therefore, the proposed project would not result in a cumulatively considerable net increase in criteria pollutants. The impact on ambient air quality would be less than significant.

CEQA-Plus Evaluation

CEQA-Plus integrates regulations from the Federal Clean Air Act (CAA) to projects in areas that are subject to the General Conformity Rule. CEQA-Plus requires that an analysis is conducted for each criteria pollutant for which the air basin is considered non-attainment or maintenance. Section 176(c) of the 1990 CAA Amendments contains the General Conformity Rule (40 CFR 51.850–860 and 40 CFR 93.150–160). The General Conformity Rule requires any federal agency responsible for an action in a non-attainment or maintenance area to determine that the action conforms to the applicable State Implementation Plan (SIP). This means that federally supported or funded activities will not (1) cause or contribute to any new air quality standard violation, (2) increase the frequency or severity of any existing standard violation, or (3) delay the timely attainment of any standard, interim emission reduction, or other milestone. The rule allows for approximately 30 exemptions that are assumed to conform to an applicable SIP. Emissions of attainment pollutants are exempt from conformity analyses. Actions would conform to a SIP if their annual direct and indirect emissions remain less than the applicable de minimis thresholds. Formal conformity determinations are required for any actions that exceed these thresholds. However, if the total emissions of a pollutant from a federal action exceed 10% of a nonattainment area's emissions inventory of that pollutant, the action is defined as a regionally significant action and it would also require a conformity determination. Under the Federal Clean Air Act, Federal actions may be exempt from conformity determinations if they do not exceed designated de minimis levels for criteria pollutants (40 CFR 51.853[b]).

Federal Clean Air Act: Is the project subject to a State Implementation Plan (SIP) conformity determination?

☒ *No. The project is in an attainment or unclassified area for all federal criteria pollutants.*

☐ *Yes. The project is in a nonattainment area or attainment area subject to maintenance plans for a federal criteria pollutant. Include information to indicate the nonattainment designation (e.g. moderate, serious, severe, or extreme), if applicable. If estimated emissions (below) are above the federal de minimis levels, but the project is sized to meet only the needs of current population projections that are used in the approved SIP for air quality, then quantitatively indicate how the proposed capacity increase was calculated using population projections.*

Discussion: The project is located within the North Central Coast Air Basin (NCCAB),

Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

and is under the jurisdiction of the Monterey Bay Unified Air Pollution Control District (MBUAPCD). The NCCAB has achieved federal-air quality conformity since 2005 for all criteria pollutants including carbon monoxide (CO), nitrogen dioxide (NO_2), particulate matter (PM), lead (Pb), and sulfur dioxide (SO_2), in addition to ozone (O_3). Table 1 provides specifics on the attainment status for the NCCAB. The project would be consistent with the State Implementation Plan.

Table 1: North Central Coast Air Basin Attainment Status – January 2015

Pollutant	National Standards
Ozone (O_3)	Attainment/Unclassified[1]
Inhalable Particulates (PM_{10})	Attainment
Fine Particulates ($PM^{2.5}$)	Attainment/Unclassified[2]
Carbon Monoxide (CO)	Attainment/Unclassified
Nitrogen Dioxide (NO_2)	Attainment/Unclassified[3]
Sulfur Dioxide (SO_2)	Attainment[4]
Lead	Attainment/Unclassified[5]

Notes:
1) On March 12, 2008, EPA adopted a new 8-hour ozone standard of 0.075 ppm. In April 2012, EPA designated the NCCAB attainment/unclassified based on 2009-2011 data.
2) This includes the 2006 24-hour standard of 35 $\mu g/m^3$ and the 2012 annual standard of 12 $\mu g/m^3$.
3) In 2012, EPA designated the entire state as attainment/unclassified for the 2010 NO_2 standard.
4) In June 2011, the ARB recommended to EPA that the entire state be designated as attainment for the 2010 primary SO_2 standard. Final designations to be addressed in future EPA actions.
5) On October 15, 2008 EPA substantially strengthened the national ambient air quality standard for lead by lowering the level of the primary standard from 1.5 $\mu g/m^3$ to 0.15 $\mu g/m^3$. Final designations were made by EPA in November 2011.

Source Monterey Bay Unified Air Pollution Control District, February 2015.

4. Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☒	☐

Discussion: The proposed recycled water project would not generate substantial pollutant concentrations. Emissions from construction activities represent temporary impacts that are typically short in duration. Impacts to sensitive receptors would be less than significant.

5. Create objectionable odors affecting a substantial number of people?	☐	☐	☒	☐

Discussion: California ultralow sulfur diesel fuel with a maximum sulfur content of 15 ppm by weight would be used in all diesel-powered equipment, which minimizes emissions of sulfurous gases (sulfur dioxide, hydrogen sulfide, carbon disulfide, and carbonyl sulfide). Therefore, no objectionable odors are anticipated from construction activities associated with the proposed project, and no mitigation measures would be required. The proposed project would not create objectionable odors affecting a substantial number of people; therefore, impacts are expected to be less than significant.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

D. BIOLOGICAL RESOURCES

Would the project:

1. *Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Wildlife, or U.S. Fish and Wildlife Service?*	☐	☒	☐	☐

***Discussion*:**

Special-Status Wildlife Species

Based on a review of the USFWS and CNDDB lists, 53 special-status wildlife species were identified as having potential to occur in the project region. Following a survey of the habitats and characteristics within the site, 26 of these species were determined to have potential to occur within the project area due to the presence of suitable habitat (see Table 2). Special-status wildlife species with potential to occur in the project area include: California red-legged frog (CRLF, *Rana draytonii*); western pond turtle (*Emys marmorata*); 15 passerine bird and raptor species; one invertebrate species; Coho salmon (*Onchorhynchus kisutch*); steelhead (*Onchorhynchus mykiss*); four bat species; the San Francisco dusky-footed woodrat (*Neotoma fuscipes annectens*), and the western pond turtle (*Emys marmorata*). Although none of these special-status species were observed during the survey; suitable habitat for each is present within or adjacent to the project area. All significant impacts to special-status species would be avoided through project design or through mitigation measures outlined in the discussion below.

California Red-legged Frog

The CRLF is listed as threatened under ESA and is a California species of special concern. The project area is located within the Santa Cruz 1 Critical Habitat Unit located in the northwest corner of Santa Cruz County (USFWS, 2010).

Historically, CRLF was common from Redding to Baja California, including the Sierra Nevada and Coast Ranges. Its current range is much reduced, and most remaining populations are found in central California along the coast, from Marin to Ventura Counties.

Non-breeding CRLF have been found in both aquatic and upland habitats. The majority of individuals prefer dense, shrubby or emergent vegetation, closely associated with deep (>0.7 meters) still, or slow moving water. However, some individuals use habitats that are removed from aquatic habitats, seeking cover in ground squirrel burrows, under boulders and logs and in non-native grasslands (Tatarian 2008). Upland refugia habitat includes areas

up to 90 meters from a stream corridor and includes natural features, such as boulders, rocks, trees, shrubs, and logs. Incised stream channels with portions narrower than 18-

Table 2: Potentially Occurring Special-Status Animal Species				
(Scientific Name) Common Name	Status USFWS/CDFW	Habitat Present/Absent	Occurrence Potential	Avoidance Yes/No
Amphibians				
(*Rana draytonii*) – California red-legged frog	FT/-	Present	High	Yes[1]
Birds				
(*Accipiter cooperi*) – Cooper's hawk	MB/SSC	Present	High	Yes[2]
(*Accipiter striatus*) Sharp-shinned hawk	MB	Present	High	Yes[2]
(*Agelaius tricolor*) – Tricolored blackbird	SC/MB/SSC	Absent	None	N/A
(*Adea alba*) – Great egret	MB/SSC	Present	High	Yes[2]
(*Ardea herodius*) – Great blue heron	MB/SSC	Present	High	Yes[2]
(*Athene cunicularia hypugea*) – Burrowing owl	SC, MB/SSC	Absent	None	N/A
(*Baeolophus inomatus*) – Oak titmouse	MB/SSC	Absent	None	N/A
(*Charadrius alexandrines nivosus*) – Western snowy plover	FT/-	Absent	None	N/A
(*Contopus borealis*) – Olive-sided flycatcher	MB/SSC	Present	High	Yes[2]
(*Cypseloides niger*) – Black swift	FSC/SSC	Absent	None	N/A
(*Dendroica petechia brewsteri*) – California yellow warbler	MB/SSC	Present	High	Yes[2]
(*Egretta thula*) – Snowy egret	MB/-	Present	High	Yes[2]
(*Elanus leucurus*) – White-tailed kite	MB/CFP	Present	High	Yes[2]
(*Empidonax difficilis*) – Pacific-slope flycatcher	SC, MB/SSC	Present	High	Yes[2]
(*Geothylpis trichas sinuosa*) – Saltmarsh common yellow throat	MB/SSC	Absent	None	N/A
(*Lanius ludovicianus*) – Loggerhead shrike	SC, MB/SSC	Absent	None	N/A
(*Pandion haliaetus*) - Osprey	-/SSC	Present	Moderate	Yes[2]
(*Riparia riparia*) – Bank swallow	MB/ST	Absent	None	N/A
(*Sayornis nigricans*) – Black phoebe	MB/-	Present	High	Yes[2]
(*Selasphorus rufus*) – Rufous hummingbird	SC, MB/-	Present	High	Yes[2]
(*Selasphorus sasin*) – Allen's hummingbird	SC, MB/-	Present	High	Yes[2]
(*Sturnella neglecta*) – Western meadowlark	MB/-	Present	High	Yes[2]
(*Tyto alba*) – Barn owl	MB/-	Present	High	Yes[2]
Fish				
(*Eucyclogobius newberryi*) – Tidewater goby	FE/SSC	Absent	None	N/A
(*Onchorhynchus kisutch*) - Coho salmon	FE/SE	Present	High	Yes[3]
(*Onchorhynchus mykiss*) - Steelhead	FT/-	Present	High	Yes[4]
Invertebrates				
(*Cicindela ohlone*) - Ohlone tiger beetle	FE/-	Absent	None	N/A
(*Cicindela hirticollis gravid*) – Sandy beach tiger beetle	-/-	Absent	None	N/A
(*Coelus globosus*) – Globose dune beetle	FSC	Absent	None	N/A
(*Danaus plexippus*) – Monarch butterfly	-/*	Present	High	Yes[3]
(*Fissilicreagris imperialis*) – Empire Cave pseudoscorpion	-/-	Absent	None	N/A
(*Lytta moesta*) – *Moestan blister beetle*	-/-	Absent	None	N/A
(*Meta dolloff*) – Dolloff cave spider	-/-	Absent	None	N/A
(*Stygobromus mackenziei*) – Mackenzie's cave amphipod	-/-	Absent	None	N/A
(*Tryonia imitator*) – Mimic tryonia	-/-	Absent	None	N/A
(*Trimerotropis infantilis*) - Zayante band-winged grasshopper	FE/-	Absent	None	N/A
Mammals				
(*Antrozous pallidus*) – Pallid bat	-/SSC	Absent	None	N/A
(*Corynorhinus townsendii*) – Townsend's big-eared bat	-/SSC	Absent	None	N/A
(*Dipodomys venustus venustus*) – Santa Cruz kangaroo rat	-/-	Absent	None	N/A
(*Mytotis thysanodes*) – Fringed myotis	-/SSC	Absent	None	N/A
(*Lasionycteris noctivagans*) – Silver haired bat	-/-	Present	Moderate	Yes[5]
(*Lasionycteris noctivagans*) – Western red bat	-/SSC	Present	High	N/A
(*Lasiurus cinereus*) – Hoary bat	-/-	Present	High	Yes[5]
(*Myotis californicus*) – California myotis	-/-	Absent	None	N/A

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
(*Myotis ciliolabrum*) – Small-footed myotis	-/-	Absent	None	N/A
(*Myotis evotis*) – Long-eared myotis	-/-	Present	High	Yes[5]
(*Myotis thysanodes*) – Fringed myotis	-/-	Present	High	Yes[5]
(*Myotis volans*) – Long-legged myotis	-/-	Present	High	Yes[5]
(*Myotis yumanensis*) – Yuma myotis	-/-	Absent	None	N/A
(*Neotoma fuscipes annectens*) – San Francisco dusky-footed woodrat	-/SSC	Present	High	Yes[6]
(*Taxidea taxus*) – American badger	-/SSC	Absent	None	N/A
Reptiles				
(*Emys marmorata*) – Western pond turtle	-/SSC	Present	Low	Yes[7]

Notes:

1) Impacts to the CRLF would be avoided through implementation of Mitigation Measures BIO-1 through BIO-16.
2) Impacts to migratory birds and raptors would be avoided through implementation of Mitigation Measure BIO-17.
3) No impacts to monarch roosting areas would occur.
4) No impacts to San Vicente Creek or other potential habitat would occur.
5) Impacts to roosting bats would be avoided through implementation of Mitigation Measure BIO-18.
6) Impacts to San Francisco dusky-footed woodrat would be avoided through implementation of Mitigation Measure BIO-19.
7) No impacts to potential habitat in San Vicente Creek or other ponded areas within the project area would occur.

Definitions:

U.S. Fish and Wildlife Service
FE = federally listed Endangered
FT = federally listed Threatened
FC = federal candidate for listing
MB = Migratory Bird Treaty Act

California Department of Fish and Wildlife
SE = State listed Endangered
ST = State listed Threatened
SSC = State Species of Special Concern

inches and depths greater than 18-inches may also provide habitat. In general, densely vegetated terrestrial areas within the riparian corridor provide important sheltering habitat during the winter flooding of the streams (Tatarian 2008). Along the coast, upland habitat is used throughout the year with animals making straight-line movements between water bodies regardless of the terrain (Bulger, et al.2003).

Impacts

The California red-legged frog is known to occur within the Cemex Cement Plant property, as well as creeks and drainages throughout the project area. Construction areas could potentially be used by CRLFs as upland habitat or during movements between ponds and drainages and creeks. Although there is some potential for impact to CRLFs during project construction, the potential would be considered low. Construction would be scheduled between the months of June and October during the summer and early fall to take advantage of dry weather. Although CRLFs are known to use upland habitat during summer months, they usually do so in response to rainfall. According to Bulger (2003), use of terrestrial habitats by non-migrating frogs showed a clear response to rainfall during the summer and early winter months. Frogs were virtually always less than 5 meters (16 feet) from their pond or stream of residence during dry intervals of the summer, but moved outward into upland habitats to distances of up to 130 meters (427 feet) in response to summer rain. Tatarian (2008) noted that all movements of frogs from their source pool began after the first 0.5 cm (0.20 inches) of rain during fall months (between September and November). Rainfall is infrequent during summer months in Santa Cruz County. Historical records for rainfall in Santa Cruz, California show an average of 0.19 inches for June between 1981 and 2010. For the same period, the average rainfall for the months of July, August, September, and October was 0.01, 0.04, 0.27, and 1.45 inches, respectively. Due to the low likelihood of rainfall during the proposed construction period, impacts to the CRLF

in terrestrial habitat areas are expected to be low.

Implementation of the avoidance and minimization measures identified below for CRLF, and the implementation of construction BMPs would avoid direct and indirect effects on CRLF and potential habitat that could occur within the project site and downstream from the construction area. Impacts would be considered less than significant with mitigation.

Mitigation Measures

Due to the low likelihood that a CRLF may be impacted in upland areas during construction of the pipeline and pond, the following measures shall be implemented to ensure avoidance of significant impacts. The following avoidance measures, based on those provided in the Programmatic Biological Opinion (USFWS 1999), will be implemented:

BIO-1 Ground disturbing construction activities will be limited to the dry season period from June 1 through September 30, to avoid potential red-legged frog dispersal events.

BIO-2 No less than 15 calendar days, prior to the onset of activities, the applicant shall submit the name (s) and credentials of biologists who could conduct the activities specified in the following measures to the County Planning Department for approval. A qualified biologist means any person who has completed at least four years of university training in wildlife biology or a related science and/or has demonstrated field experience in the identification and life history of the red-legged frog.

BIO-3 A pre-construction survey will be conducted immediately preceding any construction activity (including grading or equipment staging) that occurs in CRLF habitat. The qualified biologist will carefully search all obvious potential hiding spots for CRLF, such as large downed woody debris, the perimeter ephemeral drainage habitat, and the riparian corridor associated with streams and drainages. If no CRLF are observed, wildlife exclusion fencing will be erected around the project area to prevent CRLF from entering the site during construction. If CRLF are found within the project area, no construction will occur until the individual has travelled out of the construction area. If the frog will not exit the construction area voluntarily, the U.S. Fish and Wildlife shall be consulted prior to the start of construction. Exclusion fencing will not be erected until the project area is free of CRLF.

BIO-4 Before the onset of any construction activities, the project engineer and qualified biologist will identify locations for equipment, personnel access and materials staging other than those identified in the project description to minimize disturbance to potential terrestrial red-legged frog habitat.

BIO-5 Prior to the start of construction, a Service-approved biologist will train all construction personnel regarding habitat sensitivity, identification of special status species, and required practices before the start of construction. The training will include the general measures that are being implemented to conserve the species as they relate to the project, the penalties for non-compliance, and the boundaries of the project area. If new construction personnel are added to the project, the contractor will ensure that the personnel receive the mandatory training before starting work. A fact sheet or other supporting materials containing this information will be prepared and distributed to all construction personnel. Upon completion of training, construction personnel will sign a form stating that they attended the training and understand all the conservation and protection measures.

BIO-6 No project related activities will occur outside the exclusion fence.

BIO-7 Because dusk and dawn are often the times when CRLF are most actively foraging and dispersing, all construction activities will cease one-half hour before sunset and will not begin prior to one-half hour before sunrise.

BIO-8 A qualified biologist will be onsite during all ground-disturbance related activities (i.e., vegetation grubbing, excavation) to ensure compliance with these avoidance measures.

BIO-9 After ground disturbing activities are complete, the qualified biologist will train an individual to act as the on-site construction monitor. The construction monitor (i.e., Davenport County Sanitation District staff) will have attended the training described above under Mitigation Measure BIO-5. Both the qualified biologist and the construction monitor will have the authority to stop and/or redirect project activities to ensure protection of resources and compliance with all environmental permits and conditions of the project. The qualified biologist and construction monitor will complete a daily log summarizing activities and environmental compliance.

BIO-10 If a CRLF is encountered during project construction, the qualified biologist will issue a stop work order to allow the individual to voluntarily leave the construction area and is 50 feet away. The animal must leave of their own volition without harassment by people. If the CRLF does not voluntarily leave the construction area, the U.S. Fish and Wildlife Service shall be notified. No work shall occur until approval is give by the Service.

BIO-11 All vehicle parking will be restricted to previously determined staging areas or existing roads. Necessary vehicles belonging to the biological monitors and construction supervisors will be parked at the nearest point on existing access roads.

BIO-12 Rodent control will be permitted only in developed portions of the project area. Rodent control will not be implemented in any of the open space areas. The method of rodent control will comply with the methods of rodent control discussed in the 4(d) rule published in the final listing rule for the tiger salamander (USFWS 2004).

BIO-13 No canine or feline pets or firearms (except for Federal, State, or local law enforcement officers and security personnel) will be permitted in the work area to avoid harassment, killing, or injuring of red-legged frogs. Because the work area occurs in a rural setting, it is understood that canine or feline pets may be present in the vicinity of the work area that do not belong to the construction workers.

BIO-14 A litter control program will be instituted at the project site. All construction personnel will ensure that their food scraps, paper wrappers, food containers, cans, bottles, and other trash from the project area are deposited in covered or closed trash containers. The trash containers will be removed from the project area at the end of each working day.

BIO-15 The fueling and maintenance of vehicles and other equipment shall occur at least 20 meters (65 feet) from any riparian habitat or water body.

BIO-16 The contractor will be supplied a copy of the conditions of approval that detail the above listed avoidance and minimization measures prior to ground breaking.

Implementation of the above mitigation measure would prevent mortality to individual CRLF. No direct effects, such as loss of habitat or take of individuals, would occur from the proposed project.

Implementation of the above mitigation measures would avoid direct and indirect effects to CRLF. Impacts would be less than significant.

Migratory Birds and Raptors

Nesting Passerines

The following is a list of all migratory birds that could occur within the project area. These species are protected under the Federal Migratory Bird Treaty Act (MBTA) and California Fish and Game Code 3503.

Bewick's wren (*Thryomanes bewickii*), bushtit (*Psaltriparus minmus*), downy woodpecker (*Picoides pubescens*), plain titmouse (*Parus inornatus*), white-breasted nuthatch (*Sitta carolinensis*), black phoebe (*Sayornis nigricans*), western wood pewee (*Contopus sordidulus*), orange-crowned warbler (*Vermivora celata*), yellow-rumped warbler (*Dendroica coronata*), scrub jay (*Aphelocoma caeulescens*), California towhee (*Pipilo fuscus*), Anna's hummingbird (*Calypte anna*), rufous hummingbird (*Selasphorus rufus*), Allen's hummingbird (*Selasphorus sasin*), brown creeper (*Certhia americana*), American

robin (*Turdus migratorius*), Townsend's warbler (*Dendroica townsendi*), California yellow warbler (*Dendroica petechia brewsteri*), ruby-crowned kinglet (*Regulus calendula*), house finch (*Carpodacus mexicanus*), chestnut-backed chickadee (*Poecile rufescens*), red-shouldered hawk (*Buteo lineatus*), red-tailed hawk(*Buteo jamaicensis*), great horned owl (*Bubo virginianus*), Cooper's hawk (*Accipiter cooperi*), sharp-shinned hawk (*Accipiter striatus*), white-tailed kite (*Elanus leucurus*), Osprey (*Pandion haliaetus*), great egret (*Ardea alba*), snowy egret (*Egretta thula*), great blue heron (*Ardea herodius*), olive-sided flycatcher (*Contopus borealis*), Pacific-slope flycatcher (*Empidonax difficilis*), western meadowlark (*Sturnella neglecta*), and European starling (*Sturnus vulgaris*).

General Ecology and Distribution: As early as February, passerines begin courtship and once paired, they begin nest building, often around the beginning of March. Nest structures vary in shapes, sizes and composition and can include stick nests, mud nests, matted reeds and cavity nests. Depending on environmental conditions, young birds may fledge from the nest as early as May and, if the prey base is large, the adults may lay a second clutch of eggs.

Although no surveys were conducted for these species as part of this biological resource assessment, several passerine (perching birds) species may nest on the site in the various habitats, including, but not limited to, California towhee and song sparrows along the drainages and coastal scrub, as well as the coastal terrace prairie grasslands.

Raptors

Cooper's hawk (*Accipiter cooperii*), protected under the Federal Migratory Bird Treaty Act and California Fish and Game Code 3503.5, has the potential to occur within the project area.

Raptors nest in a variety of substrates including, cavities, ledges and stick nests. For example, Cooper's hawks are small bird hunters, hunting on the edges of forests and in broken forest where passerines forage for seeds and insects. In general, the breeding season for raptors occurs in late March through June, depending on the climate, with young fledging by early August.

Although, no surveys were conducted for these species as part of this biological resource assessment, suitable nesting trees occur along drainages and groves of trees within the proposed project.

Impacts

Disturbance during the nesting season may result in nest abandonment and mortality of young. Bird species not protected under CESA or FESA, such as some passerines (including mourning dove and scrub jays) are protected under the Fish and Game Code 3503 and the MBTA, and some raptors (including American kestrel) are protected under Fish and Game Code 3503.5 and the MBTA. Disturbance during the nesting season (February 1-August 15)

may result in the potential nest abandonment and mortality of young, which is considered a potentially significant impact.

No trees or shrubs are proposed for removal under the proposed project. However, if a tree or shrub is proposed for removal, the following mitigation measure shall be implemented.

Mitigation Measures

BIO-17 To comply with the MBTA, the following measures will be implemented:

- Mowing of grassland and/or the removal of trees and shrubs shall be conducted outside the nesting season, between August 16 and October 31. If removal of shrubs and trees and/or mowing of grassland to be impacted is not possible prior to the nesting season, the following measure shall be implemented.
- If the removal or disturbance to trees, shrubs, or grassland is proposed to occur between February 1 and August 15, a pre-construction nesting bird (both passerine and raptor) survey of the potential nesting habitat to be removed shall be performed by a qualified biologist within 7 days of the commencement of construction. If no nesting birds are observed no further action will be required and land clearing and grading shall occur within one week of the survey to prevent potential impacts to nesting birds subsequent to the preconstruction survey.
- If bird nests (either passerine and/or raptor) are observed during the pre-construction survey, a disturbance-free buffer zone shall be established around the nest tree(s) until the young have fledged, as determined by a qualified biologist.
- The radius of the required buffer zone can vary depending on the species, (i.e., 75-100 feet for passerines and 200-300 feet for raptors), with the dimensions of any required buffer zones to be determined by a qualified biologist in consultation with CDFW.
- To delineate the buffer zone around a nesting tree, orange construction fencing shall be placed at the specified radius from the base of the tree within which no machinery or workers shall intrude.
- After the fencing is in place there will be no restrictions on grading or construction activities outside the prescribed buffer zones.

With the implementation of the above mitigation measures, impacts would be less than significant.

CEQA-Plus Evaluation

Migratory Bird Treaty Act: Will the project affect migratory birds that are known, or

Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

have potential, to occur on-site, in the surrounding area, or in the service area?

☐ *No.*

☒ *Yes. Discuss the impacts (such as noise and vibration impacts, modification of habitat) to migratory birds that may be directly or indirectly affected by the project and mitigation measures to reduce or eliminate these impacts. Include a list of all migratory birds that could occur where the project is located:*

See complete discussion on Page 32 above under Migratory Birds and Raptors. Mitigation Measures BIO-17 would mitigate impacts to migratory birds to a less than significant level.

Roosting Bats

The western red bat (*Lasiurus blossevillii*) (California Species of Special Concern) and other tree roosting bats have potential to occur within the project area. Western red bats have a broad, but disjunct, distribution throughout the state, and a wide range of elevations. Reproductive females are more common in the inland portions of the state than the Bay Area, where males are more common during the summer months. An obligate tree-roosting species, western red bats roost in the foliage of primarily large-leaf trees, such as willows, cottonwoods, and sycamores, and are often found near riparian zones. Western red bats adults are solitary-roosting except during maternity season, when females give birth often to twins, and sometimes up to four young; this is atypical compared to other bat species.

Although no surveys or assessments of the trees were conducted for this analysis, there is a high likelihood that the grove of trees near the wastewater treatment plant on the Cemex Cement plant site provides suitable roosting habitat.

Impacts

Removal of trees or even trimming limbs containing suitable bat roosting habitat comprised of cavities, crevices, and/or exfoliating bark, may cause direct mortality of roosting bats if removed during maternity season prior to self-sufficient volancy of pups, or in winter during torpor or hibernation. Removal of larger mature trees has the potential of causing direct mortality of solitary tree-roosting species such as western red bat or hoary bat. The current proposal does not intend to remove or prune trees during project construction. However, if pruning of limbs or the removal of a tree is determined to be required during construction, the following mitigation measure shall be implemented.

Mitigation Measures

BIO-18 To prevent direct mortality of bats roosting in the trees on the project site, a bat habitat assessment must be conducted by a qualified bat biologist. Tree removal must only occur during seasonal periods of bat activity, between March 1, or when evening temperatures are above 45°F and rainfall less than one-half-inch in 24 hours occurs, and April 15, prior to parturition of pups. The next acceptable period

for tree removal with suitable roosting habitat is after pups become self-sufficiently volant – September 1 through about October 15, or prior to evening temperatures dropping below 45°F and onset of rainfall fretter than ½ inch in 24 hours.

With the implementation of the above mitigation measure, impacts would be less than significant.

San Francisco Dusky-footed Woodrat

The San Francisco dusky-footed woodrat (*Neotoma fuscipes annectens*), a California Species of Special Concern, has the potential to occur within the project area. This nocturnal species is active year round in forest habitats of moderate canopy and moderate to dense understory and in chaparral communities. Woodrats are, for the most part, generalist herbivores. They consume a wide variety of nuts and fruits, fungi, foliage and some forbs (CDFG 1998). Many species are good climbers and rock dwellers, and dusky-footed woodrats are highly arboreal (Kelly 1990). Evergreen or live oaks and other thick-leaved trees and shrubs are important habitat components for *N. fuscipes* (CDFG 1998). One individual can create 3 or more houses, building one in a week (up to 2.5 feet tall) (Tatarian pers. obs.). The reproductive season begins in February or March and breeding activity usually continues until July (CDFG 1998). Litter sizes range between 1-4.

Although no surveys or assessments of the trees were conducted for this analysis, there is a high likelihood that the grove of trees near the wastewater treatment plant on the Cemex Cement plant site provides suitable habitat, as well as the riparian drainages.

Impacts

There is potential for San Francisco dusky-footed woodrats to occur in the grove of trees adjacent to the wastewater treatment plant. Disturbance during the breeding season (March – August) may result in the potential nest abandonment and mortality of young, which is considered a "take" of an individual. Disturbance of trees around the wastewater treatment plant is not proposed. However, if disturbance is determined to be necessary, the following mitigation measure shall be implemented.

Mitigation Measures

BIO-19 Prior to construction, a qualified biologist shall conduct a survey for dusky-footed woodrat middens. A report shall be prepared for review and approval by the Planning Department that identifies the location of any middens that are observed. All middens found shall be avoided. Proper fencing shall be installed, giving as much room to the middens as necessary to avoid indirect impacts as determined by the project biologist.

With the implementation of the above mitigation measure, impacts would be less than significant.

Special-Status Plant Species

Federal and State Listed Plant Species

Review of the USFWS (USFWS 2012), the CDFW, and the CNDDB (CNDDB 2014) revealed that the federally listed endangered robust spineflower (*Chorizanthe robusta* var. *robusta*) and the federally listed threatened and state endangered Santa Cruz tarplant (*Holocarpha macradenia*) have potential to occur in the project area.

Robust spineflower is an annual herbaceous plant in the buckwheat family or Polygonaceae. It is a low growing plant with white flowers and prefers sandy or gravelly soils. It occurs in maritime chaparral, openings in cismontane woodland, coastal dunes and coastal scrub. It blooms from April to September. The potential for occurrence is considered to be low as most of the populations of robust spineflower have been extirpated and this plant is known from only six extended occurrences. The potential for this species to be found in the project area is low. Most occurrences have been extirpated. The nearest recorded occurrence is located in Pogonip.

Santa Cruz tarplant is an annual herbaceous plant in the sunflower family or Asteraceae. It grows from 1 to 5 decimeters tall with yellow flowers. The stems are notably stalked-glandular. It occurs in coastal prairie, coastal scrub and valley and foothill grassland communities often on clay or sandy soils. It blooms from June to October. The potential for this species to occur in the project area is very low to none.

Other Special Status Plant Species

A total of 15 additional special status plant species are considered to have a low potential to occur within the study area based on the presence of potential habitat (see Table 2 of Attachment 2). Six of the 15 species are California Native Plant Society (CNPS) ranked plant species with neither state nor federal status and have known occurrences in the vicinity of the study area, which increases the potential for those species to occur. These six species include San Francisco collinsia (*Collinsia multicolor;* CNPS Rank 1B), Kellogg's horkelia (*Horkelia cuneata* var. *sericea;* CNPS Rank 1B), Point Reyes horkelia (*Horkelia marinensis;* CNPS Rank 1B), marsh microseris (*Microseris paludosa;* CNPS Rank 1B), Choris' popcornflower (*Plagiobothrys chorisianus* var. *chorisianus;* CNPS Rank 1B), and Santa Cruz microseris (*Stebbisnoseris decipiens;* CNPS Rank 1B). Although individuals of Monterey pine (*Pinus radiata*) occur within the study area they are not considered to be special status, as only three native stands of Monterey pine are currently recognized by the CNDDB and CNPS.

Impacts

Table 3 below contains six plant species identified in the Biological Resource Assessment (Attachment 2) that have known occurrences in the study area, which increases the

potential for their occurrence. However, even these species have a low potential for occurrence in the project area due to lack of suitable habitat (see Table 3). None of the 17 special-status plant species listed in the California Natural Diversity Database (CNDDB) (see Table 2 of Attachment 2) are expected to occur within the project site due to decades of disturbance from intensive agricultural use (see Attachment 3 for historical photos of the site). It also appears that the site was covered in what appears to be cement kiln dust from the cement plant sometime between 1972 and 1979. The placement of such material would likely raise the pH level of the soil making it even more unlikely that the site is suitable for special-status plants to occur.

Table 3: Special-Status Plant Species with Known Occurrences in the Project Area

Species	Status	Habitat Affinities and Blooming Period	Occurrence Potential
San Francisco collinsia (*Collinsia multicolor*)	-/-/1B	Closed-cone coniferous forest, coastal scrub, sometimes on serpentine. Blooms March to May. Elevation 30-250m.	Low. There are three known occurrences close to the project area. However, project area has no serpentine soils, closed-cone coniferous forest, or coastal scrub habitat.
Kelloggi's horkelia (*Horkelia cuneata var. sericea*)	-/-/1B	Closed-cone coniferous forest, maritime chaparral, coastal dunes, coastal scrub on sandy or gravelly soils in openings. Blooms April to September. Elevation 10-200m.	Low. CNDDB recorded occurrence along Hwy 1 between Año Nuevo and Davenport at same location as *Agrostis blasdalei*. However, project area has no closed-cone coniferous forest, maritime chaparral, coastal dunes, or coastal scrub on sandy or gravelly soils in openings.
Point Reyes horkelia (*Horkelia marinensis*)	-/-/1B	Coastal dunes, coastal prairie, coastal scrub on sandy flats and dunes near coast. Blooms May to September. Elevation 5-350m.	Low. Known from Ben Lomond Mtn and Santa Cruz peninsula. However, project area has no coastal dunes, coastal prairie, or coastal scrub on sandy flats and dunes near coast.
Marsh microseris (*Microseris paludosa*)	-/-/1B	Closed-cone coniferous forest, cismontane woodland, coastal scrub, valley and foothill grassland. Blooms April to July. Elevation: 5-300m.	Low. Potential habitat present. One recorded occurrence from H-H Ranch between Hwy1 and Swanton Road, SE of Greyhound Rock. However, project area has no closed-cone coniferous forest, cismontane woodland, coastal scrub, valley and foothill grassland.
Choris' popcornflower (*Plagiobothrys chorisianus var. chorisianus*)	-/-/1B	Chaparral, coastal prairie, coastal scrub in mesic areas. Blooms March to June. Elevation: 15-160m.	Low. One known occurrence from SW end of Lasher Marsh between Hwy 1 and Swanton Rd. However, project area has no chaparral, coastal prairie, or coastal scrub in mesic areas.
Santa Cruz microseris (*Stebbinsoseris decipiens*)	-/-/1B	Broadleafed upland forest, closed-cone coniferous forest, chaparral, coastal prairie, coastal scrub, valley and foothill grassland in open areas, sometimes serpentinite. Blooms April to May. Elevation: 10-500m.	Low. Microhabitat in open areas in loose or disturbed soils, usually derived from sandstone, shale or serpentinite on seaward slopes. Four recorded occurrences in CNDDB located north of Davenport. However, project area does not contain serpentinite, and has no broadleafed upland forest, closed-cone coniferous forest, chaparral, coastal prairie, coastal scrub, or valley and foothill grassland in open areas.

Notes:
California Native Plant Society
Rank 1B: Plants rare and endangered in California and elsewhere.
Source: Wildlife Research Associates and Jane Valerius Environmental Consulting, 2014.

Impacts to special-status plant species are expected to be less than significant.

CEQA-Plus Evaluation

Federal Endangered Species Act, Section 7: Does the project involve any direct effects from construction activities, or indirect effects such as growth inducement that may affect federally listed threatened or endangered species that are known, or have a potential, to occur on-site, in the surrounding area, or in the service area?

☐ *No. Discuss why the project will not impact any federally listed special status species:*

☒ *Yes. Include information on federally listed species that could potentially be affected by this project and any proposed avoidance and compensation measure so that the State Water Board can initiate informal consultation with the applicable federally designated agency. Document any previous ESA consultations that may have occurred with the project.*

Discussion:

California Red-legged Frog (Rana draytonii)

The California red-legged frog is known to occur within the Cemex Cement Plant property, as well as creeks and drainages throughout the project area. Construction areas could potentially be used by CRLFs as upland habitat or during movements between ponds and drainages and creeks. Although there is some potential for impact to CRLFs during project construction, the potential would be considered low. Construction would be scheduled between the months of June and October during the summer and early fall to take advantage of dry weather. Although CRLFs are known to use upland habitat during summer months, they usually do so in response to rainfall. According to Bulger (2003), use of terrestrial habitats by non-migrating frogs showed a clear response to rainfall during the summer and early winter months. Frogs were virtually always less than 5 meters (16 feet) from their pond or stream of residence during dry intervals of the summer, but moved outward into upland habitats to distances of up to 130 meters (427 feet) in response to summer rain. Tatarian (2008) noted that all movements of frogs from their source pool began after the first 0.5 cm (0.20 inches) of rain during fall months (between September and November). Rainfall is infrequent during summer months in Santa Cruz County. Historical records for rainfall in Santa Cruz, California show an average of 0.19 inches for June between 1981 and 2010. For the same period, the average rainfall for the months of July, August, September, and October was 0.01, 0.04, 0.27, and 1.45 inches, respectively. Due to the low likelihood of rainfall during the proposed construction period, impacts to the CRLF in terrestrial habitat areas are expected to be low.

Implementation of the mitigation measures identified below for CRLF, and the implementation of construction BMPs would avoid direct and indirect effects on CRLF and

potential habitat that could occur within the project site and downstream from the construction area. Impacts would be considered less than significant with mitigation.

Due to the low likelihood that a CRLF may be impacted in upland areas during construction of the pipeline and pond, the following measures shall be implemented to ensure avoidance of significant impacts. The following avoidance measures, based on those provided in the Programmatic Biological Opinion (USFWS 1999), will be implemented:

See Mitigation Measures BIO-1 through BIO-16 on Page 30 for a complete description of required mitigation.

Implementation of the above mitigation measures would avoid direct and indirect effects to CRLF. Impacts would be less than significant.

Migratory Birds and Raptors

Disturbance during the nesting season may result in nest abandonment and mortality of young. Migratory bird species are protected under the Migratory Bird Treaty Act (MBTA). Disturbance during the nesting season (February 1-August 15) may result in the potential nest abandonment and mortality of young, which is considered a potentially significant impact. The proposed project is not proposing the removal of trees and shrubs on the project site. However, if a tree or shrub is proposed for removal, the following mitigation measure shall be implemented.

See Mitigation Measure BIO-17 on Page 34 for a complete description of required mitigation.

With the implementation of the above mitigation measures, impacts would be less than significant.

Coho Salmon (Oncorhynchus kisutch)

This area of the Pacific Ocean is identified as Critical Habitat for the Coho salmon. However, the proposed project would not impact the Pacific Ocean or Critical Habitat for the Coho salmon. Therefore, no impact would occur.

Steelhead (Oncorhynchus mykiss irideus)

Steelhead have been reported in San Vicente Creek (CDFW 2013). However, no encroachment or disturbance to San Vicente Creek is proposed. Therefore, no impact to steelhead would occur.

Special-status Plant Species

The federally listed endangered robust spineflower (*Chorizanthe robusta* var. *robusta*) and the federally listed threatened and state endangered Santa Cruz tarplant (*Holocarpha macradenia*) have potential to occur in the project area.

Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

The potential for robust spineflower to be found in the project area is low. Most occurrences have been extirpated. The nearest recorded occurrence is located in Pogonip. The potential for Santa Cruz tarplant to occur in the project area is very low to none.

These species have a low potential for occurrence in the proposed project area due to lack of suitable habitat. None of the 17 special-status plant species listed in the California Natural Diversity Database (CNDDB) (see Table 2 of Attachment 2) are expected to occur within the project site due to decades of disturbance from intensive agricultural use (see Attachment 3 for historical photos of the site). No impacts to special-status plants is expected to occur.

CEQA-Plus Evaluation

Magnuson-Stevens Fishery Conservation and Management Act, Essential Fish Habitat: Does the project involve any direct effects from construction activities, or indirect effects such as growth inducement that may adversely affect essential fish habitat?

☒ *No. Discuss why the project will not impact essential fish habitat:*

☐ *Yes. Provide information on essential fish habitat that could potentially be affected by this project and any proposed avoidance and compensation measures. Document any consultations with the National Marine Fisheries Service that may have occurred for the project. Include any comments below:*

The proposed project would not directly or indirectly impact any essential habitat for the Coho salmon. No impacts to San Vicente Creek, Agua Puera Creek or Stream 102 would occur.

2. *Have a substantial adverse effect on any riparian habitat or sensitive natural community identified in local or regional plans, policies, regulations (e.g., wetland, native grassland, special forests, intertidal zone, etc.) or by the California Department of Fish and Wildlife or U.S. Fish and Wildlife Service?*	☐	☒	☐	☐

***Discussion*:**

Wetlands and Waters

Wetlands and riparian habitat are considered sensitive by federal, state, and local agencies. These areas are regulated by the U.S. Army Corps of Engineers, State Regional Water Quality Control Board, California Department of Fish and Wildlife, California Coastal Commission, and the County of Santa Cruz.

The project area contains arroyo willow shrubland on the south side of Cement Plant Road. This habitat is dominated by arroyo willow (*Salix lasiolepis*), which is listed as a FACW plant in the 2014 Regional Wetland Plant List. A FACW species is considered to be a plant

that usually occurs in wetlands but also can occur in non-wetlands. This habitat has the potential to be under the jurisdiction of both the Army Corps of Engineers and the California Department of Fish and Wildlife.

Wetland areas within the agricultural areas could be classified as a freshwater marsh community as they support obligate wetland plants such as cattails (*Typha latifolia*) and watercress (*Nasturtium officinale*). Associated wetland plants include rushes (*Juncus* spp.), curly dock (*Rumex crispus*), and bristly ox-tongue. These wetland areas have been artificially created as a result of the construction of irrigation drainage ditches within the agricultural fields.

Trenching for the distribution pipelines connecting the treatment pond on the Cemex property with the proposed storage pond on the Coast Dairies property could potentially impact agricultural wetland ditches located both along the eastern edge of the Coast Dairy property and the willow shrubland located on the west side of Cement Plant Road across from the Coast Dairies property. However, these wetlands would be avoided by trenching for the distribution pipeline within Cement Plant Road. Agricultural wetland ditches located on the western side of Highway 1 could be avoided by trenching within the existing compacted agricultural road.

Non-native Grassland

Mapped non-native grassland in the coastal zone is considered sensitive according to the County of Santa Cruz General Plan and Local Coastal Program (Policy 5.1.2). The area within the Cemex property adjacent to the existing water treatment pond contains non-native grassland. Plant species

Plant species associated with this type include wild oats (Avena barbata, A. fatua), soft chess (*Bromus hordaeceus*), ripgut brome (*Bromus diandrus*), ryegrass (*Festuca perennis*), Mediterranean barley (*Hordeum marinum* ssp. *gussoneanum*), hare barley (*Hordeum murinum* ssp. *leporinum*), Harding grass (*Phalaris aquatica*), and velvet grass (*Holcus lanatus*). Non-native weedy forbs associated with type include English daisy (*Bellis perennis*), Italian thistle (*Carduus pycnocephalus*), bristly ox-tongue (*Helminthotheca echioides*), English plantain (*Plantago lanceolata*), wild radish (Raphanus sativus), and mallow (*Malva* sp.).

A review of historical aerial photos from the California Coastal Records Project of both the Cemex property and the Coast Dairies property within the project area revealed that the project area was intensively cultivated for decades before it was allowed to go fallow sometime in the late 1990s or early 2000s (California Coastal Records Project, 2014). The photos show that the Cemex property located immediately southeast of 1st Avenue, as well as the proposed storage pond location located to the northwest of 3rd Avenue, were maintained in a tilled condition for row crop production.

Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

Temporary impacts to approximately 100 linear feet of non-native grassland would occur during trenching for the placement of the water distribution line connecting the existing treatment pond with the proposed storage pond. Best management practices would be applied to the area during trenching and following construction. The site would be seeded with an appropriate native seed mix following construction (see best management practices under Section I-1).

Impacts

The proposed project would avoid impacts to wetland and riparian resources during construction of both the storage pond and the water distribution lines. Temporary impacts would occur to approximately 100 linear feet of mapped non-native grassland in the coastal zone. However, best management practices would be applied both during and after construction to ensure that no adverse impacts would occur.

Mitigation Measures

To ensure that no wetlands or riparian areas would be impacted, a formal delineation of wetlands and waters of the U.S., waters of the state, and coastal wetlands would be conducted prior to final project design. Mitigation Measure BIO-20 shall be implemented prior to final design to ensure avoidance. Impacts would be considered less than significance with the implementation of mitigation.

No significant impacts are anticipated to mapped non-native grassland in the coastal zone; and therefore, no mitigation measures are required.

3. *Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?*	☐	☐	☒	☐

Discussion: The following discussion has been summarized from the Biological Resource Assessment contained in Attachment 2. Three creek drainages occur within the project study area (Figure 2). San Vicente Creek occurs in the southernmost portion of the study area and crosses Highway 1 at the south end of Old Town and shows as a blue-line creek on the Davenport USGS quadrangle. San Vicente Creek has a well-developed and dense cover by willows and alders on the upstream side of Highway 1. This community type corresponds to the *Salix lasiolepis* shrubland alliance or arroyo willow thickets as described in The Manual of California Vegetation (Sawyer, et. al. 2009). The culvert under Highway 1 is made of concrete and was measured to be 12 feet high, 12 feet wide and 141 feet long (CDFW 2013).

The second drainage occurs in the central portion of the study area and in an unnamed drainage on the Davenport USGS quadrangle, but has been labeled as Stream 102 Intermittent (Figure 2). This drainage is located southeast of the Cemex Cement plant and in the upstream portion of the drainage within the study area boundary there is a large instream lake or pond, which is depicted on the Davenport USGS topographic quadrangle. This creek is culverted as it crosses Highway 1 where the upstream canopy cover for the drainage is mostly non-native Eucalyptus trees along with some non-native Monterey cypress (*Hesperocyparis macrocarpa*). The downstream portion of the drainage is covered by non-native weedy shrubs and vines including Himalayan blackberry (*Rubus armeniacus*) and German ivy (*Delairea odorata*). Although this drainage does not show up on the Davenport USGS topographic quadrangle as a blue-line drainage, it qualifies as a jurisdictional drainage based on connectivity to the Pacific Ocean.

The third drainage, Agua Puera Creek, is located in the northern portion of the study area, north of the Cemex plant and north of New Town (Figure 2). Vegetation along this drainage is mapped as ruderal riparian as it includes many non-native ruderal plants including Himalayan blackberry and German ivy as well as arroyo willow. This drainage shows as a blue-line drainage on the Davenport USGS quadrangle. It flows past an aquaculture facility directly into the Pacific Ocean.

Not shown on the Davenport Biological Map created by Santa Cruz County is a small drainage located on the west side of the entrance to the Cemex Cement plant, on the west side of Highway 1. It is a deeply incised drainage with non-native species including Himalayan blackberry (*Rubus armeniacus*) and German ivy (*Delairea odorata*).

Several ponds also occur within the project study area including the one along Stream 102 south of the Cemex plant, three ponds within the Cemex plant, and two ponds southwest of Highway 1 in the agricultural fields. At the time of the site visit the northernmost agricultural pond was dry and the one south of that was filled with water. The agricultural ponds are lined with cement and do not support any wetland vegetation. Access to the ponds within the Cemex plant was not available at the time of the field survey.

Several wetland areas are associated with drainage ditches within the agricultural fields as shown on Figure 2. These drainage ditches had standing water at the time of the field survey and support obligate wetland plants such as cattails (*Typha* spp.) and watercress (*Nasturium officinale*) along with other wetland plants including rushes (*Juncus* spp.), curly dock (*Rumex crispus*) and bristly ox-tongue (*Helminthotheca echioides*).

All of the creeks within the study area qualify as jurisdictional waters of the U.S. as defined by the U.S. Army Corps (Corps). The bed, bank and riparian vegetation along the creeks would be under the jurisdiction of the California Department of Fish and Wildlife (CDFW), Regional Water Quality Control Board (RWQCB) and the California Coastal Commission

(CCC). Ponds that are constructed as in-stream ponds are considered to be jurisdictional by the Corps and by the state agencies. The two agricultural ponds because they are constructed ponds lined with cement and lack any wetland vegetation likely do not qualify as jurisdictional waters. The irrigation ditches and associated wetlands would be considered jurisdictional by the Corps, RWQCB, CDFW and CCC. The CCC requires a 100-foot setback from any wetlands within their jurisdiction and Santa Cruz County has setbacks for riparian areas and wetlands (Santa Cruz County General Plan Chapter 5 dated 12/6/94). The project would also be required to be consistent with the County of Santa Cruz Riparian Corridor and Wetlands Protection Ordinance (Section 16.30 of the County Code).

Impacts

The proposed project would avoid impacts to wetland and riparian resources during construction of both the storage pond and the water distribution lines. To ensure that no wetlands or riparian areas would be impacted, a formal delineation of wetlands and waters of the U.S., waters of the state, and coastal wetlands would be conducted prior to final project design. Mitigation Measure BIO-20 shall be implemented prior to final design to ensure avoidance. Impacts would be considered less than significance with the implementation of mitigation.

Mitigation Measures

BIO-20 A formal jurisdictional delineation of wetlands and waters of the U.S. shall be conducted within project area stream crossings and ditches prior to implementation of the project. The project will be designed to avoid impacts to all jurisdictional areas. The proposed project will comply with the Santa Cruz County General Plan Chapter 5 Objective 5.2 and Section 16.30 of the County Code which covers Riparian Corridors and Wetlands.

CEQA-Plus Evaluation

Protection of Wetlands – Executive Order Number 11990: Does any portion of the project area contain areas that should be evaluated for wetland delineation or require a permit from the U.S. Army Corps of Engineers?

☐ *No. Provide the basis for such a determination:*

☒ *Yes. Describe the impacts to wetlands, potential wetland areas, and other surface waters, and the avoidance, minimizations, and mitigation measures to reduce such impacts. Provide the status of the permit and information on permit requirements:*

Discussion: The proposed project would avoid impacts to wetland and riparian resources during construction of both the storage pond and the water distribution lines (see discussions under D-2 and D-3). To ensure that no wetlands or riparian areas would be impacted, a formal delineation of wetlands and waters of the U.S., waters of the state, and

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

coastal wetlands would be conducted prior to final project design. Mitigation Measure BIO-20 shall be implemented prior to final design to ensure avoidance.

4	*Interfere substantially with the movement of any native resident or migratory fish or wildlife species or migratory wildlife corridors, or impede the use of native wildlife nursery sites?*	☐	☒	☐	☐

Discussion: See discussion D-1 above. Impacts from project implementation would be mitigated to a less than significant level.

5.	*Conflict with any local policies or ordinances protecting biological resources (such as the Sensitive Habitat Ordinance, Riparian and Wetland Protection Ordinance, and the Significant Tree Protection Ordinance)?*	☐	☒	☐	☐

Discussion: See discussions D-1 and D-2 above. Impacts from project implementation would be less than significant with mitigation incorporated.

6.	*Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan?*	☐	☐	☐	☒

Discussion: The proposed project would not conflict with the provisions of any adopted Habitat Conservation Plan Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan. Therefore, no impact would occur.

7.	*Produce nighttime lighting that would substantially illuminate wildlife habitats?*	☐	☐	☐	☒

Discussion: All construction would be completed during daylight hours. No nighttime lighting impacts from project implementation would occur. No impacts are anticipated.

E. CULTURAL RESOURCES

Would the project:

1.	*Cause a substantial adverse change in the significance of a historical resource as defined in CEQA Guidelines Section 15064.5?*	☐	☒	☐	☐

Discussion: The old town of Davenport is recorded as historic site P-44-379. Portions of two other recorded historic resources, Highway 1, P-44-406, and the Southern Pacific

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

Railroad Tracks, P-44-377, run through the project area. The existing wastewater treatment plant is located within the recorded boundaries of the historic Santa Cruz Portland Cement Plan, site P-44-376. No evidence of potentially significant Historic Period resources was seen in the soil during any port of the surface survey. Nevertheless, potentially significant historic materials or features could be encountered during project construction, especially near the listed historic structures in the town of Davenport. The proposed project impacts under existing pavements would not directly affect the "integrity of setting" or the "integrity of feeling" of the historic structures within the historic Town of Davenport.

Please see the discussion under E-2 below. Impacts would be considered less than significant with implementation of Mitigation Measure CUL-1.

2. Cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5?	☐	☒	☐	☐

Discussion: A Phase 1 Archaeological Survey was prepared by Archaeological Consulting for the Recycled Water Feasibility Study, dated April 11, 2014 (Attachment 4). A revised survey and report was prepared by Archaeological Consulting dated December 4, 2014, that addresses the Coast Dairies & Land Co. parcel for the proposed storage pond location (Attachment 4). Based upon the background research, the Native American consultation and the field reconnaissance, the report concluded that there is no surface evidence of significant prehistoric or historic archaeological resources within the proposed project impact areas for pipelines, disposal areas, jack and bore highway crossings and storage ponds, including the additional expanded storage area north of new town. The several archaeological and historic resources recorded in the general project area are not located directly within the proposed impact areas.

Nevertheless, potentially significant historic materials or features could be encountered during this project, especially near the listed historic structures in the town of Davenport. The proposed project impacts under existing pavements would not directly affect the "integrity of setting" or the "integrity of feeling" of the historic structures within the historic Town of Davenport.

Because of the possibility of unidentified (e.g., buried) cultural resources being found during any construction involving earth disturbance, we recommend that the following standard language, or the equivalent, be included in any permits issued within the project area:

CUL-1 All ground disturbing activity in the project area shall be monitored by a qualified archaeologist in the event a substantial intact deposit is found within the property. Pursuant to Section 16.40.040 of the Santa Cruz County Code, if archaeological resources are uncovered during construction, the responsible persons shall

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

immediately cease and desist from all further site excavation and comply with the notification procedures given in County Code Chapter 16.40.040.

With implementation of the above mitigation measures, impacts to cultural resources would be less than significant.

CEQA-Plus Evaluation

National Historic Preservation Act, Section 106: Identify the Area of Potential Effects (APE, including construction, staging areas, and depth of any excavation. (Note that the APE is three dimensional and includes all areas that may be affected by the project, including the surface area and extending below ground to the depth of any project excavations.)

Discussion: Map 1 and Figure 1 of Attachment 4 shows the Area of Potential Effects (APE). The APE includes all construction and staging areas. The proposed storage pond (Coast Dairies Agricultural Parcel Two; formerly APN 058-022-11) would be constructed immediately northwest of New Town Davenport (Figure 2). This pond would be constructed by removing vegetation and topsoil, excavating to a depth of about 8 feet, and constructing a perimeter levee from the excavated material to create a 2-acre pond with a usable water depth of 12 feet. The pond would be lined with a synthetic liner.

A pump station would be constructed adjacent to the pond consisting of 2 pumps located on a concrete slab at grade next to the pond. Electricity for the pump station would require a new power pole location off of Cement Plant Road to provide electricity to the pump station. The pumps would deliver water from the new storage pond to the recycled water distribution piping. The area around the pond would likely be used as the staging area for all of the construction for this project.

The distribution line to be installed along Cement Plant Road would be constructed in trenches within the concrete road. A trench 3 feet deep by 2 feet wide would be required to install the pipeline. Some of the excavated material would be removed to make room for the pipe and imported bedding material. Pipes within or crossing Cement Plant Road would require saw cutting through the cement to create a 2-foot wide trench, and then the concrete would be repaired after installing the pipe.

Please see the discussions under E-2 above and E-3 below for a complete discussion of project impacts and mitigation measures as they relate to the National Historic Preservation Act, Section 106.

With implementation of mitigation measures CUL-1 and CUL-2, impacts to cultural resources would be less than significant.

3.	*Disturb any human remains, including those interred outside of formal*	☐	☒	☐	☐

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

cemeteries?

Discussion: No human remains are expected to occur within the project area. However, because of the possibility of unidentified (e.g., buried) human remains being found during any construction involving earth disturbance, the following condition shall be required.

CUL-2 Pursuant to Section 16.40.040 of the Santa Cruz County Code, if at any time during site preparation, excavation, or other ground disturbance associated with this project, human remains are discovered, the responsible persons shall immediately cease and desist from all further site excavation and notify the sheriff-coroner and the Planning Director. If the coroner determines that the remains are not of recent origin, a full archeological report shall be prepared and representatives of the local Native California Indian group shall be contacted. Disturbance shall not resume until the significance of the archeological resource is determined and appropriate mitigations to preserve the resource on the site are established.

4. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	☐	☒

Discussion: No unique paleontological resources or unique geologic features are known to occur in the vicinity of the proposed project. No impacts are anticipated.

F. GEOLOGY AND SOILS

Would the project:

1. Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
A. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	☐	☐	☒	☐
B. Strong seismic ground shaking?	☐	☐	☒	☐

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
C. Seismic-related ground failure, including liquefaction?	☐	☐	☒	☐
D. Landslides?	☐	☐	☒	☐

***Discussion (A through D)*:** The project site is located outside of the limits of the State Alquist-Priolo Special Studies Zone (County of Santa Cruz GIS Mapping, California Division of Mines and Geology, 2001).

The project area is located approximately 8.75 miles southwest of the San Andreas fault zone, and approximately 2 miles northeast of the San Gregorio fault zone (San Gregorio section).

While the San Andreas fault is larger and considered more active, each fault is capable of generating moderate to severe ground shaking from a major earthquake. Consequently, large earthquakes can be expected in the future. The October 17, 1989 Loma Prieta earthquake (magnitude 7.1) was the second largest earthquake in central California history.

The project area does not cross or come within an Alquist-Priolo Special Studies zone, thus indicating the site is not very close to any known active faults(s) and the lack of observed historical faulting in the site vicinity. Therefore, the potential for fault rupture at the site is considered to be low.

No active landslides are know not occur in the project area. The risk of liquefaction at the site is expected to be relatively low with the exception of areas along San Vicente Creek, to the north of Highway 1 where it is considered to be high. However, no structures are being proposed in areas of high risk.

With implementation of the proposed project design, impacts associated with earthquakes, seismic shaking and liquefaction are considered to be less than significant.

2. Be located on a geologic unit or soil that is unstable, or that would become unstable as a result of the project, and potentially result in on- or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse?	☐	☐	☒	☐

***Discussion*:** See response to A-1 above. Following a review of mapped information and a field visit to the site, there is no indication that the development site is subject to a significant potential for damage caused by any of these hazards. Impacts would be less than significant.

3. Develop land with a slope exceeding	☐	☐	☒	☐

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

30%?

Discussion: The project is not expected to impact slopes in excess of 30 percent slopes. Impacts would be considered less than significant.

4. Result in substantial soil erosion or the loss of topsoil?	☐	☐	☒	☐

Discussion: See discussion under A-1 above. Best management practices would be implemented during construction. No in-water work would be required. However, all construction would be completed during the dry season (between June 1 and October 15). Impacts from soil erosion or loss of topsoil would be considered less than significant.

5. Be located on expansive soil, as defined in Section 1802.3.2 of the California Building Code (2007), creating substantial risks to life or property?	☐	☐	☒	☐

Discussion: Watsonville Loam, an expansive soil, is known to occur in the northwest portion of the project area. No structures are proposed within the area of expansive soils. Impacts are expected to be less than significant.

6. Have soils incapable of adequately supporting the use of septic tanks, leach fields, or alternative waste water disposal systems where sewers are not available for the disposal of waste water?	☐	☐	☒	☐

Discussion: The project proposes to develop recycled wastewater infrastructure to treat wastewater for potential agricultural and industrial use in the town of Davenport, and along State Route 1. No septic tanks are leach fields are proposed. Impacts would be less than significant.

7. Result in coastal cliff erosion?	☐	☐	☐	☒

Discussion: The proposed project is not located in the vicinity of a coastal cliff or bluff; and therefore, would not contribute to coastal cliff erosion. No impact is anticipated.

G. GREENHOUSE GAS EMISSIONS

Would the project:

1. Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	☐	☐	☒	☐

Discussion: The proposed project, like all development, would be responsible for an

Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

incremental increase in green house gas emissions by usage of fossil fuels during the site grading and construction. Santa Cruz County has recently adopted a Climate Action Strategy (CAS) intended to establish specific emission reduction goals and necessary actions to reduce greenhouse gas levels to pre-1990 levels as required under AB 32 legislation. The strategy intends to reduce greenhouse gas emissions and energy consumption by implementing measures such as reducing vehicle miles traveled through the County and regional long range planning efforts and increasing energy efficiency in new and existing buildings and facilities. All project construction equipment would be required to comply with the Regional Air Quality Control Board emissions requirements for construction equipment. As a result, impacts associated with the temporary increase in green house gas emissions are expected to be less than significant.

2.	*Conflict with an applicable plan, policy or regulation adopted for the purpose of reducing the emissions of greenhouse gases?*	☐	☐	☐	☒

Discussion: See the discussion under G-1 above. No significant impacts are anticipated.

H. HAZARDS AND HAZARDOUS MATERIALS

Would the project:

1.	*Create a significant hazard to the public or the environment as a result of the routine transport, use or disposal of hazardous materials?*	☐	☐	☒	☐

Discussion: The proposed recycled water project would not create a significant hazard to the public or the environment. No routine transport or disposal of hazardous materials is proposed. However, during construction, fuel would be used within the project area. In addition, fueling may occur within the limits of designated staging areas proposed to be located adjacent to work areas. All staging area locations would be approved by the County. All staging areas would be located within paved areas located at least 300 feet away from a waters of the state, waters of the U.S., or jurisdictional wetland. Best management practices would be used to ensure that no impacts would occur. Impacts would be considered less than significant.

2.	*Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?*	☐	☐	☒	☐

Discussion: Please see discussion under H-1 above. Project impacts would be considered

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

less than significant with the incorporation of best management practices.

3. *Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?*	☐	☐	☒	☐

Discussion: Although the Pacific Elementary School is located at 50 Ocean Street, in Davenport, CA 95017, within the project study area, it is located approximately one-half mile south of the project construction area. Therefore, impacts would be less than significant.

4. *Be located on a site which is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?*	☐	☐	☒	☐

Discussion: The following discussion summarizes the conclusions contained in the Phase 1 and Limited Phase II Environmental Site Assessment for the Cemex Property, prepared by RRM, Inc. dated February 29, 2012 (Attachment 5). The Phase 1 Environmental Site Assessment identifies several environmental concerns within the Cemex property. These include the following:

- *Coal Pile* – The coal pile is located on the north side of the property several hundred feet to the east and north of the proposed excavation areas. This site includes minor concentrations of petroleum hydrocarbons and elevated pH with elevated lead concentrations in the groundwater;
- *Iron Ore and Slag Storage* – The iron ore and slag storage is located on the north side of the property immediately east of the coal pile. See the discussion under Coal Pile for a description of environmental issues.
- *Diesel Storage, Rock Storage Area* – This area is located adjacent to the rock storage area in the central portion of the Cemex site approximately 1,500 feet southeast of the proposed treatment pond site and approximately 700 feet east of the proposed distribution line. Several diesel fuel spills have occurred at this site since 1998. The last release in 2008 is still an active case with the County of Santa Cruz Environmental Health Services.
- *Machine Shop* – The machine shop is located in the central portion of the industrial buildings approximately 250 feet north of the proposed distribution line alignment along Cement Plan Road. The site includes a variety of solvents including

Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

tetrachlorethene (PCE), acetone, and methyl ethyl ketone (MEK). However, all compounds detected were below applicable screening levels.

- *Active Landfill and CKD Pile* – This site is located approximately 700 feet northeast of the proposed treatment pond in the northern portion of the Cemex site. This area contains cement kiln dust which requires a proper closure plan to be approved by the Regional Water Quality Control Board. A final plan has yet to be approved.
- *Storm Water and Surface Water Collection and Treatment* – Surface water and storm water runoff from the Cemex site is currently regulated under a National Pollution Discharge Elimination System (NPDES) permit. The site is required to monitor for discharge volumes and pH. The pH tends to exceed discharge requirements. A pH treatment system consisting of carbon dioxide injection tube within a concrete basin operates continuously.

Two other sites have also been identified on the Santa Cruz County Site Mitigation List, dated July 3, 2014. The first site is located at 500 Highway 1, in Davenport. The site of Arro's Arco contained gasoline contamination likely from leaking underground storage tanks. The case was closed by the County of Santa Cruz Environmental Health Services on September 28, 1992. The second site in the project vicinity was the Ocean View Gas Station located at 490 Highway 1 in Davenport. This site contained two underground storage tanks and one waste oil tank that were removed in 1990 along with 55 to 70 cubic yards of soil. The case was closed on July 19, 2012 by the County of Santa Cruz Department of Environmental Health Services.

Impacts

The project proposes to excavate for the construction of a new storage pond and pump station, and for the trenching necessary for the installation of new distribution lines. Figure 2 shows the location of the proposed new storage pond and distribution lines. Based on the results of the Phase I Environmental Site Assessment, it is unlikely that hazardous materials would be encountered during excavation of the storage pond and during trenching for the distribution lines. As a result, impacts are expected to be less than significant. Therefore, no mitigation measures are required.

5.	*For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project result in a safety hazard for people residing or working in the project area?*	☐	☐	☐	☒

Discussion: The project is not located within two miles of a public airport. No impact is anticipated.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
6. *For a project within the vicinity of a private airstrip, would the project result in a safety hazard for people residing or working in the project area?*	☐	☐	☐	☒

Discussion: The project is not located within two miles of a private airstrip. The nearest private airstrip (Bonny Doon Village Airport) is located in Bonny Doon approximately 5 miles to the northeast of the project area. No impact is anticipated.

7. *Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?*	☐	☐	☐	☒

Discussion: The proposed project would not conflict with implementation of the County of Santa Cruz Local Hazard Mitigation Plan 2010-2015 (County of Santa Cruz, 2010). Therefore, no impacts to an adopted emergency response plan or evacuation Plan would occur from project implementation.

8. *Expose people or structures to a significant risk of loss, injury or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?*	☐	☐	☐	☒

Discussion: No impact is anticipated. The construction of a water recycling project involving a storage pond and distribution lines would not expose people or structures to an increased risk involving wildland fires. No adverse impact is anticipated.

I. HYDROLOGY, WATER SUPPLY, AND WATER QUALITY

Would the project:

1. *Violate any water quality standards or waste discharge requirements?*	☐	☐	☒	☐

Discussion: The County and/or their construction contractor would ensure the construction specifications include the following water quality protection and erosion and sediment control best management practices (BMPs), based on standard County requirements to minimize construction-related contaminants and mobilization of sediment to San Vicente Creek, Agua Puera Creek, Stream 102, and the Pacific Ocean.

The BMPs would be selected to achieve maximum sediment removal and represent the best available technology that is economically achievable and are subject to review and approval by the County. The County would perform routine inspections of the construction area to verify the BMPs are properly implemented and maintained. The County would notify

Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

contractors immediately if there is a noncompliance issue and would require compliance.

Although no earthwork would occur within 300 feet of a creek, the following BMPs have been provided, but are not limited to, the following.

- All earthwork activities within 300 feet of a creek would occur in the dry season (generally between June 1 and October 15).
- Equipment used in and around drainages would be in good working order and free of dripping or leaking engine fluids. All vehicle maintenance would be performed at least 300 feet from all drainages. Any necessary equipment washing would be carried out where the water cannot flow into drainages.
- Develop a hazardous material spill prevention control and countermeasure plan before construction begins that would minimize the potential for and the effects of hazardous or toxic substances spills during construction. The plan would include storage and containment procedures to prevent and respond to spills and would identify the parties responsible for monitoring the spill response. During construction, any spills would be cleaned up immediately according to the spill prevention and countermeasure plan. The County would review and approve the contractors' toxic materials spill prevention control and countermeasure plan before allowing construction to begin. Prohibit the following types of materials from being rinsed or washed into the streets, shoulder areas, or gutters: concrete; solvents and adhesives; thinners; paints; fuels; sawdust; dirt; gasoline; asphalt and concrete saw slurry; heavily chlorinated water.
- Any surplus concrete rubble, asphalt, or other rubble from construction would be taken to a local landfill.
- An erosion and sediment control plan would be prepared and implemented for the proposed project. It would include the following provisions and protocols. The SWPPP for the project would detail the applications and type of measures and the allowable exposure of unprotected soils.
    - Temporary erosion control measures, such as sandbagged silt fences, would be applied where grading and trenching are proposed outside of paved areas, and would be removed after the working area is stabilized or as directed by the engineer. Soil exposure would be minimized through use of temporary BMPs, groundcover, and stabilization measures. Exposed dust-producing surfaces would be sprinkled daily, if necessary, until wet; this measure would be controlled to avoid producing runoff. Paved streets would be swept daily following construction activities.
    - The contractor would conduct periodic maintenance of erosion and sediment

Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

control measures.

- An appropriate seed mix of native species would be planted on disturbed areas upon completion of construction.
- Cover or apply nontoxic soil stabilizers to inactive construction areas (previously graded areas inactive for 10 days or more) that could contribute sediment to waterways.
- Enclose and cover exposed stockpiles of dirt or other loose, granular construction materials that could contribute sediment to waterways. Material stockpiles would be located in non-traffic areas only. Side slopes would not be steeper than 2:1. All stockpile areas would be surrounded by a filter fabric fence and interceptor dike.
- Contain soil and filter runoff from disturbed areas by berms, vegetated filters, silt fencing, straw wattle, plastic sheeting, catch basins, or other means necessary to prevent the escape of sediment from the disturbed area.
- Use other temporary erosion control measures (such as silt fences, staked straw bales/wattles, silt/sediment basins and traps, check dams, geofabric, sandbag dikes, and temporary re-vegetation or other ground cover) to control erosion from disturbed areas as necessary.
- Avoid earth or organic material from being deposited or placed where it may be directly carried into the channel.

Implementation of the above BMPs would ensure that adverse water quality impacts to San Vicente Creek, Agua Puera Creek, Stream 102, and the Pacific Ocean are avoided. Impacts would be less than significant.

2. *Substantially deplete groundwater supplies or interfere substantially with groundwater recharge such that there would be a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level which would not support existing land uses or planned uses for which permits have been granted)?*	☐	☐	☐	☒

Discussion: The proposed recycled water project would reduce the demand for groundwater by providing reclaimed water for irrigation, thereby assisting with groundwater recharge. Reclaimed water would be used for irrigation rather than other surface or groundwater sources. Therefore, no impact to groundwater resources would

Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

occur from project implementation.

CEQA-Plus Evaluation

Safe Drinking Water Act, Sole Source Aquifer Protection: Is the project located in an area designated by the United States Environmental Protection Agency, Region 9, as a Sole Source Aquifer?

☒ No. The project is not within the boundaries of a sole source aquifer.

☐ Yes. Contact USEPA, Region 9 staff to consult, and identify the sole source aquifer (e.g., Santa Margarita Aquifer, Scott's Valley, the Fresno County Aquifer, the Campo/Cottonwood Creek Aquifer or the Ocotillo-Coyote Wells Aquifer) that will be impacted:

3.	*Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner which would result in substantial erosion or siltation on- or off-site?*	☐	☐	☒	☐

Discussion: The proposed project would not result in ground disturbance adjacent to Stream 102, Agua Puera Creek, or San Vicente Creek, but has potential to generate water quality impacts during construction. However, the proposed project would be consistent with County Code Section 7.79.070, which states, "No person shall make any unpermitted alterations to drainage patterns or modifications to the storm drain system or any channel that is part of receiving waters of the county. No person shall deposit fill, debris, or other material in the storm drain system, a drainage channel, or on the banks of a drainage channel where it might enter the storm drain system or receiving waters and divert or impede flow." An erosion control plan would also be required per Section 16.22.060 of the County Code. See discussion I-5 below for a list of best management practices. Impacts would be less than significant.

4.	*Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner which would result in flooding, on- or off-site?*	☐	☐	☒	☐

Discussion: The proposed project alignment is not located near area watercourses (San Vicente Creek, Agua Puera Creek, and Stream 102); and therefore, would not alter the existing overall drainage pattern of the site. Impacts from project construction would be

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

less than significant.

5. *Create or contribute runoff water which would exceed the capacity of existing or planned storm water drainage systems, or provide substantial additional sources of polluted runoff?*	☐	☐	☒	☐

Discussion: The proposed recycled water project would not create or contribute to additional runoff water. Some additional sources of polluted runoff could occur during project construction. See discussion under I-1 above. Impacts would be less than significant.

6. *Otherwise substantially degrade water quality?*	☐	☐	☒	☐

Discussion: Please see discussion under I-1 above. Impacts would be considered less than significant.

7. *Place housing within a 100-year flood hazard area as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?*	☐	☐	☐	☒

Discussion: The Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps identify flood zones and areas that are susceptible to 100-year and 500-year floods. The proposed project site is not located within a FEMA 100-year or 500-year flood zone (see Figure 3; FEMA 2012). Therefore, the project would not place housing or any development within a 100-year flood hazard area and there would be no impact.

8. *Place within a 100-year flood hazard area structures which would impede or redirect flood flows?*	☐	☐	☐	☒

Discussion: See discussion under B-1 above. The proposed recycled water project would not impede or redirect flood flows within a 100-year flood hazard area. Therefore, no impact is anticipated.

CEQA-Plus Evaluation

Flood Plain Management – Executive Order Number 11988: Is any portion of the project site located within a 100-year floodplain as depicted on a floodplain map or otherwise designated by the Federal Emergency Management Agency?

☒ No. Provide a description of the project location with respect to streams and potential

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

floodplains:

☐ Yes. Describe the floodplain, and include a floodplain map and a floodplains/wetlands assessment. Describe any measures and/or project design modifications that would minimize or avoid flood damage by the project:

***Discussion*:** Three creek drainages occur within the study area (Figure 2). San Vicente Creek occurs in the southernmost portion of the study area and crosses Highway 1 at the south end of Old Town and shows as a blue-line creek on the Davenport USGS quadrangle. The second drainage occurs in the central portion of the study area and in an unnamed drainage on the Davenport USGS quadrangle, but on the Davenport Biological Map created by Santa Cruz County, this drainage is labeled as Stream 102 Intermittent. The third drainage, Agua Puera Creek, is located in the northern portion of the study area, north of the Cemex plant and north of New Town. Although San Vicente Creek is within the FEMA-designated 100-year floodplain area, none of the project impact area is contained within FEMA-designated 100-year floodplain (see Figure 3). No impact is anticipated.

9. Expose people or structures to a significant risk of loss, injury or death involving flooding, including flooding as a result of the failure of a levee or dam?	☐	☐	☐	☒

Discussion: The proposed project would not increase the risk of flooding and would not lead to the failure of a levee or dam. No impact would occur.

10. Inundation by seiche, tsunami, or mudflow?	☐	☐	☒	☐

***Discussion*:** There are two primary types of tsunami vulnerability in Santa Cruz County. The first is a teletsunami or distant source tsunami from elsewhere in the Pacific Ocean. This type of tsunami is capable of causing significant destruction in Santa Cruz County. However, this type of tsunami would usually allow time for the Tsunami Warning System for the Pacific Ocean to warn threatened coastal areas in time for evacuation (County of Santa Cruz 2010).

The more vulnerable risk to the County of Santa Cruz is a tsunami generated as the result of an earthquake along one of the many earthquake faults in the region. Even a moderate earthquake could cause a local source tsunami from submarine landsliding in Monterey Bay. A local source tsunami generated by an earthquake on any of the faults affecting Santa Cruz County would arrive just minutes after the initial shock. The lack of warning time from such a nearby event would result in higher causalities than if it were a distant tsunami (County of Santa Cruz 2010).

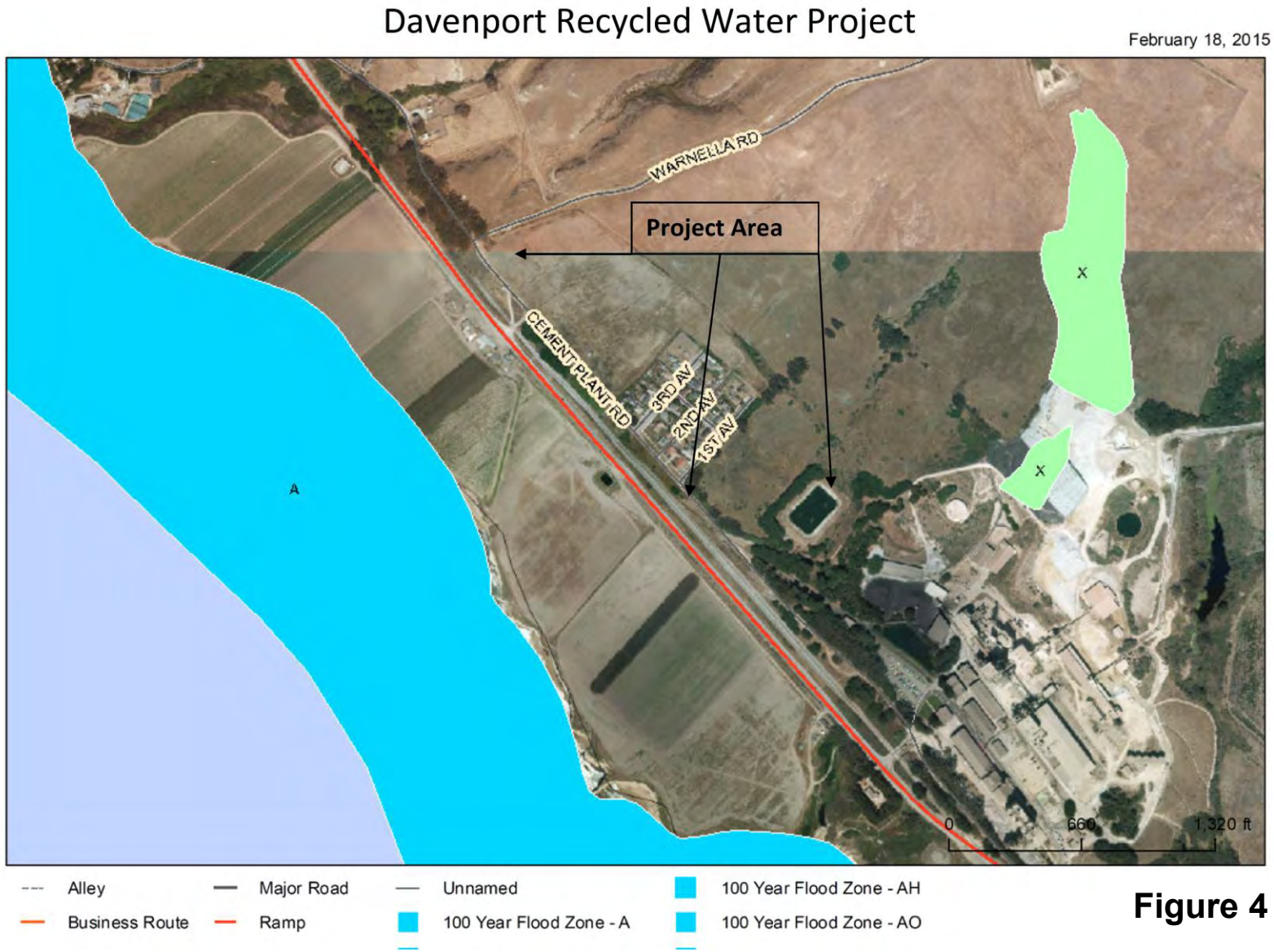
Davenport Recycled Water Project
February 18, 2015
WARNELLA RD
Project Area
CEMENT PLANT RD
3RD AV
2ND AV
1ST AV
A
X
X
0
660
1,320 ft
Alley
Business Route
Major Road
Ramp
Unnamed
100 Year Flood Zone - A
100 Year Flood Zone - AH
100 Year Flood Zone - AO

Figure 4

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Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

The project site is located on the coast near the effects of a tsunami. However, due to the project area elevation above sea level on the bluff tops (approximately 70 to 200 feet), no impacts from a seiche or mudflow are anticipated. Impacts would be less than significant.

CEQA-Plus Evaluation

Wild and Scenic Rivers Act: Is any portion of the project located within a wild and scenic river?

☒ No. The project will not impact a wild and scenic river.

☐ Yes. Identify the wild and scenic river watershed and project location relative to the affected wild and scenic river:

Identify watershed where the project is located: The entire project area is located within the Davenport Watershed.

J. LAND USE AND PLANNING

Would the project:

1.	*Physically divide an established community?*	☐	☐	☐	☒

Discussion: The proposed project does not include any element that would physically divide an established community. No impact would occur.

2.	*Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to the general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?*	☐	☐	☒	☐

Discussion: The proposed water recycling project does not conflict with any regulations or policies adopted for the purpose of avoiding or mitigating an environmental effect. Section 13.10.635 of the County Codes states, Construction and operation of recycled water facilities providing tertiary-level treatment on land zoned CA, A or AP shall be allowed, subject to the following regulations:

(A) Such facilities shall be located adjacent to or in the immediate proximity of an existing publicly owned and operated municipal wastewater treatment plant.

(B) Such facilities shall be intended and used for the sole purpose of producing recycled

Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

municipal wastewater to be used for agricultural irrigation.

(C) Conflicts with adjacent commercial agricultural activities resulting from either construction or operation of the wastewater recycling facility use shall be avoided, among other ways, by staging construction activities and establishing traffic routes in a manner that does not interfere with adjacent agricultural activities.

(D) The facility shall minimize reduction of acreage of agricultural lands and shall prevent a reduction in land available for agricultural production by offsetting the loss of agricultural land associated with facility construction. Mitigation measures that may be used to offset the loss of agricultural land resulting from project construction include, but are not limited to:

(1) Enabling fallow agricultural land to be put back into production;

(2) Protecting or restoring agricultural operations on lands where nonagricultural development has been permitted, among other ways by acquiring the land or obtaining an affirmative agricultural easement;

(3) Improving the productivity of degraded or marginal agricultural land by transporting the topsoil from the development site to such land; and

(4) Any combination of the above, or similar measures.

The proposed project would be consistent with the County Code. Approximately 4.5 acres of Commercial Agricultural land would be required to construct a storage pond and associated pumps. A 75-foot buffer area around the storage pond has also been included to allow for easier operations of the pond and the associated agricultural uses.

The proposed project is designed to provide irrigation water to agricultural parcels that are currently both in and out of production. The 4.5 acre area needed for the proposed storage pond location is currently fallow. Water is in short supply on the north coast and countywide. The production of approximately 28-acre-feet of tertiary treated irrigation water would enable additional acreage of north coast agricultural land to be placed back into production. As a result, the proposed project would likely result in additional cropland going into production on the north coast. Impacts would be less than significant. Therefore, no mitigation measures would be required.

3. Conflict with any applicable habitat conservation plan or natural community conservation plan?	☐	☐	☐	☒

Discussion: The proposed project would not conflict with any applicable habitat conservation plan or natural community conservation plan. No impact would occur.

Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

CEQA-Plus Evaluation

Coastal Zone Management Act: Is any portion of the project site located within the coastal zone?

☐ No. The project is not within the coastal zone.

☒ Yes. Describe the project location with respect to coastal areas and the status of the coastal zone permit, and provide a copy of the coastal zone permit or coastal exemption:

Discussion: The proposed project is located in the community of Davenport immediately adjacent to Highway 1 and Cement Plant Road. Distribution lines would run within Cement Plant Road and cross under Highway 1 and the railroad right-of-way in order to connect nearby agricultural parcels and water storage ponds to the recycled water plant. Agricultural lands owned by State Parks and Lone Star Cement Corp. separate the project area from adjacent beach and bluff areas. Nearby beaches include Davenport Beach near San Vicente Creek, Shark Fin Cove to the south, and Davenport Landing Beach to the north of the project area at Davenport Landing. Nearby parks include Coast Dairies State Park located to the immediate north and south of the project area, and Wilder Ranch State Park located approximately four miles to the south. The project would not have any effect on coastal access, beaches or parklands. In addition, mitigation would be required to reduce visual impacts associated with the construction of the storage pond. Mitigation Measure AES-1 would require the planting of Monterey pines to screen the pond and associated equipment from both Highway 1 and Cement Plant Road. See discussion A-1 under Aesthetics and Visual Resources. The project would not impact any sensitive visual resources. The Coastal Development Permit is currently being processed and is expected to be issued when the environmental review period is complete.

Coastal Barriers Resources Act: Will the project impact or be located within or near the Coastal Barrier Resources System or its adjacent wetlands, marshes, estuaries, inlets, and near-shore waters? Note that since there is currently no Coastal Barrier Resources System in California, projects located in California are not expected to impact the Coastal Barrier Resources System in other states. If there is a special circumstance in which the project may impact a Coastal Barrier Resource System, indicate your reasoning below.

☒ No. The project will not impact or be located within or near the Coastal Barrier Resources System or its adjacent wetlands, marshes, estuaries, inlets, and near-shore waters.

☐ Yes. Describe the project location with respect to the Coastal Barrier Resources System, and the status of any consultation with the appropriate Coastal Zone management agency and the United States Fish and Wildlife Service:

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

K. MINERAL RESOURCES

Would the project:

1. *Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?*	☐	☐	☐	☒

Discussion: The site does not contain any known mineral resources that would be of value to the region and the residents of the state. Therefore, no impact is anticipated from project implementation.

2. *Result in the loss of availability of a locally-important mineral resource recovery site delineated on a local general plan, specific plan or other land use plan?*	☐	☐	☐	☒

Discussion: The project site is designated as road right-of-way, which is not considered to be an Extractive Use Zone (M-3) nor does the site have a Land Use Designation with a Quarry Designation Overlay (Q) (County of Santa Cruz 1994). Therefore, no potentially significant loss of availability of a known mineral resource of locally important mineral resource recovery (extraction) site delineated on a local general plan, specific plan or other land use plan would occur as a result of proposed future development. No impact is anticipated.

L. NOISE

Would the project result in:

1. *Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?*	☐	☒	☐	☐

Discussion:

County of Santa Cruz General Plan

The Santa Cruz County General Plan (County of Santa Cruz 1994) contains the following table, which specifies the maximum allowable noise exposure for stationary noise sources (Table 3). The County of Santa Cruz has not adopted noise thresholds for construction noise.

Table 3: Maximum Allowable Noise Exposure for Stationary Noise Sources[1]

	Daytime[5] (7:00 am to 10:00 pm)	Nighttime[2, 5] (10:00 pm to 7:00 am)
Hourly Leq average hourly noise level, dB[3]	50	45
Maximum Level, dB[3]	70	65
Maximum Level, dB – Impulsive Noise[4]	65	60

Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

Notes:
1 As determined at the property line of the receiving land use. When determining the effectiveness of noise mitigation measures, the standards may be applied to the receptor side of noise barriers or other property line noise mitigation measures.
2 Applies only where the receiving land use operates or is occupied during nighttime hours
3 Sound level measurements shall be made with "slow" meter response.
4 Sound level measurements shall be made with "fast" meter response
5 Allowable levels shall be raised to the ambient noise levels where the ambient levels exceed the allowable levels. Allowable levels shall be reduced to 5 dB if the ambient hourly Leq is at least 10 dB lower than the allowable level.
Source: County of Santa Cruz 1994

The following applicable noise related policy is found in the Public Safety and Noise Element of the Santa Cruz County General Plan (Santa Cruz County 1994).

- Policy 6.9.7 Construction Noise. Require mitigation of construction noise as a condition of future project approvals.

County of Santa Cruz Code

There are no County of Santa Cruz ordinances that specifically regulate construction noise levels; however, the following code regulates offensive noise.

Section 8.30.010 (Curfew—Offensive noise) of the Santa Cruz County Code contains the following language regarding noise impacts:

A. No persons shall, between the hours of ten p.m. and eight a.m., make, cause, suffer, or permit to be made any offensive noise:

   1. Which is made within one hundred feet of any building or place regularly used for sleeping purposes; or

   2. Which disturbs any person of ordinary sensitivities within his or her place of residence.

B. "Offensive noise" means any noise which is loud, boisterous, irritating, penetrating, or unusual, or that is unreasonably distracting in any other manner such that it is likely to disturb people of ordinary sensitivities in the vicinity of such noise, and includes, but is not limited to, noise made by an individual alone or by a group of people engaged in any business, meeting, gathering, game, dance, or amusement, or by any appliance, contrivance, device, structure, construction, ride, machine, implement, instrument or vehicle. (Ord. 4001 § 1 (part), 1989).

Sensitive Receptors

Some land uses are generally regarded as being more sensitive to noise than others due to the type of population groups or activities involved. Sensitive population groups generally include children and the elderly. Noise sensitive land uses typically include all residential uses (single- and multi-family, mobile homes, dormitories, and similar uses), hospitals, nursing homes, schools, and parks.

The use of construction equipment to accomplish the proposed project would result in noise

in the project area, i.e., construction zone. Table 4 shows typical noise levels for common construction equipment. The sources noise that levels are normally measured at 50 feet, are used to determine the noise levels at nearby sensitive receptors by attenuating 6 dB for each doubling of distance for point sources of noise such as operating construction equipment. Noise levels at the nearest sensitive receptors for each site were analyzed on a worst-case basis, using the equipment with the highest noise level expected to be used.

Table 4: Typical Noise Levels for Common Construction Equipment (at 50 feet)

Equipment	L_{max} (dBA)
Backhoe	80
Cement Mixer Truck	85
Cement Pump Truck	82
Compactor	82
Concrete Saw	90
Dozer	85
Excavator	85
Dump Truck	84
Flat Bed Truck	84
Front End Loader	80
Grader	85
jackhammers	88
Paver	85
Pick-up Truck	55
Rollers	74

Source: Federal Transit Authority, 2006.

Impacts

Although construction activities would likely occur during daytime hours, noise could still be considered substantially disruptive to residents. However, periods of intrusive noise exposure would be temporary. Noise from construction activity could vary significantly on a day-to-day basis. Such worst-case scenarios would likely exist only for short periods at any particular residence on a given day.

Potential Temporary Construction Noise Impacts

Construction activity would be expected to use equipment listed in Table 4. Based on the activities proposed for the proposed project, the equipment with the loudest operating noise level that would be used during construction would likely be the concrete saw and jackhammer, which would produce noise levels of up to 90 dBA and 88 dBA respectively, at a distance of 50 feet. The nearest sensitive receptor is located approximately 40 feet from the construction alignment where trenching would occur to install distribution lines. At that distance, the decibel level would slightly increase to approximately 92 and 90 decibels, respectively, with the use of a concrete saw and jackhammer. The concrete saw and jackhammer would produce the highest level of noise during construction. The grader, dozer, and excavator would be used to construct the proposed storage pond. These pieces of equipment generate approximately 85 dBA at 50 feet. The nearest sensitive receptor is located approximately 875 feet from the construction site where excavation would occur to construct the storage pond. At that distance, the decibel level would be reduced by approximately 25 dBA to 60 dBA. However, these impacts would also be temporary.

The County of Santa Cruz has not adopted significance thresholds for construction noise. However, ·Policy 6.9.7 of the General Plan requires mitigation of construction noise as a condition of future project approvals.

The following mitigation measures will be required to assist in the reduction of temporary

Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

construction noise impacts. With the implementation of those measures, no adverse noise impacts are expected occur during construction activities.

Mitigation Measures

NOI-1 Limit construction activity to between the hours of 7:00 a.m. to 6:00 p.m. Monday through Friday, 9:00 a.m. to 5:00 p.m. Saturday in order to avoid noise during more sensitive nighttime hours. Prohibit construction activity on Sundays.

NOI-2 The construction contractor shall prepare a detailed noise control plan, to be reviewed and approved by the County prior to construction, which includes noise reduction measures deemed to be feasible and effective in meeting the noise limits specified in Figure 6-2 of the County General Plan.

NOI-3 Stationary noise sources shall be located as far from sensitive receptors as possible. If they must be located near receptors, adequate muffling (with enclosures) shall be used and enclosure opening or venting will face away from sensitive receptors. Enclosures will be designed by a registered engineer regularly involved in noise control analysis and design.

NOI-4 Require that all construction and maintenance equipment powered by gasoline or diesel engines have sound-control devices that are at least as effective as those originally provided by the manufacturer and that all equipment be operated and maintained to minimize noise generation.

NOI-5 Prohibit gasoline or diesel engines from having unmuffled exhaust.

NOI-6 Use noise-reducing enclosures around stationary noise-generating equipment capable of 6 dB attenuation.

NOI-7 The County and/or the construction contractor shall notify residences within 500 feet of the construction areas of the construction schedule in writing prior to construction by mailing a notice to residences and posting a notice at the site. The notice shall contain project contact information for residents in cases of disturbance or damage to residences as a result of project construction.

2. Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	☐	☐	☒	☐

Discussion: The use of construction equipment has the potential to generate vibration in the project area. The proposed storage pond location (Coast Dairies Agricultural Parcel Two; formerly APN 058-022-11) would be located northwest of New Town Davenport just off of Cement Plant Road. This site would be located approximately 800 feet northwest of the rear of six single-family homes located in New Town on 3rd Avenue. Due to this

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

distance, none of the area residences would experience significant groundborne vibration or groundborne noise levels during construction activities associated with the proposed project. Therefore, Impacts would be considered less than significant.

3. *A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?*	☐	☐	☒	☐

Discussion: The proposed recycled water project would not result in a permanent increase in the ambient noise level. The main source of ambient noise in the project area is traffic noise along Highway 1. No permanent increase in traffic trips are anticipated as a result of the recycled water project.

The project would create temporary construction impacts that are considered to be less than significant (see discussion under L-1). Impacts are expected to be less than significant with mitigation.

4. *A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?*	☐	☒	☐	☐

Discussion: See discussion under L-1 above. Noise generated during project construction would increase the ambient noise levels in adjacent areas. Construction would be temporary, however, and given the limited duration of this impact it is considered to be less than significant with the incorporation of mitigation measures.

5. *For a project located within an airport land use plan or, where such a plan has not been adopted, within two miles of a public airport or public use airport, would the project expose people residing or working in the project area to excessive noise levels?*	☐	☐	☐	☒

Discussion: The proposed project is not within two miles of a public airport. Therefore, the proposed project would not expose people residing or working in the project area. No impact is anticipated.

6. *For a project within the vicinity of a private airstrip, would the project expose people residing or working in the project area to excessive noise levels?*	☐	☐	☐	☒

Discussion: The proposed project is not within two miles of a private airstrip. Therefore, the proposed project would not expose people residing or working in the project area. No

Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

impact is anticipated.

M. POPULATION AND HOUSING

Would the project:

1.	*Induce substantial population growth in an area, either directly (for example, by proposing new homes and businesses) or indirectly (for example, through extension of roads or other infrastructure)?*	☐	☐	☐	☒

Discussion: The proposed project would not induce substantial population growth in an area because the project does not propose any physical or regulatory change that would remove a restriction to or encourage population growth in an area including, but limited to the following: new or extended infrastructure or public facilities; new commercial or industrial facilities; large-scale residential development; accelerated conversion of homes to commercial or multi-family use; or regulatory changes including General Plan amendments, specific plan amendments, zone reclassifications, sewer or water annexations; or LAFCO annexation actions. The proposed recycled water project would not provided potable water. Water produced by the project would only be used for agricultural irrigation. No impact would occur.

2.	*Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?*	☐	☐	☐	☒

Discussion: The proposed project would not displace any existing housing. No impact would occur.

3.	*Displace substantial numbers of people, necessitating the construction of replacement housing elsewhere?*	☐	☐	☐	☒

Discussion: The proposed project would not displace a substantial number of people since the project is intended to provide recycled water for agricultural and streetscape uses. No impact would occur.

CEQA-Plus Evaluation

Environmental Justice: Does the project involve an activity that is likely to be of particular interest to or have particular impact upon minority, low-income, or indigenous populations, or tribes?

☒ No. Selecting "No" means that this action is not likely to be of any particular interest to or have an impact on these populations or tribes. Explain.

Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

☐ Yes. If you answer yes, please check at least one of the boxes and provide a brief explanation below:

- ☐ The project is likely to impact the health of these populations.
- ☐ The project is likely to impact the environmental conditions of these populations.
- ☐ The project is likely to present an opportunity to address an existing disproportionate impact of these populations.
- ☐ The project is likely to result in the collection of information or data that could be used to assess potential impacts on the health or environmental conditions of these populations.
- ☐ The project is likely to affect the availability of information to these populations.
- ☐ Other reasons, describe:

Discussion: The project would provide a use for wastewater that is currently being evaporated and sprayed onto fields adjacent to the Davenport wastewater treatment plant. The reuse of the water would benefit the community by placing more agricultural land back into production. No impact would occur to minority, low-income, or indigenous populations or tribes.

N. PUBLIC SERVICES

Would the project:

		Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
1.	*Would the project result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities, need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the public services:*				
	a. *Fire protection?*	☐	☐	☐	☒
	b. *Police protection?*	☐	☐	☐	☒
	c. *Schools?*	☐	☐	☐	☒
	d. *Parks?*	☐	☐	☐	☒
	e. *Other public facilities; including the maintenance of roads?*	☐	☐	☒	☐

Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

***Discussion (a through e)*:** Approximately 1,700 feet of Cement Plant Road beginning at the existing treatment pond location and ending at the proposed storage pond would require trenching for a new recycled water distribution line. Impacts to the roadway would be temporary, as the trench in the roadway would be backfilled and repaved. Impacts would be less than significant. The proposed recycled water project would not result in impacts to other public facilities.

O. RECREATION

Would the project:

1.	*Would the project increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?*	☐	☐	☐	☒

***Discussion*:** The proposed project would not increase the use of existing neighborhood and regional parks or other recreational facilities. No impacts would occur from project implementation.

2.	*Does the project include recreational facilities or require the construction or expansion of recreational facilities which might have an adverse physical effect on the environment?*	☐	☐	☐	☒

***Discussion*:** The proposed project does not propose the expansion or construction of additional recreational facilities. No impact would occur.

P. TRANSPORTATION/TRAFFIC

Would the project:

1.	*Conflict with an applicable plan, ordinance or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation including mass transit and non-motorized travel and relevant components of the circulation system, including but not limited to intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?*	☐	☐	☒	☐

***Discussion*:** There would be no impact because no additional traffic would be generated during project operations. However, the project would generate a small incremental

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

increase in traffic on nearby roads and intersections during construction. However, this increase would be considered temporary; and therefore, would be considered less than significant. Further, the increase would not cause the Level of Service at any nearby intersection to drop below Level of Service D, consistent with General Plan Policy 3.12.1.

2. *Conflict with an applicable congestion management program, including, but not limited to level of service standards and travel demand measures, or other standards established by the county congestion management agency for designated roads or highways?*	☐	☐	☐	☒

Discussion: In 2000, at the request of the Santa Cruz County Regional Transportation Commission (SCCRTC), the County of Santa Cruz and other local jurisdictions exercised the option to be exempt from preparation and implementation of a Congestion Management Plan (CMP) per Assembly Bill 2419. As a result, the County of Santa Cruz no longer has a Congestion Management Agency or CMP. The CMP statutes were initially established to create a tool for managing and reducing congestion; however, revisions to those statutes progressively eroded the effectiveness of the CMP. There is also duplication between the CMP and other transportation documents such as the Regional Transportation Plan (RTP) and the Regional Transportation Improvement Program (RTIP). In addition, the goals of the CMP may be carried out through the Regional Transportation Improvement Program and the Regional Transportation Plan. Any functions of the CMP which are useful, desirable and do not already exist in other documents may be incorporated into those documents.

The proposed project would not conflict with either the goals and/or policies of the RTP or with monitoring the delivery of state and federally-funded projects outlined in the RTIP. No impact would occur.

3. *Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?*	☐	☐	☐	☒

Discussion: No change in air traffic patterns would result from project implementation. Therefore, no impact is anticipated.

4. *Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?*	☐	☐	☐	☒

Discussion: The proposed project consists of the construction of a recycled water

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

production, storage and distribution system. No increase in hazards would occur from project design or from incompatible uses. No impact would occur from project implementation.

5.	*Result in inadequate emergency access?*	☐	☐	☒	☐

***Discussion*:** A temporary lane closure on Cement Plant Road may be required for short periods of time during project construction. A traffic control plan would be prepared. However, the proposed project would not restrict emergency access for police, fire, or other emergency vehicles. Impacts would be less than significant from project implementation.

6.	*Conflict with adopted policies, plans, or programs regarding public transit, bicycle, or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?*	☐	☐	☐	☒

***Discussion*:** The proposed project design would comply with current road requirements to prevent potential hazards to motorists, bicyclists, and/or pedestrians. No impact would occur.

Q. UTILITIES AND SERVICE SYSTEMS

Would the project:

1.	*Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?*	☐	☐	☐	☒

***Discussion*:** The proposed project would not generate wastewater. The purpose of the project is to treat wastewater that is currently generated by the Town of Davenport for use as irrigation for agriculture. Therefore, wastewater treatment requirements would not be exceeded. No impacts would occur.

2.	*Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?*	☐	☐	☐	☒

***Discussion*:** The proposed project would not generate wastewater. The purpose of the project is to treat wastewater that is currently generated by the Town of Davenport for use as irrigation for agriculture. No new water or wastewater treatment facilities would be required as a result of the project. No impacts would occur.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact
3. *Require or result in the construction of new storm water drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?*	☐	☐	☐	☒

Discussion: The proposed recycled water project would not generate increased runoff; therefore, it would not result in the need for new or expanded drainage facilities. No impact would occur.

4. *Have sufficient water supplies available to serve the project from existing entitlements and resources, or are new or expanded entitlements needed?*	☐	☐	☐	☒

Discussion: The proposed project would only use small amounts of water during construction for dust control and concrete work. No water use would be required during the operational phase of the project. No impacts are expected to occur from project implementation.

5. *Result in determination by the wastewater treatment provider which serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?*	☐	☐	☐	☒

Discussion: The proposed project would only use small amounts of water during construction for dust control and concrete work. No wastewater would be generated. No water use would be required during the operational phase of the project. No impacts are expected to occur from project implementation.

6. *Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?*	☐	☐	☐	☒

Discussion: The proposed would not generate solid waste during the operational phase of the project. However, construction debris would be generated during demolition and construction, much of which would be recycled. No impact is anticipated.

7. *Comply with federal, state, and local statutes and regulations related to solid waste?*	☐	☐	☐	☒

Discussion: The project would comply with all federal, state, and local statutes and regulations related to solid waste disposal. No impact would occur.

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

R. MANDATORY FINDINGS OF SIGNIFICANCE

1. *Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory?*	☐	☒	☐	☐

Discussion: The potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, reduce the number or restrict the range of a rare or endangered plant or animal or eliminate important examples of the major periods of California history or prehistory were considered in the response to each question in Section III (A through Q) of this Initial Study. Resources that have been evaluated as significant would be potentially impacted by the project, particularly Biological and Cultural Resources. However, mitigation has been included that clearly reduces these effects to a level below significance. This mitigation includes measures to avoid impacts to California red-legged frog, migratory birds and raptors, roosting bats, the San Francisco dusky-footed woodrat, and archaeological resources. As a result of this evaluation, there is no substantial evidence that, after mitigation, significant effects associated with this project would result. Therefore, this project has been determined not to meet this Mandatory Finding of Significance.

2. *Does the project have impacts that are individually limited, but cumulatively considerable? ("cumulatively considerable" means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects)?*	☐	☒	☐	☐

Discussion: In addition to project specific impacts, this evaluation considered the projects potential for incremental effects that are cumulatively considerable. As a result of this evaluation, there were determined to be potentially significant cumulative effects related to Aesthetics and Visual, Biological Resources, Cultural Resources, and Noise. However,

	Potentially Significant Impact	Less than Significant with Mitigation Incorporated	Less than Significant Impact	No Impact

mitigation has been included that clearly reduces these cumulative effects to a level below significance. This mitigation includes measures to reduce these impacts to a less than significant level. As a result of this evaluation, there is no substantial evidence that there are cumulative effects associated with this project. Therefore, this project has been determined not to meet this Mandatory Finding of Significance.

3. Does the project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☒	☐	☐

Discussion: In the evaluation of environmental impacts in this Initial Study, the potential for adverse direct or indirect impacts to human beings were considered in the response to specific questions in Section III (A through Q). As a result of this evaluation, there were determined to be potentially significant effects to human beings related to the following: Aesthetics and Visual Resources, Cultural Resources, and Noise. However, mitigation has been included that clearly reduces these effects to a level below significance. As a result of this evaluation, there is no substantial evidence that, after mitigation, there are adverse effects to human beings associated with this project. Therefore, this project has been determined not to meet this Mandatory Finding of Significance.

IV. REFERENCES USED IN THE COMPLETION OF THIS INITIAL STUDY

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V. LIST OF PREPARERS

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Attachment 1

Mitigation Monitoring and Reporting Program

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County of Santa Cruz

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MITIGATION MONITORING AND REPORTING PROGRAM for the DAVENPORT RECYCLED WATER PROJECT

Application No. 121029, February 17, 2015

No.	Environmental Impact	Mitigation Measures	Responsibility for Compliance	Method of Compliance	Timing of Compliance
Biological Resources					
California Red-legged Frog Impact Avoidance Measures					
BIO-1	Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game, or U.S. Fish and Wildlife Service?	Ground disturbing construction activities will be limited to the dry season period from June 1 through September 30, to avoid potential red-legged frog dispersal events.	DPW, Contractor, and Project Biologist	To be monitored by the County Planning Department, DPW, Contractor, and the Project Biologist.	To be implemented during project construction.
BIO-2		No less than 15 calendar days, prior to the onset of activities, DPW shall submit the name (s) and credentials of biologists who could conduct the activities specified in the following measures to the County Planning Department for approval. A qualified biologist means any person who has completed at least four years of university training in wildlife biology or a related science and/or has demonstrated field experience in the identification and life history of the red-legged frog.	DPW and Planning Department	To be monitored by the County Planning Department and DPW.	To be implemented prior to construction.
BIO-3		A pre-construction survey will be conducted immediately preceding any construction activity (including grading or equipment staging) that occurs in CRLF habitat. The qualified biologist will carefully search all obvious potential hiding spots for CRLF, such as large downed woody debris, the perimeter ephemeral drainage habitat, and the riparian corridor associated with streams and drainages. If no CRLF are observed, wildlife exclusion fencing will be erected around the project area to prevent CRLF from entering the site during construction. If CRLF are found within the project area, no construction will occur until the individual has travelled out of the construction area. If the frog will not exit the construction area voluntarily, the U.S. Fish and Wildlife shall be consulted prior to the start of construction. Exclusion fencing will not be erected until the project area is free of CRLF.	DPW, Planning Department, and Contractor	To be implemented by the Project Biologist.	To be implemented prior to construction.
BIO-4		Before the onset of any construction activities, the project engineer and qualified biologist will identify locations for equipment, personnel access and materials staging other than those identified in the project description to minimize disturbance to potential terrestrial red-legged frog habitat.	DPW, Planning Department, and Contractor	To be implemented by the County Planning Department, DPW, and Project Biologist.	To be implemented prior to construction.
BIO-5		Prior to the start of construction, a Service-approved biologist will train all construction personnel regarding habitat sensitivity, identification of special status species, and required practices before the start of construction. The	DPW, Planning Department, and Contractor	To be implemented by the Project Biologist.	To be implemented prior to construction.

No.	Environmental Impact	Mitigation Measures	Responsibility for Compliance	Method of Compliance	Timing of Compliance
		training will include the general measures that are being implemented to conserve the species as they relate to the project, the penalties for non-compliance, and the boundaries of the project area. If new construction personnel are added to the project, the contractor will ensure that the personnel receive the mandatory training before starting work. A fact sheet or other supporting materials containing this information will be prepared and distributed to all construction personnel. Upon completion of training, construction personnel will sign a form stating that they attended the training and understand all the conservation and protection measures.			
BIO-6		No project related activities will occur outside the exclusion fence.	DPW, Planning Department and Contractor	To be monitored by the County Planning Department, DPW, and Project Biologist.	To be implemented prior to and during construction.
BIO-7		Because dusk and dawn are often the times when CRLF are most actively foraging and dispersing, all construction activities will cease one-half hour before sunset and will not begin prior to one-half hour before sunrise.	DPW, Planning Department and Contractor	To be monitored by the County Planning Department, DPW, and Project Biologist.	To be implemented during construction.
BIO-8		A qualified biologist will be onsite during all ground-disturbance related activities (i.e., vegetation grubbing, excavation) to ensure compliance with these avoidance measures.	DPW, Planning Department and Contractor	To be monitored by the County Planning Department, DPW, and Project Biologist.	To be implemented during construction.
BIO-9		After ground disturbing activities are complete, the qualified biologist will train an individual to act as the on-site construction monitor. The construction monitor (i.e., Davenport County Sanitation District staff) will have attended the training described above under Mitigation Measure BIO-5. Both the qualified biologist and the construction monitor will have the authority to stop and/or redirect project activities to ensure protection of resources and compliance with all environmental permits and conditions of the project. The qualified biologist and construction monitor will complete a daily log summarizing activities and environmental compliance.	DPW, Planning Department and Contractor	To be implemented by the County Planning Department, DPW, and Project Biologist.	To be implemented during construction.
BIO-10		If a CRLF is encountered during project construction, the qualified biologist will issue a stop work order to allow the individual to voluntarily leave the construction area and is 50 feet away. The animal must leave of their own volition without harassment by people. If the CRLF does not voluntarily leave the construction area, the U.S. Fish and Wildlife Service shall be notified. No work shall occur until approval is give by the Service.	DPW, Planning Department and Contractor	To be implemented by the Project Biologist.	To be implemented during construction.
BIO-11		All vehicle parking will be restricted to previously determined staging areas or existing roads. Necessary vehicles belonging to the biological monitors and construction supervisors will be parked at the nearest point on existing access roads.	DPW, Planning Department and Contractor	To be implemented by the County Planning Department, DPW, and Project Biologist.	To be implemented during construction.
BIO-12		Rodent control will be permitted only in developed portions of the project	DPW, Planning	To be implemented	To be implemented

No.	Environmental Impact	Mitigation Measures	Responsibility for Compliance	Method of Compliance	Timing of Compliance
		area. Rodent control will not be implemented in any of the open space areas. The method of rodent control will comply with the methods of rodent control discussed in the 4(d) rule published in the final listing rule for the tiger salamander (USFWS 2004).	Department and Contractor	by the Project Biologist.	during construction.
BIO-13		No canine or feline pets or firearms (except for Federal, State, or local law enforcement officers and security personnel) will be permitted in the work area to avoid harassment, killing, or injuring of red-legged frogs. Because the work area occurs in a rural setting, it is understood that canine or feline pets may be present in the vicinity of the work area that do not belong to the construction workers.	DPW, Planning Department and Contractor	To be implemented by the County Planning Department, DPW, and Project Biologist.	To be implemented during construction.
BIO-14		A litter control program will be instituted at the project site. All construction personnel will ensure that their food scraps, paper wrappers, food containers, cans, bottles, and other trash from the project area are deposited in covered or closed trash containers. The trash containers will be removed from the project area at the end of each working day.	DPW, Planning Department and Contractor	To be implemented by the County Planning Department, DPW, and Project Biologist.	To be implemented during construction.
BIO-15		The fueling and maintenance of vehicles and other equipment shall occur at least 20 meters (65 feet) from any riparian habitat or water body.	DPW, Planning Department and Contractor	To be implemented by the County Planning Department, DPW, and Project Biologist.	To be implemented during construction.
BIO-16		The contractor will be supplied a copy of the conditions of approval that detail the above listed avoidance and minimization measures prior to ground breaking.	DPW and Planning Department	To be implemented by the DPW.	To be implemented prior to construction.
Migratory Birds and Raptors Impact Avoidance Measures					
BIO-17	Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game, or U.S. Fish and Wildlife Service?	To comply with the MBTA, the following measures will be implemented: • Mowing of grassland and/or the removal of trees and shrubs shall be conducted outside the nesting season, between August 16 and October 31. If removal of shrubs and trees and/or mowing of grassland to be impacted is not possible prior to the nesting season, the following measure shall be implemented. • If the removal or disturbance to trees, shrubs, or grassland is proposed to occur between February 1 and August 15, a pre-construction nesting bird (both passerine and raptor) survey of the potential nesting habitat to be removed shall be performed by a qualified biologist within 7 days of the commencement of construction. If no nesting birds are observed no further action will be required and land clearing and grading shall occur within one week of the survey to prevent potential impacts to nesting birds subsequent to the preconstruction survey. • If bird nests (either passerine and/or raptor) are observed during the pre-construction survey, a disturbance-free buffer zone shall be established around the nest tree(s) until the young have fledged, as determined by a qualified biologist.	DPW, Planning Department, and Contractor	To be monitored by the County Planning Department, Applicant, Contractor, and the Project Biologist.	To be implemented prior to and during project construction.

No.	Environmental Impact	Mitigation Measures	Responsibility for Compliance	Method of Compliance	Timing of Compliance
		• The radius of the required buffer zone can vary depending on the species, (i.e., 75-100 feet for passerines and 200-300 feet for raptors), with the dimensions of any required buffer zones to be determined by a qualified biologist in consultation with CDFW. • To delineate the buffer zone around a nesting tree, orange construction fencing shall be placed at the specified radius from the base of the tree within which no machinery or workers shall intrude. • After the fencing is in place there will be no restrictions on grading or construction activities outside the prescribed buffer zones.			
Roosting Bats Impact Avoidance Measures					
BIO-18	Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game, or U.S. Fish and Wildlife Service?	To prevent direct mortality of bats roosting in the trees on the project site, a bat habitat assessment must be conducted by a qualified bat biologist. Tree removal must only occur during seasonal periods of bat activity, between March 1, or when evening temperatures are above 45°F and rainfall less than one-half-inch in 24 hours occurs, and April 15, prior to parturition of pups. The next acceptable period for tree removal with suitable roosting habitat is after pups become self-sufficiently volant – September 1 through about October 15, or prior to evening temperatures dropping below 45°F and onset of rainfall fretter than ½ inch in 24 hours.	DPW and Planning Department	To be implemented by the Project Biologist.	To be implemented prior to construction.
San Francisco Dusky-footed Woodrat Impact Avoidance Measures					
BIO-19	Have a substantial adverse effect, either directly or through habitat modifications, on any species identified as a candidate, sensitive, or special status species in local or regional plans, policies, or regulations, or by the California Department of Fish and Game, or U.S. Fish and Wildlife Service?	Prior to construction, a qualified biologist shall conduct a survey for dusky-footed woodrat middens. A report shall be prepared for review and approval by the Planning Department that identifies the location of any middens that are observed. All middens found shall be avoided. Proper fencing shall be installed, giving as much room to the middens as necessary to avoid indirect impacts as determined by the project biologist.	DPW and Planning Department	To be implemented by the Project Biologist.	To be implemented prior to construction.
Wetland and Riparian Impact Avoidance Measures					
BIO-20	Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but	A formal jurisdictional delineation of wetlands and waters of the U.S. shall be conducted within project area stream crossings and ditches prior to implementation of the project. The project will be designed to avoid impacts to all jurisdictional areas. The proposed project will comply with the Santa Cruz County General Plan Chapter 5 Objective 5.2 and Section 16.30 of the	DPW and Planning Department	To be implemented by the Project Biologist.	To be implemented prior to construction.

No.	Environmental Impact	Mitigation Measures	Responsibility for Compliance	Method of Compliance	Timing of Compliance
	not limited to marsh, vernal pool, coastal, etc.) through direct removal, filling, hydrological interruption, or other means?	County Code which covers Riparian Corridors and Wetlands.			
Migratory Fish and Wildlife Species Impact Avoidance Measures					
BIO-1 through BIO-17	Interfere substantially with the movement of any native resident or migratory fish or wildlife species or migratory wildlife corridors, or impede the use of native wildlife nursery sites?	Impacts from project implementation would be mitigated to a less than significant level through the implementation of Mitigation Measures BIO-1 through BIO-17.	DPW, Planning Department, and Contractor	To be monitored by the County Planning Department, Applicant, Contractor, and the Project Biologist.	To be implemented prior to and during project construction.
Consistency with Local Policies and Ordinances Protecting Biological Resources					
BIO-1 through BIO-20	Conflict with any local policies or ordinances protecting biological resources (such as the Sensitive Habitat Ordinance, Riparian and Wetland Protection Ordinance, and the Significant Tree Protection Ordinance)?	Impacts from project implementation would be mitigated to a less than significant level through the implementation of Mitigation Measures BIO-1 through BIO-20.	DPW, Planning Department, and Contractor	To be monitored by the County Planning Department, Applicant, Contractor, and the Project Biologist.	To be implemented prior to and during project construction.
Cultural Resources					
CUL-1	Cause a substantial adverse change in the significance of a historical resource as defined in CEQA Guidelines Section 15064.5?	Impacts from project implementation would be mitigated to a less than significant level through the implementation of Mitigation Measures CUL-1.	DPW, Planning Department, and Contractor	To be implemented by a qualified archaeologist.	To be implemented during project construction.
CUL-1	Cause a substantial adverse change in the significance of an archaeological resource pursuant to CEQA Guidelines Section 15064.5?	All ground disturbing activity in the project area shall be monitored by a qualified archaeologist in the event a substantial intact deposit is found within the property. Pursuant to Section 16.40.040 of the Santa Cruz County Code, if archaeological resources are uncovered during construction, the responsible persons shall immediately cease and desist from all further site excavation and comply with the notification procedures given in County Code Chapter 16.40.040.	DPW, Planning Department, and Contractor	To be implemented by a qualified archaeologist.	To be implemented during project construction.
CUL-2	Disturb any human remains, including those	Pursuant to Section 16.40.040 of the Santa Cruz County Code, if at any time during site preparation, excavation, or other ground disturbance	DPW, Planning Department, and	To be implemented by a qualified	To be implemented during project

No.	Environmental Impact	Mitigation Measures	Responsibility for Compliance	Method of Compliance	Timing of Compliance
	interred outside of formal cemeteries?	associated with this project, human remains are discovered, the responsible persons shall immediately cease and desist from all further site excavation and notify the sheriff-coroner and the Planning Director. If the coroner determines that the remains are not of recent origin, a full archeological report shall be prepared and representatives of the local Native California Indian group shall be contacted. Disturbance shall not resume until the significance of the archeological resource is determined and appropriate mitigations to preserve the resource on the site are established.	Contractor	archaeologist.	construction.
Noise					
NOI-1	Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies?	Limit construction activity to between the hours of 7:00 a.m. to 6:00 p.m. Monday through Friday, 9:00 a.m. to 5:00 p.m. Saturday in order to avoid noise during more sensitive nighttime hours. Prohibit construction activity on Sundays.	DPW, Planning Department, and Contractor	To be monitored by the County Planning Department and DPW.	To be implemented during project construction.
NOI-2		The construction contractor shall prepare a detailed noise control plan, to be reviewed and approved by the County prior to construction, which includes noise reduction measures deemed to be feasible and effective in meeting the noise limits specified in Figure 6-2 of the County General Plan.	DPW, Planning Department, and Contractor	To be monitored by the County Planning Department and DPW.	To be implemented prior to project construction.
NOI-3		Stationary noise sources shall be located as far from sensitive receptors as possible. If they must be located near receptors, adequate muffling (with enclosures) shall be used and enclosure opening or venting will face away from sensitive receptors. Enclosures will be designed by a registered engineer regularly involved in noise control analysis and design.	DPW, Planning Department, and Contractor	To be monitored by the County Planning Department and DPW.	To be implemented prior to and during project construction.
NOI-4		Require that all construction and maintenance equipment powered by gasoline or diesel engines have sound-control devices that are at least as effective as those originally provided by the manufacturer and that all equipment be operated and maintained to minimize noise generation.	DPW, Planning Department, and Contractor	To be monitored by the County Planning Department and DPW.	To be implemented during project construction.
NOI-5		Prohibit gasoline or diesel engines from having unmuffled exhaust.	DPW, Planning Department, and Contractor	To be monitored by the County Planning Department and DPW.	To be implemented during project construction.
NOI-6		Use noise-reducing enclosures around stationary noise-generating equipment capable of 6 dB attenuation.	DPW, Planning Department, and Contractor	To be monitored by the County Planning Department and DPW.	To be implemented during project construction.
NOI-7		The County and/or the construction contractor shall notify residences within 500 feet of the construction areas of the construction schedule in writing prior to construction by mailing a notice to residences and posting a notice at the site. The notice shall contain project contact information for residents in cases of disturbance or damage to residences as a result of project construction.	DPW, Planning Department, and Contractor	To be monitored by the County Planning Department and DPW.	To be implemented prior to and during project construction.

No.	Environmental Impact	Mitigation Measures	Responsibility for Compliance	Method of Compliance	Timing of Compliance
NOI-1 through NOI-7	A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	Impacts from project implementation would be mitigated to a less than significant level through the implementation of Mitigation Measures NOI-1 through NOI-7.	DPW, Planning Department, and Contractor	To be monitored by the County Planning Department and DPW.	To be implemented prior to and during project construction.

Attachment 2

Biological Resource Assessment for the
Davenport Recycled Water Feasibility Study
November 14, 2014

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BIOLOGICAL RESOURCE ASSESSMENT

DAVENPORT RECYCLED WATER FEASIBILITY STUDY
700 Highway 1
Davenport, Santa Cruz County, CA

FINAL

November 14, 2014

Prepared for:
GHD
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SUMMARY

The Davenport Recycled Water Feasibility Study project, located at 700 Highway 1, is situated just north of the Town of Davenport, Santa Cruz County, California. The project currently treats about 24 acre-feet of water annually to Title 22 advanced secondary level and the treated water is spray irrigated onto un-mowed turf adjacent to the treatment plant. This project will evaluate alternatives to reuse this valuable water supply for the purposes of crop irrigation and landscape irrigation in the community.

Jane Valerius Environmental Consulting and Wildlife Research Associates were contracted by GHD to perform this Biological Resources Assessment for the federally listed Threatened California red-legged frog (*Rana draytonii*) and the federal and State listed threatened Central Coast steelhead (*Oncorhynchus mykiss irideus*).

Eleven vegetation types were observed within the study area where access was available and include the following: 1) *Salix lasiolepis* shrubland alliance or arroyo willow thickets; 2) ruderal riparian; 3) *Eucalyptus (globulus, camaldulensis*) semi-natural woodland stands or Eucalyptus groves; 4) Monterey cypress groves; 5) *Baccharis pilularis* shrubland alliance or coyote bush scrub; 6) *Artemisia californica* shrubland alliance or California sagebrush scrub; 7) non-native grassland; 8) ruderal vegetation; 9) wetlands; 10) landscaped and developed areas; and 11) agricultural land. As part of this Biological Resource Assessment, we also evaluated the potential for occurrence of 39 special-status plant species, and 54 special-status wildlife species, as well as the potential for California red-legged frog to occur within the study area.

The project study area includes marginal potential habitat for two federally listed species: robust spineflower (*Chorizanthe robusta var. robusta*) and Santa Cruz tarplant (*Holocarpha macradenia*). The potential for occurrence is considered to be low to very low for these species since the habitats where these species could occur will be avoided. The portion of the study area within the Cemex plant properties has not been previously surveyed for plants, and populations not previously known to occur in the area may exist. However a review by Santa Cruz County (2014) for the Cemex plant found that it is unlikely that sensitive plants would occur on the Cemex property due to its long history of disturbance from ongoing intensive agricultural production. A review of aerial photos by the County for the site showed that the proposed storage pond location for Alternatives 1, 2 and 3 was previously maintained in a tilled condition for row crop production and it also appears that the site was covered in what appears to be cement kiln dust from the cement plant sometime between 1972 and 1979, which would raise the pH level of the soils making it even more unlikely to support special status plants. Alternative 4 places the storage pond in a highly altered and disturbed agricultural field with no potential to support special status plants due to lack of habitat. The remaining impacts from construction of the proposed distribution lines would occur in areas that are either paved, or within unpaved roadway that are highly compacted.

Steelhead are known to occur within San Vicente Creek. No impacts to the species were identified at this time.

California red-legged frog have been reported in the north, east, and south of the project area (CNDDB 2014).

There is a high potential for nesting passerines (perching birds), such as California towhee (*Pipilo crissalis*), to occur within the project area.

There is a high likelihood that roosting bats occur in the grove of trees located within the project area.

Best Construction Practices and Avoidance and Minimization Measures as well as Mitigation Measures to prevent take of individuals discussed above are included in this report.

List of Acronyms and Abbreviations

BRA	Biological Resource Assessment
CDFW	California Department of Fish and Wildlife
CESA	California Endangered Species Act
CNDDB	California Natural Diversity Base
CRF	California red-legged frog
Corps	US Army Corps of Engineers
FESA	Federal Endangered Species Act
OHWM	Ordinary High Water Mark
NMFS	National Marine Fisheries Service
NPDES	National Pollution Discharge Elimination System
RPW	Relatively Permanent Water
RWQCB	Regional Water Quality Control Board
SSC	California Species of Special Concern
SWPPP	Stormwater Pollution Prevention Plan
USFWS	U.S. Fish and Wildlife Service
UTM	Universal Trans Mercator
WPT	Western pond turtle

1.0 INTRODUCTION

The purpose of this Biological Resource Assessment is to provide technical information and to review the Davenport County Sanitation Districts proposed study area, located in and around Davenport, Santa Cruz County (Appendix A, Figure 1). This project will evaluate alternatives to reuse this valuable water supply for the purposes of crop irrigation and landscape irrigation in the community. Wildlife Research Associates and Jane Valerius Environmental Consulting prepared this Biological Resources Assessment to provide sufficient detail to determine the potential effects of the proposed project on the federally-listed Threatened California red-legged frog (*Rana draytonii*) (hereafter CRF) and federally listed Threatened steelhead (*Oncorhynchus mykiss irideus*). This Biological Resource Assessment was conducted to determine the potential for special-status vegetation communities, plant and animal species to occur within the proposed linear project, and to identify the limitations to potential development of the project, such as wetland habitat removal. The biological resource assessment is prepared in accordance with legal requirements found in Section 7 (a)(2) of the Endangered Species Act (16 U.S. C 1536(c)) and also provides information required for an Initial Study/Mitigated Negative Declaration as part of the California Environmental Quality Act (CEQA) review for the project. The document presents technical information upon which later decisions regarding project affects are developed.

1.1 REASON FOR THE PROJECT

The project is being undertaken to identify several potential users of the recycled water and evaluate a treatment, storage and distribution infrastructure to deliver the water to users at the time of their need for the water. The improvements needed include some combination of the following:

Treatment Plant Upgrades
Minor upgrades will be needed to the treatment plant located on the Cemex Cement Plant property to meet Title 22 criteria for disinfected tertiary treated water designation including:

- Dredging the treatment lagoon of accumulated solids
- Replacing the lagoon effluent pump
- Installing alarms for the lagoon effluent pump, filtration and disinfection processes
- Adding redundancy for coagulant and hypochlorite dosing

1.2 PROJECT SPONSOR

The Davenport Recycled Water project is proposed by the Davenport County Sanitation District. The contact person is:

Name: Rachel Lather
Address: Davenport County Sanitation District
701 Ocean Street, Room 410
Santa Cruz, CA 95060
Phone: (831) 454-2637

1.3 PROJECT DESCRIPTION

1.3.1 Location

The Davenport Recycled Water Feasibility Study project study area is situated along Highway 1, within the Cemex cement plant property located north of the Town of Davenport, to the north of the treatment plant, and on the west side of Highway 101, south of Davenport Landing in Santa Cruz County, California (Appendix A, Figure 1). The project area is located in the unsectioned

portion of the Arroyo de la Laguna Rancheria in the south central portion of the Davenport 7.5-minute topographic quadrangle, within Township 10S and Range 3W. Surrounding land uses consist of mainly agriculture, residential and pastures.

1.3.2 Action Area

The Project Action Area is defined as all areas to be affected directly or indirectly by the Federal action, and not merely in the immediate area involved in the action (50 CFR Sect. 402.02). The action area is analyzed for potential direct and indirect effects to federally-listed species. The action area includes the areas of the pipelines plus 5 feet on the center line, as well as 3 acres for pond creation.

Given the generally minor nature of the ground-disturbing construction activities, the limits of the action area for most of the project extend at a maximum of 10 ft wide along 4,250 ft of agricultural dirt road. All other areas of pipeline will be placed within existing roadways. A total of 2 acres will be created for ponds, to be placed in agricultural fields, as described below in 1.3.3.1. All staging areas will be on existing roadways or compacted shoulders adjacent to Highway 1. Please refer to Chapter 5.0 for discussion of these potential effects.

1.3.3 Proposed Action

The Davenport County Sanitation District (District) owns and operates a wastewater treatment facility serving the community of Davenport, CA. The facility treats about 24 acre-feet of water annually to Title 22 advanced secondary-23 level and the treated water is spray irrigated onto un-mowed turf adjacent to and east of the treatment plant and is shown on the attached figures as the existing disposal area. Four project alternatives were reviewed in this BRA and are presented in Figures 2-5. The descriptions of the various components to the four alternatives are presented below. This project will evaluate alternatives to reuse this valuable water supply for the purposes of crop irrigation and landscape irrigation in the community.

1.3.3.1 Construct New Storage Pond

The proposed project includes need to construct storage for the treated water since water is treated continuously whereas demand for the water will be seasonal and intermittent. In Alternatives 1, 2 and 3 the storage pond would be constructed on the Cemex property adjacent to the existing treatment plant. In Alternative 4, the new storage pond will be constructed in an agricultural field located north of the treatment plant, on Coastal Dairies Agricultural parcel Two (APN 058-022-11). This pond will be constructed by removing vegetation and topsoil, excavating to a depth of about 8 feet, and constructing a perimeter levee from the excavated material to create a 2-acre pond with a usable water depth of 12 feet. The pond will be lined with a synthetic liner.

A pump station will be constructed adjacent to the pond consisting of 2 pumps located on a concrete slab at grade next to the pond. Power for the pump station will come from the existing treatment plant by burying conduits in a trench constructed between the two locations. The pumps will deliver water from the new storage pond to the recycled water distribution piping.

The area around the pond will likely be used as the staging area for all of the construction for this project.

1.3.3.2 Construct New Distribution Pipes

Water will be distributed to potential users through small diameter PVC pipe ($\leq$ 6 inches), along Cement Plant Road, , crossings of Hwy 1 along the west side of Hwy 1, as shown on the attached figures. Pipe installation will be accomplished with a backhoe and dump truck. Pipe, excavation

spoils and imported bedding material will be stockpiled in the work area as work progresses. Steel plates will cover open excavations when the work is not being performed and the plates will also be stockpiled near the work area. A description of the various pipe segments is provided below.

1.3.3.3 Construction Techniques/Methods

Pipe installed along Cement Plant Road will be constructed in trenches adjacent to the concrete road, to one side or the other (whichever has fewest constraints). This will consist of a trench 4 feet deep by 2 feet wide. Some of the excavated material will be removed to make room for the pipe and imported bedding material. Pipes crossing Cement Plant Road will require saw cutting through the cement to create a 2-foot wide trench, and then the concrete will be repaired after installing the pipe.

To the greatest extent feasible, pipe will be installed in the paved street along Cement Plant Road in trenches 4 feet deep by 2 feet wide. Pavement will be saw cut and removed for the pipe installation and excavated material will be removed to make room for the pipe and imported bedding material. The pavement will then be repaired after the pipe is installed. Service laterals will extend to the sides of the paved roadways where there are customers to be served.

Pipe crossing Hwy. 1 will be installed in 12-inch steel casings which will be installed by jacking and boring under the surface at a depth of about 12 feet. This will require shored jacking and receiving pits on each end of the casing pipes. Jacking pits will be about 10 feet wide by 20 feet long and receiving pits will be about 10 feet by 10 feet. All pits will be about 15 feet deep.

Pipe installed along the west side of Hwy. 1 adjacent to the planted fields will be installed in 4-foot deep by 2-foot wide trenches. Excavated material will be removed to make room for the pipe and imported bedding material. This pipe will have laterals rising above grade and topping over the edge of the existing irrigation ponds shown on the attached figure

1.3.3.4 Staging Areas and Fueling

Storage areas for contractor equipment and materials will be located next to the work area. All other staging areas must be approved by the County and must be located away from wetlands and San Vicente Creek. In addition, to prevent contamination of fuel into San Vicente Creek, the following measures will apply:

1. The use or storage of petroleum-powered equipment shall be accomplished in a manner to prevent the potential release of petroleum materials into waters of the State,
2. Areas for fuel storage, refueling and servicing of construction equipment must be located in an upland location,
3. Wash sites must be located in upland locations to ensure wash water does not flow into the stream channel or adjacent wetlands.
4. All construction equipment must be in good working condition, showing no signs of fuel or oil leaks. All questionable motor oil, coolant, transmission fluid, and hydraulic fluid hoses, fittings and seals shall be replaced. The mechanical equipment shall be inspected on a daily basis to ensure no leaks. All leaks shall be repaired in the equipment staging area or other suitable location prior to resumption of construction activity.
5. Oil absorbent and spill containment materials shall be located on site when mechanical equipment is in operation within 100 feet of waterway. If a spill occurs, no additional work shall occur in-channel until, 1) the mechanical equipment is inspected by the contractor and the leak has been repaired, 2) the spill has been contained, and 3) CDFW and NMFS are contacted and have evaluated the impacts of the spill.

1.3.4 Construction Scheduling

The estimated time period for construction is 180 working days for the whole project, and construction will occur outside in the fall season, when creek flows are at the lowest. Work within or adjacent to any creek is restricted to between June 15 and October 15.

1.3.5 Extent of Project Effects

The construction of this project will involve temporary direct effects. Temporary effects include trenching up to 9,000 linear feet.

1.3.6 Operations and Maintenance

The facilities would be constructed to current construction-industry standards and codes.

1.3.7 Construction Best Management Practices

Construction BMPs will be incorporated in the construction of the project and include, but are not limited to, the following:

A. Work on non-developed areas is proposed to be conducted outside the rainy season (defined as October 15-April 15), primarily between May 15 and October 15, therefore no erosion or sediment control is expected to be necessary. To avoid debris contamination into drainages, a silt fence will be placed parallel to the project area to contain spoils from trenching during construction. Work in roadways will occur during this same time period.

B. Surveys for special-status species (i.e., plants, amphibians, birds, bats) by qualified biologists shall be conducted at the appropriate times before construction starts to determine occupancy at the site. If no special-status species are found, no further action other than the Best Management Practices identified above are required. If individuals are found, including plants or nesting birds, a buffer zone around the species or nest will be required at a sufficient distance to prevent take of individual plants, or until after the nesting season.

C. Due to the potential for special-status species to occur, move through, or into the project area, an on-site biological monitor, shall at a minimum, check the ground beneath all equipment and stored materials each morning before construction starts to prevent take of individuals. All pipes or tubing 4 inches or greater shall be sealed by the relevant contractor with tape at both ends to prevent animals from entering the pipes at night. All trenches and other excavations shall be backfilled the same day they are opened, or shall have an exit ramp built into the excavation to allow animals to escape.

1.4 AVOIDANCE AND MINIMIZATION MEASURES

The above measures will benefit other fish, amphibian and aquatic reptile species present on the site.

1.5 PROJECT ALTERNATIVES

There are four project alternatives, as shown in Figures 2, 3, 4 and 5. Figure 2 shows Alternative 1 which is the minimum alternative and has a storage pond and pump station to be constructed adjacent to the treatment plant along with piping to connect the new storage pond to the existing treatment pond.

Alternative 2 (Figure 3) shows the medium project which includes all the features of Alternative 1 plus piping that crosses Highway 1 and runs along the agricultural field road west of Highway 1 to access two existing irrigation ponds.

Alternative 3 (Figure 4) shows the maximum project and includes all of the features of Alternative 2 plus piping to Old Town and New Town along Cement Plant Road and Highway 1 and within the two subdivisions.

Alternative 4 (Figure 5) shows the agriculture reuse project which moves the storage pond to the Coastal Dairies site north of the New Town subdivision and on the east side of Cement Plant Road and Highway 1; has piping to the treatment pond and moves the pipe crossing further north and still includes piping along the agricultural field road west of Highway 1; but does not include piping to the two subdivisions.

2.0 STUDY METHODOLOGY

This Biological Resource Assessment used the best available scientific and commercial data to evaluate the potential effects to biological resources from the proposed project. Literature review, aerial imagery and field surveys informed the descriptions of the vegetation communities, identification of present and past occurrences of special-status species in the vicinity of the proposed project, the assessment of habitats for special-status animal species.

2.1 LITERATURE SEARCH

Information on special-status plant species was compiled through a review of the literature and database search. Database searches for known occurrences of special-status species focused on the Davenport and Santa Cruz U.S. Geologic Service 7.5-minute topographic quadrangles, which provided a 4.8 km (3 mi) radius around the proposed project area. The following sources were reviewed to determine which special-status plant and wildlife species have been documented in the vicinity of the project site:

- U.S. Fish and Wildlife Service (USFWS) quadrangle species lists (USFWS 2014)
- USFWS list of special-status animals for Sonoma County (USFWS 2014)
- California Natural Diversity Database records (CNDDB) (CNDDB 2014)
- California Department of Fish and Wildlife's (CDFW) Special Animals List (CDFW 2014),
- State and Federally Listed Endangered and Threatened Animals of California (CDFW 2014)
- California Native Plant Society (CNPS) Electronic Inventory records (CNPS 2014)
- Santa Cruz County General Plan Update 1994)
- CDFG publication "California's Wildlife, Volumes I-III" (Zeiner et al., 1990)

The U.S. Fish and Wildlife Service (USFWS) electronic list of Endangered and Threatened Species was queried electronically (www.fws.gov/sacramento/es_spp_lists-overview.htm). We also reviewed the CalFish IMAPS Viewer (www.calfish.org/DataandMaps/CalFishGeographicData), developed by CDFW Biogeographic Branch for analysis of fisheries.

The CDFW BIOS website and the *California Essential Habitat Connectivity Project: A strategy for conserving a connected California* (Spencer, et al., 2010) were reviewed for wildlife movement information. The CDFW BIOS website and the CNDDB were review for documented nursery sites.

Other sources of information regarding reported occurrences include locations previously reported to the U.C Berkeley Museum of Vertebrate Zoology and the California Academy of Sciences.

2.2 PERSONNEL AND SURVEY DATES

Trish Tatarian, wildlife biologist of Wildlife Research Associates, and Jane Valerius, botanist and wetland specialist of Jane Valerius Environmental Consulting, conducted an initial daytime survey of the project site on March 18, 2014, from 1030 to 1345 and on October 22, 2014 from 1130 to1315. Trish analyzed the on-site habitats for suitability for California red-legged frog. No access to the Cemex Plant was allowed at the time of the survey. As a result, the water treatment plant, and the proposed disposal area were not surveyed or evaluated for this report.

Analysis of aerial photographs was conducted of adjacent habitat that could provide terrestrial habitat for CRF, and ponds and water bodies that could provide potential breeding habitat for CRF but from which have not been reported in the CNDDB. Habitats within 1.6 km were evaluated for their potential to provide connectivity between sites for CRF. Jane evaluated the on-site vegetation communities for their potential to support special status plants and/or wetland communities.

2.3 IMPACT ASSESSMENT METHODOLOGY

We examined the on-site vegetation communities, present and past occurrence locations of federally listed species and federal species of concern within close proximity of the proposed project areas, and habitats for special-status plant and animal species. Based on the current site conditions, we evaluated the potential for occurrence on the site for special-status biological resources and used the project description to determine any potential direct or indirect effects.

No access to the Cemex property was allowed for either the May or October surveys. As a result, we did not evaluate the storage pond location for Alternatives 1, 2 and 3 or the pipelines coming from the treatment plant to Cement Plant Road.

We based our determination of whether the proposed project may result in adverse impacts to federally-listed special-status species, based on guidelines established by the USFW under Section 7(a) of the Federal Endangered Species Act (FESA), in which a project that may have an adverse effect impact on listed biological resources must be assessed. FESA states that, "each federal agency shall…insure that any *action authorized, funded, or carried out by such agency (hereinafter in this section referred to as an "agency action") is not likely to jeopardize the continued existence of any endangered or threatened or result in the destruction or adverse modification of habitat of such species." Thus, components of the proposed project were deemed to have an adverse impact on special-status biological resources if they could result in effects as described in the above statement to any listed species or its habitat.

We based our determination of whether the proposed project may result in adverse impacts to State special-status species based on CEQA, the CDFG and the CNPS guidelines for special status plants and animals.

We also evaluated potential impacts from the project to habitats not occupied by species but for which habitats occurred.

2.4 LIMITATIONS THAT MAY INFLUENCE RESULTS

No focused surveys for this Biological Resource Assessment were conducted; species opportunistically observed during the field survey were noted. As a result, the potential for a special-status plants and animal species to occur in the project area was based on reported occurrences in the vicinity of and habitats within the project area. The limitation of relying on reported occurrences is that not all lands have been surveyed for their occupancy of special status species. As a result, a lack of findings of a species in a particular area may not be result of no occupancy but rather the result of no focused surveys being conducted.

For those species that were present (i.e., reported in the CNDDB) in the project area at the time of the Biological Resource Assessment, focused surveys were not conducted. For example, the assessment was conducted in March which was the beginning of the breeding season for detecting nesting bird species on or adjacent to the site and was also outside the flowering or blooming season for many special status plant species. No focused surveys for special status wildlife

species were conducted given the timeline of this Biological Resource Assessment. Plant species identifiable at the time of the survey were recorded.

3.0 ENVIRONMENTAL BASELINE

The project area is located within the North Coast Bioregion (Welsh 1994), a bioregion that encompasses the area from southwestern Oregon to southern Monterey County and contains the southern extent of the mixed hardwood forest with redwood. The North Coast Bioregion is delineated by the Pacific Ocean on the west and the Coast Ranges Mountains on the east and encompasses those lands west of the highest ridgeline dividing areas that drain directly into the Pacific Ocean from those areas that drain toward the interior (Welsh 1994). Habitats within this bioregion include both mesic (moist) habitats, such as freshwater marsh, and xeric (dry) habitats, such as chaparral, and are typical of a Mediterranean type climate. Average rainfall in the area is 40 inches (NCRCD 2004).

Located at the edge of the Coast Range Mountains, along the coast of the Pacific Ocean, the 14,440 linear feet project area is located between San Vicente Creek in the south and an unnamed tributary that flows into Davenport Landing in the north. Both of these drainages flow into the Pacific Ocean.

3.1 WETLANDS AND WATERS OF THE U.S. AND STATE

Four creek drainages occur within the study area (Figure 6). San Vicente Creek occurs in the southernmost portion of the study area and crosses Highway 1 at the south end of Old Town and shows as a blue-line creek on the Davenport USGS quadrangle. San Vicente Creek has a well-developed and dense cover by willows and alders on the upstream side of Highway 1. This community type corresponds to the *Salix lasiolepis* shrubland alliance or arroyo willow thickets as described in *The Manual of California Vegetation* (Sawyer, et. al. 2009). Please see section 3.2 for a more detailed descriptions of this and other vegetation communities. The width of the creek at the ordinary high water mark was not observable due to the dense canopy cover by willows and alders. According to the San Vincente Creek Stream Habitat Assessment Report (CDFW 2013), San Vicente Creek is a F3 channel type for 5,932 feet of the stream surveyed in Reach 1, which starts at the Pacific Ocean and includes the portion of the creek within the study area. The culvert that serves as a railroad tunnel was measured to be 15-feet high, 14-feet wide and 280-feet long (CDFW 2013). The culvert under Highway 1 is made of concrete and was measured to be 12-feet high, 12-feet wide and 141-feet long (CDFW 2013).

The second drainage occurs in the central portion of the study area and in an unnamed drainage on the Davenport USGS quadrangle, but on the Davenport Biological Map created by Santa Cruz County and provided by GHD, this drainage is labeled as Stream 102 Intermittent (Figure 6). This drainage is located southeast of the Cemex Cement plant and in the upstream portion of the drainage within the study area boundary there is a large instream lake or pond, which is depicted on the Davenport USGS topographic quadrangle, as shown on Figure 1). This creek is culverted as it crosses Highway 1 where the upstream canopy cover for the drainage is mostly non-native *Eucalyptus* trees along with some non-native Monterey cypress (*Hesperocyparis macrocarpa*). The downstream portion of the drainage is covered by non-native weedy shrubs and vines including Himalayan blackberry (*Rubus armeniacus*) and German ivy (*Delairea odorata*). Although this drainage does not show up on the Davenport USGS topographic quadrangle as a blue-line drainage, it qualifies as a jurisdictional drainage based on connectivity to the Pacific Ocean.

The third drainage channel occurs east of the treatment pond and runs along the north side of the existing disposal area. There was no access to this portion of the study area so no additional information is available. The drainage does not show as a blue-line drainage on the USGS quadrangle but it would likely qualify as a waters of the U.S. and state.

The fourth drainage is also an unnamed creek and it is located in the northern portion of the study area, north of the Cemex plant and north of New Town (Figure 6). Vegetation along this drainage is mapped as ruderal riparian as it includes many non-native ruderal plants including Himalayan blackberry and German ivy as well as arroyo willow. This drainage shows as a blue-line drainage on the Davenport USGS quadrangle. It flows past a crab facility and flows directly to the Pacific Ocean.

Not shown on the Davenport Biological Map created by Santa Cruz County is a small drainage located on the west side of the entrance to the Cemex Cemnt plant, on the west side of Highway 1. It is a deeply incised drainage with non-native species including Himalayan blackberry (*Rubus armeniacus*) and German ivy (*Delairea odorata*).

Several ponds also occur within the project study area including the one along Stream 102 south of the Cemex plant, three ponds within the Cemex plant, and two ponds southwest of Highway 101 in the agricultural fields. At the time of the site visit the northernmost agricultural pond was dry and the one south of that was filled with water. The agricultural ponds are lined with cement and do not support any wetland vegetation. Access to the ponds within the Cemex plant was not available at the time of the field survey.

Several wetland areas are associated with drainage ditches within the agricultural fields as shown on Figure 6. These drainage ditches had standing water at the time of the field survey and support obligate wetland plants such as cattails (*Typha* ssp.) and watercress (*Nasturium officinale*) along with other wetland plants includeing rushes (*Juncus* spp.), curly dock (*Rumex crispus*)and bristly ox-tongue (*Helminthotheca echioides*). The Coastal Dairies property has two constructed wetland ditches: one cuts across the southern portion of the parcel and one that occurs in the extreme southeastern portion of the parcel and connects with 1st Avenue (Figure 6). There is also a roadside ditch with wetland vegetation on the east side of Cement Plant Road from the north end of the New Town subdivision going north along Cement Plant Road for about 600 linear feet (Figure 6). These are relatively dry ditches although vegetation such as rabbitsfoot grass (*Polypogon monspeliensis*) was noted along with other wetland plants.

All of the creeks within the study area qualify as jurisdictional waters of the U.S. as defined by the U.S. Army Corps (Corps). The bed, bank and riparian vegetation along the creeks would be under the jurisdiction of the California Department of Fish and Wildlife (CDFW), Regional Water Quality Control Board (RWQCB) and the California Coastal Commission (CCC). Ponds that are constructed as in-stream ponds are considered to be jurisdictional by the Corps and by the state agencies. The two agricultural ponds because they are constructed ponds lined with cement and lack any wetland vegetation likely do not qualify as jurisdictional waters. The irrigation ditches and associated wetlands would be considered jurisdictional by the Corps, RWQCB, CDFW and CCC. The CCC requires a 100-foot setback from any wetlands within their jurisdiction and Santa Cruz County has setbacks for riparian areas and wetlands (Santa Cruz County General Plan Chapter 5 dated 12/6/94).

3.2 VEGETATION COMMUNITIES

Eleven vegetation types were observed within the study area where access was available (Figure 6). Where appropriate vegetation community types are described using The Manual of California Vegeation (Sawyer, et. al. 2009). Vegetation types observed were: 1) *Salix lasiolepis* shrubland alliance or arroyo willow thickets; 2) ruderal riparian; 3) *Eucalyptus (globulus, camaldulensis*) semi-natural woodland stands or Eucalyptus groves; 4) Monterey cypress groves; 5) *Baccharis pilularis* shrubland alliance or coyote bush scrub; 6) *Artemisia californica* shrubland alliance or California sagebrush scrub; 7) non-native grassland; 8) ruderal vegetation; 9) wetlands; 10) landscaped and developed areas; and 11) agricultural land.

1. *Salix lasiolepis* shrubland alliance or arroyo willow thickets occurs along San Vicente Creek and along the north unnamed drainage. An area labeled as willow wetland as has a willow riparian canopy with herbaceous wetland plants such as rushes (*Juncus* spp.) and sedges (*Carex* ssp.) as understory species and qualifies as a wetland. Red alder (*Alnus rubra*) was observed as part of the tree canopy for San Vicente Creek. The arroyo willow thickets can include other species of willow such as shining willow (*Salix lasiandra*) and Sitka willow (*Salix sitchensis*). Other plant species noted include native blackberry *(Rubus ursinus*), non-native Himalayan blackberry (*Rubus armeniacus*), stinging nettles (*Urtica dioica*), manroot (*Marah fabaceus*), common horsetail (*Equisetum arvense*), calla lily (*Zantedeschia aethiopica*), and German ivy (*Delairea odorata*). The County of Santa Cruz identifies all riparian communities as sensitive natural communities in their General Plan (1994).

2. Ruderal riparian occurs along Stream 102 and the northern unnamed creek. Ruderal riparian includes mostly non-native plants such as Himalayan blackberry and German ivy but also includes some arroyo willow. Because this is a disturbed type it was not assigned a vegetation community type using the Manual of California (Sawyer, et. al. 2009) classification system. This type should be further described during more detailed studies of the project area. The County of Santa Cruz identifies all riparian communities as sensitive natural communities in their General Plan (1994).

3. *Eucalyptus (globulus, camaldulensis*) semi-natural woodland stands or Eucalyptus groves occurs along Stream 102 and along Cement Plant Road (Figure 6). Blue gum or Eucalyptus globulus is the dominant species in this type. Typically there is very little herbaceous understory in this community type.

4. Monterey cypress (*Hesperocyparis macrocarpa*) groves occur in various areas within the project study area. This is not a vegetation type in The Manual of California vegetation. However, several areas within the project area have Monterey cypress as a dominant species so this was called out as a separate vegetation type. Monterey pine *(Pinus radiata*) trees can also occur in this type. Monterey pines within the project area do not form their own vegetation community type and the individual trees are not considered to be special status trees. This vegetation type also has very little herbaceous understory.

5. *Baccharis pilularis* shrubland alliance or coyote bush scrub (Sawyer, et. al. 2009) occurs in patches along Cement Plant Road (Figure 6) and represents the Northern (Franciscan) coastal scrub community type as described in *Preliminary descriptions of the terrestrial natural communities of California* by Robert Holland (1986). This community type is described as consisting of low, usually dense shrubs with scattered grassy openings. It typically occurs on windy exposed sites with shallow rocky soils. Plant species associated with this type include lizard tail (*Eriophyllum staechadifolium*), poison oak (*Toxicodendron diversilobum*), Douglas iris (*Iris douglasiana*), and seaside daisy (*Erigeron glaucus*). This type is often intersepced with coastal terrace prairie.

6. *Artemisia californica* shrubland alliance or California sagebrush scrub (Sawyer, et. al. 2009) occurs along Highway 1, especially in the roadside area adjacent to the agricultural fields (Figure 6). This is another coastal scrub community type and within the project area a co-dominant in this type is lizard tail. This type represents the Northern coastal bluff scrub community type as described in *Preliminary descriptions of the terrestrial natural communities of California* by Robert Holland (1986). This type consists of low, prostrate shrubs that form continuous mats. It occurs areas exposed to nearly constant winds with high salt content. The soils are usually rocky and poorly developed. This type integrades with costal prairie and northern coastal scrub in less exposed sites.

7. Non-native grassland occurs along Highway 1 and mostly like is the grassland type within the Cemex plant (Figure 6), although there was no access to this area to confirm the vegetation. This vegetation type is comprised of non-native grasses and forbs and is a common type. Plant species associated with this type include wild oats (*Avena barbata, A. fatua*), soft chess (*Bromus hordaeceus*), ripgut brome (*Bromus diandrus*), ryegrass (*Festuca perennis*), Mediterranean barley (*Hordeum marinum* ssp. *gussoneanum*), hare barley (*Hordeum murinum* ssp. *leporinum*), Harding grass (*Phalaris aquatica*), and velvet grass. Non-native weedy forbs associated with type include English daisy (*Bellis perennis*), Italian thistle (*Carduus pycnocephalus*), bristly ox-tongue (*Helminthotheca echioides*), English plantain (*Plantago lanceolata*), wild radish (*Raphanus sativus*), and mallow (*Malva* sp.).

8. Ruderal vegetation occurs along Highway 1 and in disturbed areas. This vegetation type is comprised mostly of non-native weedy herbaceous forb plants such as iceplant (*Carpobrotus chilensis, C. edulis*), wild radish, English plantain, cut-leaf plantain (*Plantago coronopus*), Bermuda buttercup (*Oxalis pes-caprae*), Italian thistle, German ivy, mallow, and bristly ox-tongue. This type often occurs near bare areas associated with parking areas along the highway or in the median between Highway 1 and Cement Plant Road.

9. Wetland areas within the agricultural areas could be classified as a freshwater marsh community type as they support obligate wetland plants such as cattails and watercress. Associated wetland plants include rushes, curly dock, and bristly ox-tongue. This community is not a natural type and has been artificially created as a result of the construction of irrigation drainage ditches (Figure 6) within the agricultural fields. The wetland/freshwater marsh community is also associated with culverts under Highway 1 that discharge on the west side in the agricultural fields.

10. Landscaped and developed areas are mapped for areas associated with Old Town and New Town. These are residential areas with landscaped yards. Plant species associated with this type include rosemary (*Rosmarinus officinalis*), calla lilly (*Zanteseschia aethiopica*) and palm trees. This type could also include some Monterey pine, Monterey cypress and blue gum trees.

11. Agricultural areas occur west of Highway 1 along the coast and at the time of the site visit were planted with globe artichoke (*Cynara cardunculus* var. *scloymus*). Some of the fields were disced and bare at the time of the site visit in preparation for planting. The Coast Dairies Agricultural Parcel Two area is also classified as agricultural land. This area had been mowed prior to the October 22, 2014 site visit however there was sufficient vegetation to identify that the majority of plants were weedy and invasive plant species icluding fennel (*Foeniculum vulgare*), mustard (*Brassica* sp.), Italian thistle (*Carduus pycnocephalus*), mallow (*Malva spp.*), milk thistle (*Silybum marianum*), wild oats (*Avena fatua*), and wild radish (*Raphanus sativus*).

3.3 WILDLIFE HABITATS

Wildlife habitat classifications for this report is based on the California Department of Fish and Game's Wildlife Habitat Relationships (WHR) System (CDFG 1988) which places an emphasis on dominant vegetation, vegetation diversity and physiographic character of the habitat. The value of a site to wildlife is influenced by a combination of the physical and biological components of the immediate environment, and includes such features as type, size, and diversity of vegetation communities present and their degree of disturbance. As a plant community is degraded by loss of understory species, creation of openings, and a reduction in canopy area, a loss of structural diversity generally results. Degradation of the structural diversity of a community typically diminishes wildlife habitat quality, often resulting in a reduction of wildlife species diversity.

Vegetation communities are often classified based on the dominant plant species within the community. Wildlife habitats are typically distinguished by vegetation type, with varying combinations of plant species providing different resources for use by wildlife. As a result, wildlife habitats are often classified on a more inclusive manner of the structure of the habitat rather than the specifics of the plant species, resulting in several vegetation communities occurring under one type of wildlife habitat (Table 1).

Table 1: Vegetation Communities and Wildlife Habitat Corollary

Vegetation Community	Wildlife Habitat (WHR)
Arroyo Willow thickets	Valley foothill Riparian
Ruderal Riparian	
Eucalyptus groves	Eucalyptus
Monterey cypress grove	Monterey Cypress
Coyote bush scrub	Coastal scrub
California Sagebrush Scrub	
Non-native Grassland	Annual grassland
Ruderal Vegetation	Urban
Landscaped and Developed areas	
Wetlands	Fresh emergent wetland
Agricultural Land	Cropland

The following is a discussion of existing wildlife habitats found on site and the wildlife species they support.

Valley-Foothill Riparian: This habitat occurs along San Vicente Creek and supports insect diversity attractive to a variety of migratory birds and provides nesting habitat. Typically, diverse foraging substrates, such as foliage, bark and ground substrates, increase feeding availability. Birds that forage for insects in the leaves of plants include Bewick's wren (*Thryomanes bewickii*), and bushtit (*Psaltriparus minimus*). Bark-insect foraging species, such as downy woodpecker (*Picoides pubescens*), plain titmouse (*Parus inornatus*) and white-breasted nuthatch (*Sitta carolinensis*) forage for insects in the bark. There are a few species that are adapted to foraging for insects in flight, such as black phoebe (*Sayornis nigricans*), western wood pewee (*Contopus sordidulus*), orange-crowned warbler (*Vermivora celata*), and yellow-rumped warbler (*Dendroica coronata*). Amphibians and reptiles expected in this community include California slender salamander (*Batrachoseps attenuatus*), enssatina (*Ensatina eschscholtzii*), Pacific chorus frogs (*Pseudacris regilla*), arboreal salamanders (*Aneides lugubris*), California newt (*Taricha torosa*) and western pond turtle (Emys marmorata). Generalist omnivores are species such as the scrub jay (*Aphelocoma caerulescens*) that eat a variety of different foods, from insects to seeds to fruits. Although insects are the primary food source for most species in the riparian habitat, ground dwelling species, such as California quail (*Callipepla californica*) and California towhee (*Pipilo fuscus*), are also present in the riparian habitat feeding on seeds. Brush-pile houses created by the San Francisco ducky-footed woodrat (*Neotomas fuscipes*) were observed in this habitat. This type of habitat also provides forage and roosting habitat for bat species, including possibly forage habitat for red bat (*Lasiurus blosservillii*).

San Vicente Creek. Located on the south side of the proposed project area, San Vicente Creek drains a watershed of 11.3 square miles and is fed by Mill Creek and several small tributaries (CDFW 2013). This creek supports a mean canopy cover of 92% of which 15% is conifer, 85 % is hardwood (CDFW 2013) and can be classified as montane hardwood, that grades into Valley – foothill riparian habitat.

Young of the year steelhead /rainbow trout were detected at the outflow of San Vicente Creek and up to 17,938 feet upstream from the outlet (CDFW 2013). California red-legged frogs were observed in the creek, 4,624 feet from the Pacific Ocean (CDFW 2013). Coho salmon were introduced into the creek in January 2013.

Eucalyptus Trees with Monterey Cypress Trees: These communities are usually monotypic, with only one species providing canopy and very little undergrowth due to the oils in eucalyptus leaves that hinder invertebrate presence. Structurally, these forests offer perching and nesting sites for a variety of avian species, including Anna's hummingbird that feed on the flower nectar and nest on the twigs within the eucalyptus. The loose bark of blue gum eucalyptus, and crevices and cracks in the bark provide foraging substrate and nest sites for some species. Species reported nesting in eucalyptus trees include brown creepers (*Certhia americana*), and American robin (*Turdus migratorius*), among others. The flowers of blue gum, red gum, and other species provide a bounty for many different birds during the winter and spring. Birds visit the flowers for the copious nectar, and to eat insects that are attracted to the flowers and include yellow-rumped warbler (*Dendroica coronate*) and Townsend's warblers (*Dendroica townsendi*), ruby-crowned kinglet (*Regulus calendula*), house finch (*Carpodacus mexicanus*), chestnut-backed chickadee (*Poecile rufescens*), and several others. Eucalyptus trees of the size within the project area may provide key nest sites for raptors, such as red-shouldered hawk (*Buteo lineatus*), red-tailed hawk (*Buteo jamaicensis*), and great horned owl (*Bubo virginianus*).

Monarch butterflies were observed in this habitat during the March assessment.

Coastal Scrub: The sandy soils often associated with coastal scrub habitat provide ideal habitat for reptiles such as western rattlesnake (*Crotalus viridis*) and western fence lizards (*Sceloporus occidentalis*), which are common in the warm dry scrub community. Coastal scrub habitat, often interspersed with other habitats, provides foraging and nesting habitat for species that are attracted to edges of communities, including California quail (*Lophortyx californicus*), California thrasher (*Toxostoma redivivum*), mourning dove (*Zenaidura macroura*), and rufous-sided towhee (*Pipilo crissalis*). These birds forage among the leaf litter for invertebrates. Reptiles such as western fence lizard (*Sceloporus occidentalis*), western rattlesnake (*Crotalus viridis*) and western skink (*Eumeces skiltonianus*) also use this habitat.

Annual grassland: Grassland habitat provides both primary habitat, such as nesting and foraging, and secondary habitat, such as a movement corridor. Small species using this habitat as primary habitat include reptiles and amphibians, such as southern alligator lizard (*Gerrhonotus multicarinatus*), western fence lizard (*Sceloporus occidentalis*), and Pacific slender salamander (*Batrachoseps attenuatus*), which feed on invertebrates found within and beneath vegetation and boulders within the vegetation community. This habitat also attracts seed-eating and insect-eating species of birds and mammals. California quail (*Lophortyx californicus*), mourning dove (*Zenaidura macroura*), and meadowlark (*Sturnella neglecta*) are a few seed-eaters that nest and forage in grasslands. Insect-eaters such as scrub jays (*Aphelocoma coerulescens*) use the habitat for foraging only. Grasslands are important foraging grounds for aerial and ground foraging insect-eating bat species such as myotis (*Myotis* spp.) and pallid bat (*Antrozous pallidus*). A large number of other mammal species such as California vole (*Microtus californicus*), deer mouse (*Peromyscus maniculatus*), Botta's pocket gopher (*Thomomys bottae*), California ground squirrel (*Spermophilus beecheyi*) and brush rabbit (*Sylvilagus bachmani*) also forage and nest within grasslands.

Urban and landscape: Urban and landscaped areas provide little habitat for wildlife except for those species adapted to human habitation, such as European starlings (*Sturnus vulgaris*), and

rock pigeons (*Columba livia*). These areas do not provide habitat for the larger mammalian species nor for predators, except as possible movement corridors.

Cropland: Agricultural lands generally do not provide the same habitat values for mammals, reptiles, and amphibians as they do for birds. The requirements of large herbivorous mammals for food and cover from predators and the elements in their territory, as well as those for suitable courting and pairing habitats are generally not met by agricultural uses. Agricultural fields, which generally consist of monocrops of a uniform height, do not provide the diversity of structural components needed for large herbivores. Food diversity is also not available for larger mammals, such as deer, which eat bark, and a variety of foliage, and berries. To obtain this habitat diversity, the mammals would have to travel farther in large agricultural areas, which would decrease their energy efficiency.

Fresh emergent wetland. This habitat occurs along the western edge of Hwy 1 and the agriculture dirt road. Pacific chorus frogs (*Pseudacris regilla*) were observed in some pools.

Treatment lagoon. Although this area of the project was not surveyed, there is potential for California red-legged frog to breed in this habitat, depending on its use. Similar to the Settlement Basins in quarries, it is likely a little disturbed body of water that is used by all age classes of CRF.

3.4 WILDLIFE MOVEMENT CORRIDORS

The proposed project site is located within the Central Coast Ecoregion which supports a wide range of connectivity areas that include natural landscapes that act as corridors to allow for wildlife movement, as well as interstate connections that act as barriers to movement (Spencer, et al. 2010). Wildlife movement includes migration (i.e., usually one way per season), inter-population movement (i.e., long-term genetic flow) and small travel pathways (i.e., daily movement corridors within an animal's territory). While small travel pathways usually facilitate movement for daily home range activities such as foraging or escape from predators, they also provide connection between outlying populations and the main corridor, permitting an increase in gene flow among populations. Barriers to movement include those structures that impede such movements, such as large scale development or major highways with no undercrossings. Roads cause habitat fragmentation because they break large habitat areas into smaller habitat patches that support fewer individuals, which can increase loss of genetic diversity and risk of local extinction. Additionally, roads may prevent access to essential physical or biological features necessary for breeding, feeding, or sheltering.

San Vicente Creek is considered a movement corridor for fish, such as coho, amphibians, such as California red-legged frog, and mammals, such as striped skunk. The intermittent drainages in the central and northern portion of the project provide a corridor for terrestrial species. Based on the climate in this portion of Santa Cruz County, movements by amphibians are not just restricted to the drainages and creeks and all areas are considered occupied by amphibians at any time of the year. Breeding likely occurs in all ponded water, including the settling pond within the sewer treatment plant.

4.0 SPECIAL-STATUS SPECIES AND THEIR HABITATS

4.1 REGULATORY REQUIREMENTS

4.1.1 Federal Endangered Species Act (FESA)

To determine whether the proposed project may result in adverse effects to federally listed species, the criteria used was based on guidelines established by the USFW under Section 7(a) of the FESA, in which a project that may have an adverse effect on listed biological resources must be assessed. FESA (16 U.S. Code [USC 1531–1544) provides for the conservation of species that are Endangered or Threatened throughout all or a significant portion of their range, as well as the protection of habitats on which they depend.

Section 7 requires federal agencies to consult with USFWS or NMFS, or both, before performing any action (including actions such as funding a program or issuing a permit) that may affect listed species or designated Critical Habitat. The section 7 consultations are designed to assist Federal agencies in fulfilling their duty to ensure federal actions "do not jeopardize" the continued existence of a species or destroy or adversely modify Critical Habitat.

The USFWS defines temporary and permanent effects as areas denuded, manipulated, or otherwise modified from their pre-project conditions, thereby removing one or more essential components of a listed species' habitat as a result of project activities that include, but are not limited to, construction, staging, storage, lay down, vehicle access, parking, etc. According to the USFWS, temporary effects are limited to one construction season and, at a minimum, are fully restored to baseline habitat values or better within one year following initial disturbance. Permanent effects are not temporally limited and include all effects not fulfilling the criteria for temporary effects.

4.1.2 Federal Migratory Bird Treaty Act

The Migratory Bird Treaty Act (MBTA) (Title 16, United States Code [USC], Part 703) enacts the provisions of treaties between the United States, Great Britain, Mexico, Japan, and the Soviet Union and authorizes the U.S. Secretary of the Interior to protect and regulate the taking of migratory birds. It establishes seasons and bag limits for hunted species and protects migratory birds, their occupied nests, and their eggs (16 USC 703, 50 Code of Federal Regulations [CFR] 21, 50 CFR 10). Most actions that result in taking of, or the permanent or temporary possession of, a protected species constitute violations of the MBTA. The MBTA also prohibits destruction of occupied nests. The Migratory Bird Permit Memorandum (MBPM-2) dated April 15, 2003, clarifies that destruction of most unoccupied bird nests (without eggs or nestlings) is permissible under the MBTA; exceptions include nests of federally threatened or endangered migratory birds, bald eagles (*Haliaeetus leucocephalus*), and golden eagles (*Aquila chrysaetos*). USFWS is responsible for overseeing compliance with the MBTA.

4.1.3 California Endangered Species Act (CESA)

The California Endangered Species Act (CESA (FGC §§ 2050–2116) is administered by DFG. The CESA prohibits the "taking" of listed species except as otherwise provided in state law. The CESA includes FGC Sections 2050–2116, and policy of the state to conserve, protect, restore, and enhance any endangered species or any threatened species and its habitat. The CESA requires mitigation measures or alternatives to a proposed project to address impacts to any State listed endangered, threatened or candidate species, or if a project would jeopardize the continued existence of any endangered or threatened species or result in the destruction or adverse modification of habitat essential to the continued existence of those species, if there are reasonable and prudent alternatives available consistent with conserving the species or its habitat which would prevent jeopardy. Section 86 of the FGC defines take as "hunt, pursue, catch, capture, or kill, or attempt to hunt, pursue, catch, capture, or kill." Unlike the ESA, CESA applies

the take prohibitions to species under petition for listing (state candidates) in addition to listed species. Section 2081 of the FGC expressly allows DFG to authorize the incidental take of endangered, threatened, and candidate species if all of the following conditions are met:

- The take is incidental to an otherwise lawful activity.
- The impacts of the authorized take are minimized and fully mitigated.
- Issuance of the permit will not jeopardize the continued existence of the species.
- The permit is consistent with any regulations adopted in accordance with §§ 2112 and 2114 (legislature-funded recovery strategy pilot programs in the affected area).
- The applicant ensures that adequate funding is provided for implementing mitigation measures and monitoring compliance with these measures and their effectiveness.

The CESA provides that if a person obtains an incidental take permit under specified provisions of the ESA for species also listed under the CESA, no further authorization is necessary under CESA if the federal permit satisfies all the requirements of CESA and the person follows specified steps (FGC § 2080.1).

4.1.4 California Fish and Game Code

The California Constitution establishes the California Fish and Game Commission (Commission) (CA Constitution Article 4, § 20). The California Fish and Game Code (FGC) delegates the power to the Commission to regulate the taking or possession of birds, mammals, fish, amphibian and reptiles (FGC § 200). The Commission has adopted regulations setting forth the manner and method of the take of certain fish and wildlife in the California Code of Regulations, Title 14.

4.1.5 California Fish and Game Code- Species Protection

The FGC establishes DFG (FGC § 700) and states that the fish and wildlife resources of the state are held in trust for the people of the state by and through DFG (FGC § 711.7(a)). All licenses, permits, tag reservations and other entitlements for the take of fish and game authorized by FGC are prepared and issued by DFG (FGC § 1050 (a)).

Provisions of the FGC provide special protection to certain enumerated species such as:
§ 3503 protects eggs and nests of all birds.
§ 3503.5 protects birds of prey and their nests.
§ 3511 lists fully protected birds.
§ 3513 protects all birds covered under the federal Migratory Bird Treaty Act.
§ 3800 defines nongame birds.
§ 4150 defines nongame mammals.
§ 4700 lists fully protected mammals.
§ 5050 lists fully protected amphibians and reptiles.
§ 5515 lists fully protected fish species.

4.1.6 California Coastal Commission

The California Coastal Commission (CCC) November 16, 2006 workshop on the Definition and Delineation of Wetlands in the Coastal Zone (California Coastal Commission 2006) provides the following guidance related to the CCC definition of wetlands:

Coastal Act Section 30121 defines the term “wetland” as: “lands within the coastal zone which may be covered periodically or permanently with shallow water and include saltwater marshes, freshwater marshes, open or closed brackish water marshes, swamps, mudflats, and fens. The Coastal Commission’s regulations (California Code of Regulations Title 14 (14 CCR)) establish a

"one parameter definition" that only requires evidence of a single parameter to establish wetland conditions:

> *Wetland shall be defined as land where the water table is at, near, or above the land surface long enough to promote the formation of hydric soils or to support the growth of hydrophytes, and shall also include those types of wetlands where vegetation is lacking and soil is poorly developed or absent as a result of frequent and drastic fluctuations of surface water levels, wave action, water flow, turbidity or high concentrations of salts or other substances in the substrate. Such wetlands can be recognized by the presence of surface water or saturated substrate at some time during each year and their location within, or adjacent to, vegetated wetlands or deep-water habitats. (14 CCR Section 13577)*

The Commission's one parameter definition is similar to the USFWS wetlands classification system, which states that wetlands must have one or more of the following three attributes: (1) at least periodically the land supports predominantly hydrophytes; (2) the substrate is predominantly undrained hydric soil; and (3) the substrate is nonsoil and is saturated with water or covered by shallow water at some time during the growing season of each year.

As opposed to wetlands definitions, which describe the general parameters that must be shown to establish wetland conditions (hydrology, soils, and vegetation), the delineation of wetlands in the field typically requires substantial evidence of indicators, which are the physical, chemical, or biological features of an area that can be easily observed or assayed and that are usually correlated with the presence of a wetland parameter; and methodologies that guide the process of distinguishing wetland from non-wetland conditions. Such field tools are needed because the various characteristics of wetlands typically occur on physical gradients (i.e., wet to dry conditions, hydric to nonhydric soils, and hydrophytic to meso/xerophytic vegetation). The Coastal Commission's regulations acknowledge these distinctions by specifying some general decision rules for establishing the upland boundary of wetlands:

> *…the upland limit of a wetland shall be defined as:*
> *a. the boundary between land with predominantly hydrophytic cover and land with predominantly mesophytic or xerophytic cover;*
> *b. the boundary between soil that is predominantly hydric and soil that is predominantly nonhydric; or*
> *c. in the case of wetlands without vegetation or soils, the boundary between land that is flooded or saturated at some time during years of normal precipitation, and land that is not. (14 CCR Section 13577).*

The CCC and the local coastal plan typically requires a 100-foot setback from areas designated as wetlands or waters. This includes all riparian areas.

4.1.7 County of Santa Cruz

The Conservation and Open Space Element of the Santa Cruz County General Plan includes objectives and policies to protect biological resources which includes biological diversity, riparian corridors and wetlands, and aquatic and marine habitats. The objectives and policies applicable to the MBSST Network project are discussed below.

Objective 5.1. To maintain the biological diversity of the county through an integrated program of open space acquisition and protection, identification and protection of plant habitat and wildlife corridors and habitats, low-intensity and resource compatible land uses in sensitive habitats and mitigations on projects and resource extraction to reduce impacts on plant and animal life.

Policy 5.1.2. Definition of Sensitive Habitat. An area is defined as a sensitive habitat if it meets one or more of the following criteria:

a) Areas of special biological significance as identified by the State Water Resources Control Board.
b) Areas which provide habitat for locally unique biotic species/communities. Including coastal scrub, maritime chaparral, native rhododendrons and associated Elkgrass, mapped grasslands in the coastal zone and sand parkland; and Special Forests including San Andreas Live Oak woodlands, Valley Oak, Santa Cruz Cypress, indigenous Ponderosa Pine, indigenous Monterey Pine, and ancient forests.
c) Areas adjacent to essential habitat of rare, endangered or threatened species as defined in (e) and (f) below.
d) Areas which provide habitat for Species of Special Concern as listed by the California Department of Fish and Game in the Special Animals list, Natural Diversity Database.
e) Areas which provide for rare or endangered species which meet the definition of Section 15380 if the California Environmental Quality Act guidelines.
f) Areas which provide habitat for rare, endangered or threatened species as designated by the State Fish and Game Commission, United States Fish and Wildlife Service or California Native Plant Society.
g) Nearshore reefs, rocky intertidal areas, seacaves, islets, offshore rocks, kelp beds, marine mammal hauling grounds, sandy beaches, shorebird roosting, resting and nesting area, cliff nesting areas and marine, wildlife or educational/research reserves.
h) Dune plant habitats.
i) All lakes, wetlands, wetlands, estuaries, lagoons, streams and rivers.
j) Riparian corridors.
(Appendix B of the General Plan contains a list of the specific habitats and/or species)

Policy 5.1.4. Sensitive Habitat Protection Ordinance. Implement the protection of sensitive habitats by maintaining the existing Sensitive Habitats Protection ordinance. The ordinance identifies sensitive habitats, determines the uses which are allowed in and adjacent to sensitive habitats, and specifies required performance standards for land in or adjacent to these areas. Any amendments to this ordinance shall require a finding that sensitive habitats shall be afforded equal or greater protection by the amended language.

Policy 5.2.1. Designation of Riparian Corridors and Wetlands. Designate and define the following areas as Riparian Corridors:

a) 50’ from the top of a distinct channel or physical evidence of high water mark of a perennial stream;
b) 30’ from the top of a distinct channel or physical evidence of highwater mark of an intermittent stream as designated on the General Plan maps and through field inspection of undesignated intermittent and ephemeral streams;
c) 100’ of the high water mark of a lake, wetland, estuary, lagoon, or natural body of standing water;
d) The landward limit of a riparian woodland plant community;
e) Wooded arroyos within urban areas.

Designate and define the following areas as Wetlands:

Transitional areas between terrestrial and aquatic systems where the water table is usually at or near the surface, or the land is covered by shallow water periodically or permanently. Examples of wetlands are saltwater marshes, freshwater marshes, open or closed brackish water marshes, swamps, mudflats, and fens.

The US Army Corps of Engineers, and other federal agencies utilize a “unified methodology” which defines wetlands as “those areas meeting certain criteria for hydrology, vegetation, and soils.”

Policy 5.2.3. Activities within Riparian Corridors and Wetlands. Development activities, land alteration and vegetation disturbance within riparian corridors and wetlands and required buffers shall be prohibited unless exception is granted per the Riparian Corridor and Wetlands Protection ordinance. As a condition of riparian exception, require evidence of approval for development from the US Army Corps of Engineers, California Department of Fish and Game, and other federal or state agencies that may have regulatory authority within riparian corridors and wetlands.

4.2 SPECIAL-STATUS SPECIES REVIEWED

For the purposes of this Biological Resources Assessment for the Davenport Recycled Water project, special-status species include those that are federally listed as Endangered, Threatened or Proposed for federal listing (candidate) under the USFWS. Other species also evaluated in this Biological Assessment include non-listed federal and California Special Species of Concern (SSC) and those species that fall under the jurisdiction of the USFWS such as the Migratory Bird Treaty Act (MBTA) and the CDFG, such as CEQA Section 15380(d).

Impacts to special-status species were assessed if: (1) those species occurred in habitats similar to those of the project area, and (2) were known to occur within the project area represented by the Davenport 7.5-minute topographic quadrangle, and within 3 miles, which includes the Santa Cruztopographic quadrangle, and are shown on Figure 7.

Federally Listed Plant Species. Review of the USFWS (USFWS 2012), the CDFW, and the CNDDB (CNDDB 2014) revealed that 6 federally listed plant species and species of concern have potential to occur in the area along with one state listed endangered plant. Please refer to Table 2 for a list of these species. Potential habitat is present for two of the federally listed species: robust spineflower (*Chorizanthe robusta* var. *robusta*) and Santa Cruz tarplant (*Holocarpha macradenia*).

Robust spineflower is an annual herbaceous plant in the buckwheat family or Polygonaceae. It is a low growing plant with white flowers and prefers sandy or gravelly soils. It occurs in maritime chaparral, openings in cismontane woodland, coastal dunes and coastal scrub. It blooms from April to September. The potential for occurrence is considered to be low as most of the populations of robust spineflower have been extirpated and this plant is known from only six extended occurrences. Additionally there is no maritime chaparral, cismontane woodland or coastal dune habitat within the project area and the coastal scrub habitats (coyote bush scrub and California sagebrush scrub) would either be avoided or impact to these areas would be very limited and restricted to piping along the road.

Santa Cruz tarplant is an annual herbaceous plant in the sunflower family or Asteraceae. It grows from 1 to 5 decimeters tall with yellow flowers. The stems are notably stalked-gladular. It occurs in coastal prairie, coastal scrub and valley and foothill grassland communities often on clay or sandy soils. It blooms from June to October. Existing populations of Santa Cruz tarplant have all been introduced and nearly half of these have failed. The project will not impact any coastal prairie habitat and the grassland habitats within the project area have been highly disturbed and altered according to information provided by Santa Cruz County (2014). As stated above, the coastal scrub habitats will either be avoided or impact to these areas would be very limited and restricted to piping along the road.

Special Status Plant Species: All of the federally listed species are also state-listed species and CNPS Rank 1B species (Table 2). There are an additional 32 species protected under CEQA. Species associated with broadleaved upland forest, chaparral, North Coast coniferous forest, lower montane coniferous forest on inland marine sands, maritime ponderosa pine sandhills, maritime chaparral, or on special substrates such as diatomaceous shale, siliceous shale, calcareous rock in redwood forest, serpentinite or very acid metamorphic rock or substrate were not considered to be present within the study area. Of the 32 CNPS ranked species reviewed, 17 are considered to have a low to moderate potential to occur within the study area based on the presence of potential habitat (please refer to Table 2 for further details on these species). Six

plant species have known occurrences near the study area. The 6 species are San Francisco collinsia (*Collinsia multicolor*), Kellogg's horkelia (*Horkelia cuneata* var. *sericea*), Point Reyes horkelia (*Horkelia marinensis*), marsh microseris (*Microseris paludosa*), Choris' popcornflower (*Plagiobothrys chorisianus* var. *chorisianus*), and Santa Cruz microseris (*Stebbisnoseris decipiens*). However, the typical habitats for these species are either lacking in the project area or the habitats are highly disturbed. According to the County of Santa Cruz (2014) the proposed storage pond location immediately southeast of 1st Avenue is dominated by non-native grasses and forbs is a highly disturbed and ruderal grassland that is not likely to support any special status plants. In addition the County's analysis of the area, based on historic aerial photos, states that it appears that the Cemex site was covered in a cement kiln dust from the cement plant sometime between 19972 and 1979. As a result the County surmises that the placement of such material would likely raise the pH level of the soils making it even more unlikely to support any special status plant species (County of Santa Cruz 2014). A review of the Coastal Dairies Agricultural Parcel Two, based on our October 22, 2014 site visit, confirms with the County's analysis that this area is a fallow agricultural land dominated by non-native and invasive plants and is not considered to be suitable habitat for any special status plants. However, we did not have access to any areas within the Cemex plant.

Although individuals of Monterey pine (*Pinus radiata*) occur within the study area they are not considered to be special status, as only three native stands of Monterey pine are currently recognized by the CNDDB and CNPS.

Table 2. Potentially Occurring Special-Status Plant Species in the Davenport Recycled Water Study Area.

Scientific Name Common Name	Status USFWS/ CDFW/ CNPS	Habitat Affinities and Blooming Period	Habitat Present/absent	Occurrence Potential
FEDERAL AND STATE LISTED SPECIES AND FEDERAL SPECIES OF CONCERN				
Chorizanthe pungens var. *hartwegiana* Ben Lomond spineflower	FE/-/1B	Lower montane coniferous forest (maritime ponderosa pine sandhills). Blooms April to July. Elevation: 90-610m.	Absent	**None.** No habitat present in study area. Known only from sandhill parklands in the Santa Cruz Mountains.
Chorizanthe robusta var. *robusta* Robust spineflower	FE/-/1B	Maritime chaparral, openings in cismontane woodland, coastal dunes, coastal scrub on sandy or gravelly soils. Blooms April to September. Elevation: 3-300m.	Present	**Low.** Most populations extirpated. Known only from six extended occurrences. There is no cismontane woodland or coastal dune habitat in the study area and areas with coastal scrub will either be avoided or have limited impact.
Erysimum teretifolium Santa Cruz wallflower	FE/CE/1B	Chaparral, lower montane coniferous forest on inland marine sands. Blooms March to July. Elevation: 120-610m.	Absent	**None.** No habitat in project area.
Hesperocyparis abramsiana var. *abramsiana* Santa Cruz cypress	FE/CE/1B	Closed-cone coniferous forest, chaparral, lower montane coniferous forest on sandstone or granitic soils. Perennial evergreen tree. Elevation: 280-800m.	Absent	**None.** Known from Santa Cruz Mountains and Bonny Doon Ecological Reserve. No habitat in study area.
Holocarpha macradenia Santa Cruz tarplant	FT/CE/1B	Coastal prairie, coastal scrub, valley and foothill grassland often on clay or sandy soils. Blooms June to October. Elevation: 10-220m.	Present	**Very low to none**. All extant occurrences are introduced; nearly half have failed. Last remaining natural population in the S.F. Bay Area extirpated by development in 1993. There is no coastal prairie habitat in the study area and areas with coastal scrub will either be avoided or have limited

Scientific Name Common Name	Status USFWS/ CDFW/ CNPS	Habitat Affinities and Blooming Period	Habitat Present/absent	Occurrence Potential
				impact and grassland habitats are mostly ruderal and highly disturbed and not likely support this species
Pentachaeta bellidiflora White-rayed pentachaeta	FE/CE/1B	Cismontane woodland, valley and foothill grassland, often on serpentinite. Blooms March to May. Elevation: 35-620m.	Absent	**None**. Study site not in the elevation range of this species. Known from fewer than 20 occurrences.
Plagiobothrys diffusus San Francisco popcornflower	-/CE/1B	Coastal prairie, valley and foothill grassland. Blooms March to June. Elevation: 60-360m.	Absent	**None.** Study site not in the elevation range of this species. Identification difficult; taxonomic work needed.
CNPS RANKED SPECIES				
Agrostis blasdalei Blasdale's bent grass	-/-/1B	Coastal bluff scrub, coastal dunes, coastal prairie. Blooms May to July. Elevation: 5-150m.	Absent	**None.** There is no coastal bluff scrub, coastal dunes or coastal prairie in the study area. Known to occur along Highway 1 between Ano Nuevo and Davenport, about 1.8 miles SE of Swanton Road at Highway 1.
Amsinckia lunaris Bent-flowered fiddleneck	-/-/1B	Coastal bluff scrub, cismontane woodland, valley and foothill grassland. Blooms March to June. Elevation: 3-500m.	Present	**Low.** Potential grassland habitat in study area. Grassland areas are ruderal and highly disturbed and not likely to support special status plants.
Arabis blepharophylla Coast rockcress	-/-/4	Broadleaved upland forest, coastal bluff scrub, coastal prairie, coastal scrub in rocky areas. Blooms February to May. Elevation: 3-1100m.	Absent	**None.** No habitat in study area.
Arctostaphylos andersonii	-/-/1B	Broadleaved upland forest, chaparral, North	Absent	**None.** No habitat in study area.

Scientific Name Common Name	Status USFWS/ CDFW/ CNPS	Habitat Affinities and Blooming Period	Habitat Present/absent	Occurrence Potential
Anderson's manzanita		Coast coniferous forest in openings and edges and redwood forest. Blooms November to May. Elevation: 60-760m.		
Arctostaphylos glutinosa Schreiber's manzanita	-/-/1B	Closed-cone coniferous forest, chaparral on diatomaceous shale. Blooms November to April. Elevation: 170-685m.	Absent	**None.** No habitat in study area. Known from fewer than 10 occurrences.
Arctostaphylos ohloneana Ohlone manzanita	-/-/1B	Closed-cone coniferous forest, coastal scrub on siliceous shale. Blooms February to March. Elevation: 450-530.	Absent	**None.** Study area not in elevation range of species. Known from fewer than 5 occurrences.
Arctostaphylos pajaroensis Pajaro manzanita	-/-/1B	Chaparral on sandy soils. Blooms December to March. Elevation: 30-760m.	Absent	**None.** No habitat in study area.
Arctostaphylos silvicola Bonny Doon manzanita	-/-/1B	Closed-cone coniferous forest, chaparral, lower montane coniferous forest on inland marine sands. Blooms February to March. Elevation: 120-600m.	Absent	**None.** No habitat in study area and not in elevation range of species
Calyptridium parryi var. *hesseae* Santa Cruz Mountains pussypaws	-/-/1B	Chaparral, cismontane woodland on sandy or gravelly soils in openings. Blooms May to August. Elevation: 305-1530m.	Absent	**None**. No habitat in study area and not in elevation range of species
Castilleja ambigua var. *ambigua* Johnny-nip	-/-/4	Coastal bluff scrub, coastal prairie, coastal scrub, marshes and swamps, valley and foothill grassland, vernal pools margins. Blooms March to August	Present	**Low.** Coastal scrub, wetland and grassland habitats occur in project area. No known recorded occurrences in area.
Collinsia multicolor	-/-/1B	Closed-cone coniferous forest, coastal scrub,	Present	**Low.** There are three known occurrences

Scientific Name Common Name	Status USFWS/ CDFW/ CNPS	Habitat Affinities and Blooming Period	Habitat Present/absent	Occurrence Potential
San Francisco collinsia		sometimes on serpentinite. Blooms March to May. Elevation: 30-250m.		close to the project area. However, there is no closed-cone coniferous forest or serpentine in the study area and the coastal scrub areas will either be avoided or have limited impact.
Dacryophyllum falcifolium Tear drop moss	-/-/1B	North Coast coniferous forest – occurs on calcareous rock in redwood forests. Elevation: 50-275m.	Absent	**None.** No habitat in study area.
Eriogonum nudum var. *decurrens* Ben Lomond buckwheat	-/-/1B	Chaparral, cismontane woodland, lower montane coniferous forest (maritime ponderosa pine sandhills) on sandy soils. Blooms June to October. Elevation: 50-800m.	Absent	**None.** No habitat in study area.
Grindelia hirsutula var. *maritima* San Francisco gumplant	-/-/3	Coastal bluff scrub, coastal scrub, valley and foothill grassland on sandy or serpentinite soils. Blooms June to September. Elevation: 15-400m.	Present	**Low**. Potential grassland and coastal scrub habitat in study area but no coastal bluff scrub or serpentine soils. .
Hoita strobilina Loma Prieta hoita	-/-/1B	Chaparral, cismontane woodland, riparian woodland, usually on serpentinite and mesic sites. Blooms May to October. Elevation: 30-860m.	Present	**Low.** Potential riparian woodland habitat in study area but no serpentinite. Riparian woodland areas will be avoided. .
Horkelia cuneata var. *sericea* Kelloggi's horkelia	-/-/1B	Closed-cone coniferous forest, maritime chaparral, coastal dunes, coastal scrub on sandy or gravelly soils in openings. Blooms April to September. Elevation: 10-200m.	Present	**Low.** Potential coastal scrub habitat in study area but these areas will either be avoided or have limited impact by the project. CNDDB recorded occurrence along Hwy1 between Ano Nuevo and Davenport at same location as *Agrostis blasdalei*.

Scientific Name Common Name	Status USFWS/ CDFW/ CNPS	Habitat Affinities and Blooming Period	Habitat Present/absent	Occurrence Potential
Horkelia marinensis Point Reyes horkelia	-/-/1B	Coastal dunes, coastal prairie, coastal scrub on sandy flats and dunes near coast. Blooms May to September. Elevation: 5-350m.	Present.	**Low**. Known from Ben Lomond Mtn and Santa Cruz peninsula. However project impact area does not include the typical habitat for this species.
Lessingia micradenia var. *glabrata* Smooth lessingia	-/-/1B	Chaparral and cismontane woodland on serpentinite, often roadsides. Blooms July to November. Elevation: 120-420m.	Absent	**None.** No habitat in study area.
Microphus amphibolus Mt. Diablo cottonweed	-/-/3	Broadleafed upland forest, chaparral, cismontane woodland, valley and foothill grassland on rocky areas. Blooms March to May. Elevation: 45-825m.	Present	**Low**. Potential grassland habitat present, however the habitats on site are highly disturbed..
Microseris paludosa Marsh microseris	-/-/1B	Closed-cone coniferous forest, cismontane woodland, coastal scrub, valley and foothill grassland. Blooms April to July. Elevation: 5-300m.	Present	**Low.** One recorded occurrence from H-H Ranch between Hwy1 and Swanton Road, SE of Greyhound Rock. However, project impact area does not include the typical habitat for this species..
Mielichhoferia elongata Elongate copper moss	-/-/2B	Cismontane woodland growing on very acid metamorphic rock or substrate, usually in higher portions of fens. Elevation: 500-1300m.	Absent	**None.** No habitat present in study area – project site not in elevation range of species.
Monolopia gracilens Woodland woollythreads	-/-/1B	Openings in broadleafed upland forest, chaparral, cismontane woodland, North Coast Coniferous forest, valley and foothill grassland on serpentinite soils. Blooms February to May. Elevation: 100-1200m	Absent	**None.** No habitat in study area (no serpentinite).

Scientific Name Common Name	Status USFWS/ CDFW/ CNPS	Habitat Affinities and Blooming Period	Habitat Present/absent	Occurrence Potential
Penstemon rattanii var. *kleei* Santa Cruz Mountains beardtongue	-/-/1B	Chaparral, lower montane coniferous forest, North Coast coniferous forest. Blooms May to June. Elevation: 400-1100m.	Absent.	**None.** No habitat present in study area – project site not in elevation range of species.
Pinus radiata Monterey pine	-/-/1B	Closed-cone coniferous forest, cismontane woodland.	Present	**Present.** Only three native stands are known to occur: one at Ano Nuevo, one in Cabria and one on the Monterey Peninsula. Individuals in the project area are not considered to be special status.
Piperia candida White-flowered rein orchid	-/-/1B	Broadleafed upland forest, lower montane coniferous forest, North Coast Coniferous forest, sometimes on serpentinite. Blooms March to September. Elevation: 30-1310m.	Present	**Low.** Typical habitat not present on site. Microhabitat for this species is on serpentine in forest duff, mossy banks and rock outcrops which are lacking in the project area.
Plagiobothrys chorisianus var. *chorisianus* Choris' popcornflower	-/-/1B	Chaparral, coastal prairie, coastal scrub in mesic areas. Blooms March to June. Elevation: 15-160m.	Present	**Low.** Potential coastal scrub habitat in project area. One known occurrence from SW end of Lasher Marsh between Hwy 1 and Swanton Rd. The project will either avoid or have limited impact to coastal scrub areas.
Sanicula hoffmannii Hoffman's sanicle	-/-/4	Broadleafed upland forest, coastal bluff scrub, chaparral, cismontane woodland, coastal scrub, lower montane coniferous forest, often on serpentinite or clay. Blooms March to May. Elevation: 30-300m	Present	**Low.** Typical habitat not present on site as this species is associated with serpentine and clay soils which are lacking in the project area.

Scientific Name Common Name	Status USFWS/ CDFW/ CNPS	Habitat Affinities and Blooming Period	Habitat Present/absent	Occurrence Potential
Senecio aphanactis Chaparral ragwort	-/-/2B	Chaparral, cismontane woodland, coastal scrub on alkaline soils. Blooms January to April. Elevation: 15-800m.	Absent	**None.** Microhabitat is drying alkaline flats which do not occur in the project area.
Sidalcea malachroides Maple-leaved checkerbloom	-/-/4	Broadleafed upland forest, coastal prairie, coastal scrub, North Coast coniferous forest, riparian woodland often in disturbed areas. Blooms March to August.	Present	**Moderate**. Potential riparian woodland habitat present in study area. However the habitats where this species could occur will not be impacted by the project.
Stebbinsoseris decipiens Santa Cruz microseris	-/-/1B	Broadleafed upland forest, closed-cone coniferous forest, chaparral, coastal prairie, coastal scrub, valley and foothill grassland in open areas, sometimes serpentinite. Blooms April to May. Elevation: 10-500m	Present	**Low.** Microhabitat is open areas in loose or disturbed soils, usually derived from sandstone, shale or serpentinite on seaward slopes. Four recorded occurrences in CNDDB located north of Davenport. However the project impact area does not contain shale or serpentinite so typical habitat for this species is lacking in the project area.
Trifolium buckwestiorum Santa Cruz clover	-/-/1B	Broadleafed upland forest, cismontane woodland, coastal prairie in moist grassland, gravelly margins. Blooms April to October. Elevation: 105-610m.	Absent	**None.** Project not in elevation range of species.
SENSITIVE NATURAL COMMUNITIES				
Maritime Coast Range Ponderosa Pine Forest	CNDDB G1, S1	Ponderosa pine is the sole dominant. Associates include black oak, incense cedar, canyon live oak, Coulter pine, Douglas-fir, interior live oak, Jeffrey pine, sugar pine and white fir.	Absent	**None.** No habitat in project area**.**

Scientific Name Common Name	Status USFWS/ CDFW/ CNPS	Habitat Affinities and Blooming Period	Habitat Present/absent	Occurrence Potential
Monterey Pine Forest	CNDDB G1, S1	Only three native stands are known to occur: one at Ano Nuevo, one in Cabria and one on the Monterey Peninsula.	Absent	**None.** No habitat in project area. Individual Monterey pine trees are present in project area but these are not considered to be special status**.**
Northern Coastal Salt Marsh	CNDDB G3, S3	A complex and variable mosaic of a variety of species including cordgrass, pickleweed, inland saltgrass, jaumea, and gumplant.	Absent	**None.** No habitat in project area.
Northern Interior Cypress Forest	CNDDB G2, S2	Santa Cruz cypress is the sole or dominant tree; canyon live oak and knobcone pine maybe present.	Absent	**None.** No habitat in project area**.** Known from Santa Cruz Mountains.
Northern Maritime Chaparral	CNDDB G1, S1	Scrub oak sole or dominant shrub; blue blossom, California coffeeberry, chamise, chaparral pea, chaparral whitethorn, hollyleaf redberry, interior live oak manzanita, poison oak, red shank and/or toyon may be present.	Absent	**None.** No habitat in project area.

U.S. Fish and Wildlife Service

FE = federally Ranked Endangered
FT = federally Ranked Threatened
FPE= federally proposed Endangered
SC[1] = federally Species of Concern

California Department of Fish and Game

CE = California Ranked Endangered
CR = California Ranked as Rare
CT = California Ranked as Threatened

California Native Plant Society

Rank 1B: Plants rare and endangered in California and elsewhere
Rank 2B: Plants rare and endangered in California but more common elsewhere
Rank 3: Plants about which more information is needed – a review list
Rank 4: Plants of limited distribution – a watch list.

G1, S1 = fewer than 6 viable occurrences worldwide/statewide and/or up to 518 hectares
G2, S2 = 6-20 viable occurrences worldwide/statewide and/or more than 518-2,590 hectares
G3, S3 = 21-100 viable occurrences worldwide/statewide, and/or more than 2,590-12,950 hectares
Note: Alliances marked with a G1 through G3 code are considered to be rare and threatened throughout its range

Special Status Animal Species: Of the 27 special-status animal species identified as potentially occurring in the vicinity of the Davenport Recycled Water project area, including a 3 mile radius (CNDDB 2014, USFWS 2014), several additional species have potential to occur on or near the site based on the habitats present for a total number of 54 animal species evaluated for their potential to occur (please refer to Table 3). Other species prominent in today's regulatory environment, but with low potential to occur on the site, are also included in the table.

Table 3: Potentially Occurring Special-Status Animal Species in the Davenport Recycled Water Study area

Common Name Scientific Name	Status USFWS/ CDFG	Habitat Affinities/ Reported Localities in the Project Area	Habitat Present/absent	Occurrence Potential
FEDERAL				
Invertebrates				
Ohlone tiger beetle *Cincindela ohlone*	FE/CSC	Hunts, breeds, and digs larval burrows along sunny single-track trails and dirt roads in coastal terrace meadows that still support native grasses.	None	**None:** No suitable habitat present
Zayante band-winged grasshopper *Trimerotropis infantilis*	FE/-	Isolated sandstone deposits in the Santa Cruz Mountains (Zayante sandhills ecosystem). Occurs mostly on sand parkland habitat, but also in areas with well-developed ground cover and in sparse chaparral with grass.	Absent	None: No suitable habitat present.
Fish				
Tidewater goby Eucyclogobius newberryi	FE/SSC	Occurs discontinuously throughout California, ranging from Tillas Slough (mouth of the Smith River) in Del Norte County south to Agua Hedionda Lagoon in San Diego County. Areas of precipitous coastlines that preclude the formation of lagoons at stream mouths have created three natural gaps in the distribution of the goby.	Absent	None: No suitable habitat present.
Coho salmon - Central California Coast ESU *Onchorhynchus kisutch*	FE/SE	Occurs from Punta Gorda, in northern California, to the San Lorenzo River, in Santa Cruz County, and includes coho salmon populations from several tributaries of San Francisco Bay.	Present	**High**: in Pacific Ocean
steelhead - Central California Coast DPS *Onchorhynchus mykiss*	FT/-	Requires beds of loose, silt-free, coarse gravel for spawning. Also needs cover, cool water and sufficient dissolved oxygen. Reported in San Vicente Creek (CNDDB 2014).	Present	**High**: Spawning habitat present.
Amphibians				

Common Name Scientific Name	Status USFWS/ CDFG	Habitat Affinities/ Reported Localities in the Project Area	Habitat Present/absent	Occurrence Potential
California red-legged frog *Rana draytonii*	FT/-	Prefers semi-permanent and permanent stream pools, ponds and creeks with emergent and/or riparian vegetation. Occupies upland habitat especially during the wet winter months. Species reported in San Vicente Creek and stock ponds in project area (CNDDB 2014).	Present	**High**: Dispersal and upland habitat present.
Birds				
Western snowy plover *Charadrius alexandrines nivosus*	FT/-	Sandy beaches, salt pond levees or shores of large alkali lakes. Sandy, gravelly or friable soils required for nesting.	Absent	None: No suitable habitat present.
STATE				
Invertebrates				
Globose dune beetle *Coelus globosus*	FSC	Fore dunes, sand hummocks, sometimes back dunes along immediate coast. Larvae and pupae spend most of the time in the sand. The larvae can also be found under vegetation or accumulated debris.	Absent	None: No suitable habitat present.
Sandy beach tiger beetle *Cicindela hirticollis gravida*		Inhabits areas adjacent to non-brackish water along the coast of California on clean, dry light-colored sand in the upper zone. Subterranean larvae prefer moist sand no affected by wave action.	Absent	None: No suitable habitat present.
monarch butterfly *Danaus plexippus*	-/*	Roosts during winter migration in dense stands of large trees such as eucalyptus and Monterey pines that provide shelter from the wind. Roosts in groves close to nectar and water sources.	Present	**High**: observed in eucalyptus grove.
Empire Cave pseudoscorpion *Fissilicreagris imperialis*	-/-	Restricted to small isolated karst area in Cave Gulch, Santa Cruz (CNDDB 2014).	Absent	None: Outside species range.
Moestan blister beetle *Lytta moesta*	SC/-	Inhabits vernal pools.	Absent	None: No suitable habitat present.

Common Name Scientific Name	Status USFWS/ CDFG	Habitat Affinities/ Reported Localities in the Project Area	Habitat Present/absent	Occurrence Potential
Dolloff cave spider *Meta dolloff*	-/-	Lives in caves in the Empire Cave System and Grey Whale Ranch State Park (CNDDB 2014).	Absent	None: Outside species range.
Mackenzie's cave amphipod *Stygobromus mackenziei*	-/-	Amphipod crustaceans that live in subterranean habitats.	Absent	None: Outside species range.
Mimic tryonia *Tryonia imitator*	-/-	Inhabits coastal lagoons, estuaries, and salt marshes. Found only in permanently submerged areas in a variety of sediments; able to withstand a variety of salinities.	Absent	None: no suitable habitat.
Reptiles				
western pond turtle *Emys marmorata*	-/SSC	Prefers permanent, slow-moving creeks, streams, ponds, rivers, marshes and irrigation ditches with basking sites and a vegetated shoreline. Requires upland sites for egg-laying.).	Present	**Low:** suitable aquatic habitat present.
Birds				
Cooper's hawk *Accipiter cooperi*	MB/ SSC	Nests primarily in deciduous riparian forests. May also occupy dense canopied forests from gray pine-oak woodland to ponderosa pine. Forages in open woodlands.	Present	**High**: suitable nesting habitat along drainages with trees and groves.
Sharp-shinned hawk *Accipiter striatus*	MB	Dense canopy pine or mixed conifer forest and riparian habitats. Water within one mile required.	Present	**High**: suitable nesting habitat along drainages with trees and groves.
tricolored blackbird *Agelaius tricolor*	SC/MB/ SSC	Nests primarily in dense freshwater marshes with cattail or tules, but also known to nest in upland thistles. Forages in grasslands.	Absent	None: no suitable habitat.
Great egret *Ardea alba*	MB/ SSC	Nests colonially in large trees near water	Present	**High**: suitable nesting habitat along drainages with trees and groves.

Common Name Scientific Name	Status USFWS/ CDFG	Habitat Affinities/ Reported Localities in the Project Area	Habitat Present/absent	Occurrence Potential
Great blue heron *Ardea herodius*	MB/ SSC	Nests colonially in large trees near water	Present	**High**: suitable nesting habitat along drainages with trees and groves.
burrowing owl *Athene cunicularia hypugea*	SC, MB/ SSC	Open, dry grasslands, deserts, prairies, farmland and scrublands with abundant active and abandoned mammal burrows. Prefers short grasses and moderate inclined hills.	Absent	None: no suitable habitat.
Oak titmouse *Baeolophus inornatus*	MB/ SSC	Breeds in cavities in oak woodlands, gleaning insects from the bark. Occurs from southern Oregon to northern Mexico along the Central Valley and xeric coastal foothills.	Absent	None: no suitable habitat.
Western snowy plover *Charadrius alexandrines nivosus*	FT/-	Sandy beaches, salt pond levees or shores of large alkali lakes. Sandy, gravelly or friable soils required for nesting.	Absent	None: no suitable habitat.
olive-sided flycatcher *Contopus borealis*	MB/ SSC	Nests in open conifer or mixed oak woodland. Nets on horizontal branches, among a cluster of twigs and needles.	Present	**High**: suitable nesting habitat along drainages with trees.
black swift *Cypseloides niger*	FSC/SSC	Nests made of moss bound with mud or simply a cushion of grass or bare mud, are often built on small ledges with overhanging moss or grass near seashore and waterfalls.	Absent	None: no suitable habitat.
California yellow warbler *Dendroica petechia brewsteri*	MB/SSC	Nests in riparian areas dominated by willows, cottonwoods, sycamores or alders and in mature chaparral. May also inhabit oak and coniferous woodlands and urban areas near stream courses.	Present	**High**: suitable nesting habitat along drainages with trees.
Snowy egret *Egretta thula*	MB/-	Nest in colonies on thick vegetation in isolated places—such as dredge-spoil islands, salt marsh islands, swamps, and marshes. They often change location from year to year. During the breeding season they feed in estuaries, saltmarshes, tidal channels, shallow bays.	Present	**High**: suitable nesting habitat along drainages with trees and groves.

Common Name Scientific Name	Status USFWS/ CDFG	Habitat Affinities/ Reported Localities in the Project Area	Habitat Present/absent	Occurrence Potential
white-tailed kite *Elanus leucurus*	MB/CFP	Inhabits low rolling foothills and valley margins with scattered oaks and river bottom- lands or marshes adjacent to deciduous woodlands. Prefers open grasslands, meadows and marshes for foraging close to isolated, dense-topped trees for nesting and perching.	Present	**High**: suitable nesting habitat along drainages with trees and groves.
Pacific-slope flycatcher *Empidonax difficilis*	SC, MB/SSC	Found in a variety of habitats including cliff, conifer, forest, hardwood, mixed, and woodland. Nests along streams, in tree cavities, in cliffs, crotch of branch, earth banks, or buildings.	Present	**High**: suitable nesting habitat along drainages with trees.
saltmarsh common yellowthroat *Geothylpis trichas sinuosa*	MB/SSC	Nests in fresh and salt marshes in tall grasses, tule patches and willows and forages in thick, continuous cover down to the water surface.	Absent	None: no suitable habitat.
loggerhead shrike *Lanius ludovicianus*	SC, MB/CSC	Nests in woodland and scrub habitats at margins of open grasslands. Often uses lookout perches such as fence posts. Resident and winter visitor in lowlands and foothills throughout California.	Absent	None: no suitable habitat.
Osprey *Pandion haliaetus*	-/SSC	Nests in large trees within 15 miles of good fish-producing water body.	Present	**Moderate**: suitable habitat occurs in groves of trees.
bank swallow *Riparia riparia*	MB/ST	Nests in banks along rivers, excavating holes in sides of the banks.	Absent	None: no suitable habitat
black phoebe *Sayornis nigricans*	MB/-	Nests in anthropogenic structures on ledges and trees. Nest made of mud pellets, dry grasses, weed stems, plant fibers and hair.	Present	**High**: suitable nesting habitat along drainages with trees.
rufous hummingbird *Selasphorus rufus*	SC, MB/-	Nests in chaparral, coniferous forest, scrub habitats and riparian habitats. Nests are placed on a downward drooping structure.	Present	**High**: suitable nesting habitat along drainages with trees.

Common Name Scientific Name	Status USFWS/ CDFG	Habitat Affinities/ Reported Localities in the Project Area	Habitat Present/absent	Occurrence Potential
Allen's hummingbird *Selasphorus sasin*	SC, MB/-	Nests in wooded areas, meadows, or thickets along shaded streams, on a branch low down on stem, although placement height varies between 10 inches and 90 feet.	Present	**High**: suitable nesting habitat along drainages with trees.
western meadowlark *Sturnella neglecta*	MB/-	Nests in grasslands removed from trees and shrubs. Nest is domed in structure.	Present	**High**: suitable nesting habitat grasslands.
barn owl *Tyto alba*	MB/-	Nests in tree cavities, crevices between the fronds of palm trees or small caves in cliffs or banks and in anthropogenic structures. Nests are typically 10 feet above ground. Occurs throughout North America but listed endangered in some states.	Present	**High**: suitable nesting habitat along drainages with trees.
Mammals				
pallid bat *Antrozous pallidus*	-/SSC	Day roosts include rock outcrops, mines, caves, buildings, bridges, and hollows and cavities in a wide variety of tree species.	Absent	None: no suitable habitat
Townsend's big-eared bat *Corynorhinus townsendii*	-/SSC	Roosting sites include caves, mine tunnels, abandoned buildings and other structures.	Absent	None: no suitable habitat
Santa Cruz kangaroo rat *Dipodomys venustus venustus*	-/-	Silverleaf manzanita mixed chaparral in the Zayante Sand Hills ecosystem of the Santa Cruz Mountains. Needs soft, well-drained soils	Absent	None: no suitable habitat
Fringed myotis *Myotis thysanodes*	-/SSC	Roosts in colonies in caves, cliffs and attics of old buildings. Will also use trees as day roosts.	Absent	None: no suitable habitat
Silver haired bat *Lasionycteris noctivagans*	-/-	Primarily a coastal and montane forest dweller. Roosts in hollow trees, beneath exfoliating bark, abandoned woodpecker holes and rarely under rocks.	Present	**Moderate**: roosting habitat in groves.

Common Name Scientific Name	Status USFWS/ CDFG	Habitat Affinities/ Reported Localities in the Project Area	Habitat Present/absent	Occurrence Potential
Western red bat *Lasiurus blossevillii*	-/SSC	Roosts in foliage of large shrubs and trees in woodland borders, rivers, agricultural areas, and urban areas with mature trees. Typically found in large cottonwoods, sycamores, walnuts and willows associated with riparian habitats. Solitary when roosting, except when females are with young (from 2 to 5 are born).	Present	**High**: suitable roosting habitat along drainages with trees.
Hoary bat *Lasiurus cinereus*	-/-	Roosts singly (except female-young association) in dense foliage of medium to large coniferous and deciduous trees. Highly migratory, but occurs year-round in California, overwintering in S.F. Bay Area. Forages over tree canopy, often high altitude, often long distances from day roost.	Present	**High**: suitable roosting habitat along drainages with trees.
California myotis *Myotis californicus*	-/-	Roosts in caves, mine tunnels, crevices in rocks and buildings, generally near forested areas. Feeds low among trees or over shrubs.	Absent	None: no suitable habitat
Small-footed myotis *Myotis ciliolabrum*	-/-	Roosts in caves, mine tunnels, crevices in rocks and buildings, generally near forested areas. Feeds around canopy, often low to the ground, higher in open habitat.	Absent	None: no suitable habitat
long-eared myotis *Myotis evotis*	-/-	Day roosts in hollow trees under exfoliating bark, and crevices in rock outcrops. Found roosting under bark of small black oaks in northern California, also use mixed conifer forests throughout California	Present	**High**: suitable roosting habitat along drainages with trees.
fringed myotis *Myotis thysanodes*	-/-	Roosts in colonies in caves, cliffs and attics of old buildings. Will also use trees as day roosts.	Present	**High**: suitable roosting habitat along drainages with trees.
long-legged myotis *Myotis volans*	-/-	Day roosts in hollow trees, particularly large diameter snags or live trees with lightning scars. Associated with forests.	Present	**High**: suitable roosting habitat along drainages with trees.
Yuma myotis *Myotis yumanensis*	-/-	Roosts colonially in caves, tunnels and buildings. Closely associated with water.	Absent	None: no suitable habitat

Common Name Scientific Name	Status USFWS/ CDFG	Habitat Affinities/ Reported Localities in the Project Area	Habitat Present/absent	Occurrence Potential
San Francisco dusky-footed woodrat *Neotoma fuscipes annectens*	-/SSC	Found throughout the San Francisco Bay area in brushy and forested areas, this species is a generalist herbivore. Houses are typically placed on the ground against or straddling a log or exposed roots of a standing tree, and, are often located in dense brush. Nests are also placed in the crotches and cavities of trees and in hollow logs.	Present	**High**: suitable roosting habitat along drainages.
American badger *Taxidea taxus*	-/SSC	Inhabits open grasslands, savannas and mountain meadows near timberline. Requires abundant burrowing mammals, their principal food source, and loose, friable soils.	Absent	None: no suitable habitat

U.S. Fish and Wildlife Service

FE = federally listed Endangered
FT = federally listed Threatened
FC = federal candidate for listing
MB = Migratory Bird Treaty Act.

California Department of Fish and Game

SE = State listed Endangered
ST = State listed as Threatened
SSC = State Special Concern species

The following is a discussion of species having potential to occur on site and/or are species that are prominent in today's regulatory environment, such as the California red-legged frog. This document does not address impacts to species that may occur in the region but for which no habitat occurs on site.

4.3 FEDERALLY THREATENED AND ENDANGERED WILDLIFE SPECIES

Coho salmon (*Oncorhynchus kisutch*) Central California coast ESU
Status: Federally listed Endangered with a designated Critical Habitat, and is California listed Endangered. The threatened and endangered ESUs of coho salmon were listed on June 28, 2005. Some had been previously listed in 1996 or 1997, but, because of legal and other issues, all listings were reaffirmed in 2005. The Central California Coastal ESU was uplisted from threatened to endangered in the 2005 listing. The proposed project is located within the Critical Habitat for the species, which occurs from Santa Cruz County north into Mendocino County (NOAA 2005).

Description: The coho salmon, also known as silver salmon, measure between 24-28 inches and 6-9.5 lbs (Behnke 2002). This medium sized fish lives 2-4 years. *Oncorhynchus kisutch* can be distinguished from other co-occurring salmon by their gray gums and absence of spots of entire caudal fin or slight spotting on the upper lobe (Behnke 2002).

General Ecology and Distribution: In California, Coho salmon generally exhibit a simple 3-year life cycle (USACE 2008). For the first half of their life cycle, Coho live in streams and small freshwater tributaries before smolting and migrating to the ocean in April and May. For 16 to 18 months the fish feed in the marine environment, foraging in estuarine and marine waters of the Pacific Ocean. With the onset of sexual maturity, they return to their natal stream, spawn and die. The freshwater migration from the ocean typically occurs after heavy late-fall or winter rains breach the sand bars at the mouths of coastal streams (USACE 2008). Adult migration peaks in December and January, and continues into March, with spawning occurring shortly after the fish return to the spawning grounds (USACE 2008). Coho salmon fry undergo distinct morphological, physiological, and behavioral transformation from parr (more than 1 year old) to smolts before they migrate to the ocean (USACE 2008). The onset of smoltification and migration is associated with fish age and size, and environmental conditions (primarily increasing day length and water temperatures) (USACE 2008).

Occurrence in Project Area: This area of the Pacific Ocean is identified as Critical Habitat (NOAA 2005) (Figure 7). No outfall from the proposed pipeline will occur into the Pacific Ocean. Therefore, no further analysis is required.

Steelhead (*Oncorhynchus mykiss irideus*) Central California Coast Distinct Population Segment
Status: federally listed Threatened in 1997. Critical Habitat was designated in 2005.

Description: The steelhead, also known as coastal rainbow trout, has a more rounded snout, with a bright pink stripe along the lateral line with spotted dorsal fins and a square or slightly forked caudal fin (Behnke 2002).

General Ecology and Distribution: Winter steelhead enter streams from the ocean when rains have increased the stream flows (Moyle 2002). Spawning typically occurs in tributaries to mainstream rivers, after which they return to the ocean. A key characteristic of all breeding streams is cool temperatures, typically between 0° Celsius (winter) and 26°-27° C (summer) (Moyle 2002). Higher temperatures may reduce oxygen levels that are not population sustaining.

Different size classes require different microhabitats that are defined by depth, water velocity, substrate and cover (Moyle 2002).

The *O. mykiss irideus* includes coastal populations from Alaska to California (including the Sacramento River). Within the range of West Coast steelhead, spawning migrations occur throughout the year, with seasonal peaks of activity. In a given river basin there may be one or more peaks in migration activity; because these runs are usually named for the season in which the peak occurs, some rivers may have runs known as winter-, spring-, summer-, or fall-run steelhead. The stream-maturing type (summer-run steelhead in the Pacific Northwest and northern California) enters freshwater in a sexually immature condition between May and October and requires several months to mature and spawn. The ocean-maturing type (winter-run steelhead in the Pacific Northwest and northern California) enters freshwater between November and April, with well-developed gonads, and spawns shortly thereafter. Coastal streams are dominated by winter-run steelhead.

Occurrence in the project area: Steelhead have been reported in San Vicente Creek (CDFW 2013) (Figure 7). However, no outfall is proposed into San Vicente Creek. Therefore, no further analysis is required.

California red-legged frog (*Rana draytonii*)(CRF)
Status: federally listed by as Threatened with associated critical habitat and is classified by the CDFG as a State Special Concern species.

General Ecology and Distribution: Breeding habitat for this frog is primarily in ponds, but they will also breed in slow moving streams, or deep pools in intermittent streams. Inhabited ponds are typically permanent and contain emergent and shoreline vegetation. Sufficient pond depth and shoreline cover are both critical, because they provide means of escape from predators for the frogs (Stebbins 1985, CDFG 1988, Tatarian 2008). Additionally, emergent vegetation is necessary for the deposition of eggs. The breeding period begins during heavy rains, from early to late winter, usually November through early May. The larvae mature in 11 to 20 weeks.

Non-breeding CRF have been found in both aquatic and upland habitats. The majority of individuals prefer dense, shrubby or emergent vegetation, closely associated with deep (>0.7 meters) still, or slow moving water. However, some individuals use habitats that are removed from aquatic habitats, seeking cover in ground squirrel burrows, under boulders and logs and in non-native grasslands (Tatarian 2008). Upland refugia habitat includes areas up to 90 meters from a stream corridor and includes natural features, such as boulders, rocks, trees, shrubs, and logs. Incised stream channels with portions narrower than 18 inches and depths greater than 18 inches may also provide habitat. In general, densely vegetated terrestrial areas within the riparian corridor provide important sheltering habitat during the winter flooding of the streams (Tatarian 2008). Along the coast, upland habitat is used throughout the year with animals making straight-line movements between water bodies regardless of the terrain (Bulger, et al. 2003).

Occurrence in the project area: CRF are reported from San Vicente Creek, the pond located on Drainage 102, and in the upper reaches of the northern drainage (CNDDB 2014) (Figure 7). This species is located within the Cemex Plant site. This species likely uses the upland habitats between these water bodies.

4.4 CRITICAL HABITAT

Coho salmon (Central California Coast) – the project area is located along the Central California Coast (NOAA 2005).

Steelhead (California Central Coast) – the project area is located within the Big Basin Hydrologic Unit 3 of the Central California Coast Ecologically Significant Unit (NOAA 2005).

California Red-legged Frog – the project area is located within the Santa Cruz 1 Critical Habitat Unit located in the northwest corner of Santa Cruz County (USFWS 2010).

4.5 OTHER SPECIAL-STATUS WILDLIFE SPECIES

Western Pond Turtle (*Emys marmorata*) (WPT)
Status: State Species of Concern

General Ecology and Distribution: This medium sized turtle ranges in size to just over 8 inches (21cm) with a low carapace that is generally olive, brownish or blackish (Stebbins 1985, Jennings and Hayes 1994). Primary habits include permanent water sources such as ponds, streams and rivers. It is often seen basking on logs, mud banks or mats of vegetation, although wild populations are wary and individuals will often plunge for cover after detecting movement from a considerable distance. Although it is an aquatic species with webbed feet, it can move across land in response to fluctuating water level, an apparent adaptation to the variable rainfall and unpredictable flows that occur in many coastal California drainage basins (Rathbun, *et al.* 1993). In addition, it can over-winter on land or in water or remain active in the winter, depending on environmental conditions (Rathbun, *et al.* 1993; Jennings and Hayes 1994). Females travel from aquatic sites into open, grassy areas to lay eggs in a shallow nest (Holland 1992; Rathbun, *et al.* 1993). Nests have been reported from 2-400 meters or more away from water bodies (Jennings and Hayes 1994).

Project Area Occurrence: Although not reported in the CNDDB in the general area of the project, this species likely occurs in the drainages and ponded waters within the project area.

Nesting Passerines – including California towhee (*Pipilo crissalis*) and song sparrow (*Melospiza melodia*), among others
Status: Protected under the Federal Migratory Bird Treaty Act and Fish and Game Code 3503.

General Ecology and Distribution: As early as February, passerines begin courtship and once paired, they begin nest building, often around the beginning of March. Nest structures vary in shapes, sizes and composition and can include stick nests, mud nests, matted reeds and cavity nests. Depending on environmental conditions, young birds may fledge from the nest as early as May and, if the prey base is large, the adults may lay a second clutch of eggs.

Project Area Occurrence: No surveys were conducted for these species as part of this biological resource assessment. Several passerine (perching birds) species may nest on the site in the various habitats, including, but not limited to, California towhee and song sparrows along the drainages and coastal scrub, as well as the coastal terrace prairie grasslands.

Nesting Raptors –Cooper's hawk (*Accipiter cooperii*)
Status: Protected under the Federal Migratory Bird Treaty Act and Fish and Game Code 3503.5

General Ecology and Distribution: Raptors nest in a variety of substrates including, cavities, ledges and stick nests. For example, Cooper's hawks are small bird hunters, hunting on the edges of forests and in broken forest where passerines forage for seeds and insects. In general, the breeding season for raptors occurs in late March through June, depending on the climate, with young fledging by early August.

Project Area Occurrence: No surveys were conducted for these species as part of this biological resource assessment. Suitable nesting trees occur along drainages and groves of trees within the proposed project.

Roosting Bats – western red bat (*Lasiurus blossevillii*) and other tree roosting bats
Status: California Species of Special Concern, as well as Fish and Wildlife Code Sections 86, 2000, 2014, 3007, Title 14, Sections 15380, 15382.

General Ecology and Distribution: Western red bats have a broad, but disjunct, distribution throughout the state, and a wide range of elevations. Reproductive females are more common in the inland portions of the state than the Bay Area, where males are more common during the summer months. An obligate tree-roosting species, western red bats roost in the foliage of primarily large-leaf trees, such as willows, cottonwoods, and sycamores, and are often found near riparian zones. Western red bats adults are solitary-roosting except during maternity season, when females give birth often to twins, and sometimes up to four young; this is atypical compared to other bat species.

Project Area Occurrence: No surveys or assessments of the trees were conducted for this analysis. There is a high likelihood that the grove of trees near the wastewater treatment plant on the Cemex Cement plant site provides suitable roosting habitat.

San Francisco Dusky-footed woodrat ((*Neotoma fuscipes annectens*) is a California Species of Special Concern.

General Ecology and Distribution: This nocturnal species is active year round in forest habitats of moderate canopy and moderate to dense understory and in chaparral communities. Woodrats are, for the most part, generalist herbivores. They consume a wide variety of nuts and fruits, fungi, foliage and some forbs (CDFG 1998). Many species are good climbers and rock dwellers, and dusky-footed woodrats are highly arboreal (Kelly 1990). Evergreen or live oaks and other thick-leaved trees and shrubs are important habitat components for N. *fuscipes* (CDFG 1998). One individual can create 3 or more houses, building one in a week (up to 2.5 feet tall) (Tatarian pers. obs.). The reproductive season begins in February or March and breeding activity usually continues until July (CDFG 1998). Litter sizes range between 1-4.

Project Area Occurrence: No surveys or assessments of the trees were conducted for this analysis. There is a high likelihood that the grove of trees near the wastewater treatment plant on the Cemex Cement plant site provides suitable habitat, as well as the riparian drainages.

4.6 SPECIAL STATUS NATURAL COMMUNITIES

The arroyo willow thickets, ruderal riparian, ponds, streams and wetland areas are all considered to be sensitive natural communities even though they are not officially designated by the CNDDB as special status plant communities. These areas are protected by the County of Santa Cruz General Plan as well as the CCC and local coastal plan. In addition these areas fall under the jurisdiction of the Corps, RWQCB and CDFW.

5.0 EFFECTS ANALYSIS AND MITIGATION MEASURES

This section summarizes the potential temporary biological effects from construction activities within the study area. The analysis of these effects is based on a single reconnaissance-level survey of the study area, a review of existing databases and literature, and personal professional experience with biological resources of the region. Potential effects to federally-listed special-status animal species may occur from the proposed project. Mitigations for these biological effects are provided below.

In addition, impacts to state protected special status species are also included in this section and mitigation measures are proposed to reduce the impacts to less than significant. A synopsis of the species potentially affected is presented in Table 4, and is followed by mitigation measures to avoid "take" of individuals.

Table 4: Special Status Animal Species Potentially Affected by the Proposed Project

Species	Status	Habitat Present/Absent	Occurrence Potential	Avoidance Yes/No
Coho salmon - Central California Coast ESU *Onchorhynchus kisutch*	FE/SE	Present	High	Yes
steelhead - Central California Coast DPS *Onchorhynchus mykiss*	FT/-	Present	High	Yes
California red-legged frog *Rana draytonii*	FT/-	Present	High	Yes
western pond turtle *Emys marmorata*	-/SSC	Present	Low	Yes
Cooper's hawk *Accipiter cooperi*	MB/ SSC	Present	High	Yes
Sharp-shinned hawk *Accipiter striatus*	MB	Present	High	Yes
Great egret *Ardea alba*	MB/ SSC	Present	High	Yes
Great blue heron *Ardea herodius*	MB/ SSC	Present	High	Yes
olive-sided flycatcher *Contopus borealis*	MB/ SSC	Present	High	Yes
California yellow warbler *Dendroica petechia brewsteri*	MB/SSC	Present	High	Yes
Snowy egret *Egretta thula*	MB/-	Present	High	Yes
white-tailed kite *Elanus leucurus*	MB/CFP	Present	High	Yes

Species	Status	Habitat Present/Absent	Occurrence Potential	Avoidance Yes/No
Pacific-slope flycatcher *Empidonax difficilis*	SC, MB/SSC	Present	High	Yes
Osprey *Pandion haliaetus*	-/SSC	Present	Moderate	Yes
black phoebe *Sayornis nigricans*	MB/-	Present	High	Yes
rufous hummingbird *Selasphorus rufus*	SC, MB/-	Present	High	Yes
Allen's hummingbird *Selasphorus sasin*	SC, MB/-	Present	High	Yes
western meadowlark *Sturnella neglecta*	MB/-	Present	High	Yes
barn owl *Tyto alba*	MB/-	Present	High	Yes
Silver haired bat *Lasionycteris noctivagans*	-/-	Present	Moderate	Yes
Western red bat *Lasiurus blossevillii*	-/SSC	Present	High	Yes
Hoary bat *Lasiurus cinereus*	-/-	Present	High	Yes
long-eared Myotis *Myotis evotis*	-/-	Present	High	Yes
fringed myotis *Myotis thysanodes*	-/-	Present	High	Yes
long-legged myotis *Myotis volans*	-/-	Present	High	Yes
San Francisco dusky-footed woodrat *Neotoma fuscipes annectens*	-/SSC	Present	High	Yes

5.1 FEDERALLY PROTECTED WILDLIFE

5.1.1 California Red-legged Frog

Project Impact: The California red-legged frog is known to occur within the Cemex cement plant property, as well as creeks and drainages throughout the project site. Construction of the pipeline and ponds occur in areas that may be used by California red-legged frog as upland habitat or during movements between ponds and drainages and creeks. As a result, there is potential that individuals may be taken during construction.

Mitigation Measure: The avoidance measures presented in the *Programmatic Biological Opinion* (USFWS 1999), will be adopted and implemented to prevent mortality of individuals. Those measures will be included on the construction plans.

Direct Effects: Implementation of the avoidance and minimization measures described in the above mitigation measure will prevent mortality to individual CRF. No direct effects, such as loss of habitat or take of individuals, will occur from the proposed project, based on the temporary nature of the pipeline placement.

Indirect Effects: Implementation of the avoidance and minimization measures described in the above mitigation measure will avoid indirect effects to CRF. The proposed project will not result in an increase in the human population nor will it increase the number of vehicles on Highway 1 or surrounding roads.

No increased predation will occur from the proposed project.

No degradation to water quality will occur from the proposed project as the SWPP and erosion control methods, as well as the bioswale or bioretention area to treat surface runoff, will minimize and contain sedimentation that would have potential effects to downstream resources. In addition, the project will return the on-the-ground condition to pre-construction function within one season.

Compensatory Mitigation: There are no direct effects from this project to CRF habitat. Therefore, no compensatory mitigation is proposed.

5.2 STATE PROTECTED RESOURCES

5.2.1 Wetlands and Waters of the U.S. and State, Including Riparian Areas

Potential Impact:
It appears based on the information provided that the project will be able to avoid impacts to any potential wetland areas. Alternative 1 does not appear to impact any wetland areas although no access was available for this area so it was not surveyed. Alternatives 2 and 3 would avoid impacts to wetlands provided that the trench for the pipelines in the agricultural fields on the west side of Highway1 occur on the west side of the agricultural road as there is an existing wetland ditch on the east side of the road.

For Alternative 4 trenching for the pipelines that goes from the proposed storage pond south along Cement Plant Road to the treatment pond could potentially impact wetland ditches located both along the eastern edge of the Coast Dairy property and the willow wetland area on the west side of Cement Plant Road across from the Coastal Dairy property (Figure 6). These wetlands could be avoided if the trench was constructed within the roadway. In addition, wetlands could be avoided for piping in the agricultural field on the west side of Highway 1 provided that the trench occurs on the west side of the agricultural road so that the wetland ditches on the east side of the dirt road are avoided (Figure 6).

Mitigation Measure: No mitigation is required provided that any wetlands, streams and riparian areas are avoided. To ensure that no wetlands will be impacted, a formal delineation of wetlands and waters of the U.S. may be required prior to implementation of the project by the Corps, RWQCB and CCC. If impacts to jurisdictional areas cannot be avoided, permits from the Corps, RWQCB, CDFW and CCC will be required. These permits would require that a wetland mitigation and monitoring plan be developed as compensation for any impacts. The proposed

project shall also comply with the Santa Cruz County General Plan Chapter 5 Objective 5.2 which covers Riparian Corridors and Wetlands.

5.2.2 Vegetation

Potential Impact:
Areas that may be impacted by the project through the construction of a storage pond and piping are in habitats that are highly disturbed and dominated primarily by non-native ruderal plants. A review by Santa Cruz County (2014) for the Cemex plant found that it is unlikely that sensitive plants would occur on the Cemex property due to its long history of disturbance from ongoing intensive agricultural production. A review of aerial photos by the County for the site showed that the proposed storage pond location in the Cemex plant was previously maintained in a tilled condition for row crop production and it also appears that the Cemex site was covered in what appears to be cement kiln dust from the cement plant sometime between 1972 and 1979 which would likely raise the pH level of the soils making it even more unlikely to support special status plants. The remaining impacts from construction of the proposed distribution lines would occur in areas that are either paved, or within unpaved roadway that are highly compacted. Placement of the storage pond in the Coast Dairies site would not impact any habitat for special status plants and this is an agricultural field dominated by non-native species and not suitable habitat.

Mitigation Measure: No mitigation measures are required as there will be no impacts to any special status plants due to the highly disturbed and alternated nature of the habitats and habitats that could support special status plants will be avoided

5.2.3 Wildlife

Potential Impact: There is potential that western pond turtle may use the upland habitat within the project area.

Mitigation Measure: Measures to avoid take of California red-legged frog will prevent take of western pond turtle. No further action is required.

Potential Impact: At this time, no trees or shrubs are proposed to be removed. However, if the pipeline locations change and trees and/or shrubs are to be removed on the project site there is potential that occupied passerine or raptor nests may be impacted. Disturbance during the nesting season may result in nest abandonment and mortality of young. Bird species not protected under CESA or FESA, such as some passerines (including mourning dove and scrub jays) are protected under the Fish and Game Code 3503 and the MBTA, and some raptors (including American kestrel) are protected under Fish and Game Code 3503.5 and the MBTA. These aforementioned species may potentially be impacted by the removal of potential nesting habitat in the trees within the project area. Disturbance during the nesting season (February 15- August 15) may result in the potential nest abandonment and mortality of young, which is considered a “take” of an individual. This is a potentially significant impact.

Mitigation Measure: To avoid “take” and/or further evaluate presence or absence of passerines and raptors, the following measures are recommended:

- Grading or removal of nesting trees should be conducted outside the nesting season, which occurs between approximately March 1 and August 15.

- If grading between August 15 and March 1 is infeasible and groundbreaking must occur within the breeding season, a pre-construction nesting bird (both passerine and raptor) survey of the grasslands and adjacent trees shall be performed by a qualified biologist

within 7 days of ground breaking. If no nesting birds are observed no further action is required and grading shall occur within one week of the survey to prevent "take" of individual birds that could begin nesting after the survey.

- If bird nests (either passerine and/or raptor) are observed during the pre-construction survey, a disturbance-free buffer zone shall be established around the nest tree(s) until the young have fledged, as determined by a qualified biologist.

- The radius of the required buffer zone can vary depending on the species, (i.e., 75-100 feet for passerines and 200-300 feet for raptors), with the dimensions of any required buffer zones to be determined by a qualified biologist in consultation with CDFG.

- To delineate the buffer zone around a nesting tree, orange construction fencing shall be placed at the specified radius from the base of the tree within which no machinery or workers shall intrude.

- After the fencing is in place there will be no restrictions on grading or construction activities outside the prescribed buffer zones.

Potential Impact: At this time, no trees or shrubs are proposed to be removed. However, if the pipeline locations change and trees and/or shrubs are to be removed on the project site, removal of trees or even trimming limbs containing suitable bat roosting habitat comprised of cavities, crevices, and/or exfoliating bark, may cause direct mortality of roosting bats if removed during maternity season prior to self-sufficient volancy of pups, or in winter during torpor or hibernation. Removal of larger mature trees has the potential of causing direct mortality of solitary tree-roosting species such as western red bat or hoary bat. The reconnaissance level site visit did not have the trees proposed for removal. As a result, the condition of the trees to be removed needs to be assessed.

Mitigation Measure: To prevent direct mortality of bats roosting in the trees on the project site, a bat habitat assessment must be conducted by a qualified bat biologist that should be conducted 3 to 6 months prior to tree removal. Tree removal must only occur during seasonal periods of bat activity, between March 1, or when evening temperatures are above 45F and rainfall less than ½" in 24 hours occurs, and April 15, prior to parturition of pups. The next acceptable period for tree removal with suitable roosting habitat is after pups become self-sufficiently volant – September 1 through about October 15, or prior to evening temperatures dropping below 45F and onset of rainfall fretter than ½" in 24 hours.

Potential Impact: There is potential for dusky footed woodrats to occur in the grove of trees adjacent to the wastewater treatment plant. Disturbance during the breeding season (March – August) may result in the potential nest abandonment and mortality of young, which is considered a "take" of an individual.

Mitigation Measure: A qualified biologist will conduct surveys for dusky-footed woodrat middens. The report shall identify the measures taken if middens are found (i.e., avoidance, minimization of impacts, removal of nests). If the middens can be avoided, proper fencing shall be installed, giving as much room to the middens as necessary to avoid indirect impacts, as determined by a qualified biologist.

6.0 CONCLUSIONS AND DETERMINATIONS

6.1 CONCLUSIONS

This project will incorporate reasonable and prudent measures for avoidance and minimization, described in Section 1.4, and species-specific avoidance and minimization measures. As a result, the project is not anticipated to result in take of any of the listed species described in this biological assessment. The project effects are insignificant and primarily temporary in nature. All temporarily disturbed areas will be restored to pre-construction function.

6.2 DETERMINATIONS

A "may affect, but not likely to adversely affect" determination to special-status species is based on guidelines established by the USFWS under Section 7(a) of the Federal Endangered Species Act (FESA). FESA states that, "each federal agency shall…insure that any action authorized, funded, or carried out by such agency (hereinafter in this section referred to as an "agency action") is not likely to jeopardize the continued existence of any Endangered or Threatened species or result in the destruction or adverse modification of habitat of such species." In addition, the "may affect, but not likely to adversely affect" language means that all effects are either beneficial, insignificant, or discountable, or any combination thereof. Beneficial effects have contemporaneous positive effects without any adverse effects to the species or habitat. Insignificant effects relate to the size of the effect and include those effects that are undetectable, not measurable, or cannot be evaluated. Discountable effects are those extremely unlikely to occur. Thus, components of the proposed project were deemed to have an insignificant effect based on the size and temporal nature of the proposed project.

Steelhead – this species has been reported within San Vicente Creek. This project will not result in mortality of steelhead but may result in insignificant effects to dispersal habitat for a temporary period. As a result, we determine that the project *may affect, but is not likely to adversely affect* steelhead.

California red-legged frog - Presence of this species is inferred based on potential habitat within the project area and proximity to a known occurrence of CRF (CNDDB 2014). This project will not result in mortality of CRF and may result in insignificant effects to potential dispersal habitat. As a result, we determine that the project *may affect, but is not likely to adversely affect* CRF

Critical Habitat - The project will not affect any critical habitat nor adversely modify any critical habitat for steelhead or California red-legged frog.

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PERSONAL COMMUNICATION

Whiton, T. 2014. Planner, GHD. Personal communication with Jane Valerius. March.

Appendix A: Project Figures

Name: DAVENPORT
Date: 11/12/14
Scale: 1 inch = 2,000 ft.

Location: 10 0570978 E, 4098069 N
Figure 1: Project Location

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Paper Size 11" x 17" (ANSI B)

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Feet

Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California III FIPS 0403 Feet

Legend

- Study Area
- Property Boundary & ID
- Stream
- New Pipelines
- Disposal Area
- New Storage Pond/Pump Station

Davenport County Sanitation District
Recycled Water Project

Job Number 8410848
Revision
Date 21 May 2014

Alternative 1
Minimum Project

Figure 2

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Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California III FIPS 0403 Feet

Legend

- Study Area
- Property Boundary & ID
- Stream
- Jack and Bore HWY/RR
- New Pipelines
- Disposal Area
- New Storage Pond/Pumpstation
- Irrigation

Davenport County Sanitation District
Recycled Water Project

Job Number 8410848
Revision
Date 02 Jun 2014

Alternative 2 Medium Project

Figure 3

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Feet

Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California III FIPS 0403 Feet

Legend

- Study Area
- Property Boundary & ID
- Stream
- Jack and Bore HWY/RR
- New Pipelines
- Disposal Area
- New Pond/Pump Station
- Potential HWY Landscape Area
- Irrigation

Davenport County Sanitation District
Recycled Water Project

Job Number 8410848
Revision
Date 02 Jun 2014

Alternative 3
Maximum Project

Figure 4

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Map Projection: Lambert Conformal Conic
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Grid: NAD 1983 StatePlane California III FIPS 0403 Feet

Legend

- Study Area
- Property Boundary & ID
- Stream
- Jack and Bore HWY/RR
- New Pipelines
- Disposal Area
- New Storage Pond/Pumpstation
- Irrigation

Davenport County Sanitation District
Recycled Water Project

Job Number 8410848
Revision
Date 21 Jul 2014

Alternative 4
Agriculture Reuse

Figure 5

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Vegetative Mapping

- AGR Agriculture
- AWS Arroyo Willow Shrubland
- BA Bare Area
- CSS California Sagebrush Scrub
- CP Concrete Plant
- CBS Coyote Bush Scrub
- MCG Monterey Cypress Groves
- CGP Coastal Grass Prairie
- D Drainage
- EG Eucalyptus Groves
- I Iceplant
- L/D Landscaped/Developed
- NNG Non-Native Grassland
- P Pond
- R Ruderal
- RR Ruderal Riparian
- W Wetland

Stream 778 Swale
Stream 759 Swale
Stream 762 Swale
San Vicente Creek Paramida
Stream 764 Swale

Paper Size 11" x 17" (ANSI B)

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Feet

Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California III FIPS 0403 Feet

- Project Limits
- Streams
- Property Boundary

Santa Cruz Sanitation District
Davenport Recycled Water Study

Job Number	8410848
Revision	A
Date	14 Nov 2014

Vegetation Communities and Wetland Map

Figure 6

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Data source: Santa Cruz County GIS: Parcels, Streams, 2013; GHD: Project Limits, 2013, Vegetative, 2014. Created by:amshows

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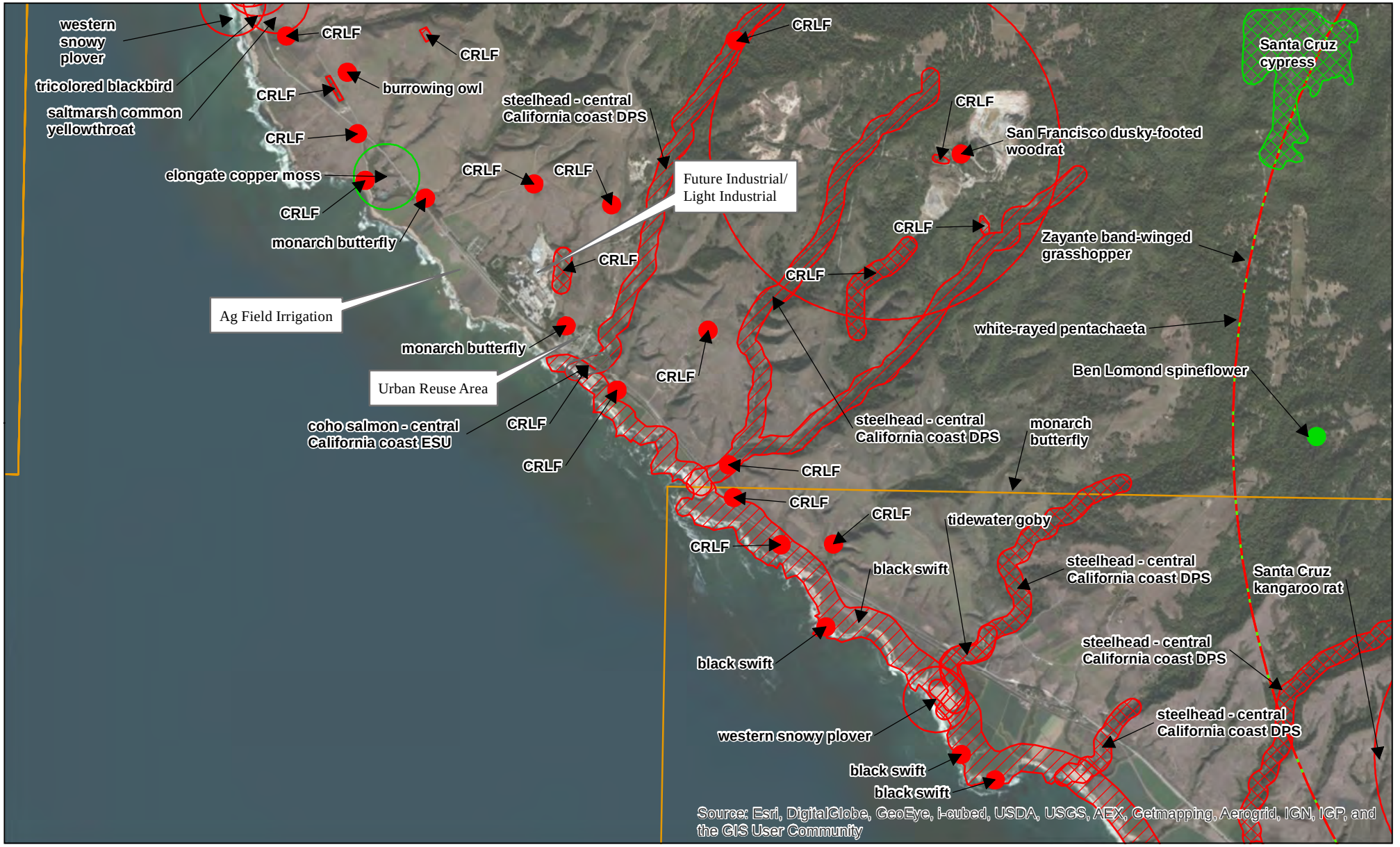

Paper Size ANSI A

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1 inch = 4,000 feet

Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California III FIPS 0403 Feet

N

CNDDB ANIMAL OCCURENCES

- Western snowy plover
- Tricolored blackbird
- Saltmarsh common yellowthroat
- California red-legged frog
- Burrowing owl
- Monarch butterfly
- Zayante band-winged grasshopper
- Steelhead-central California coast DPS
- Coho salmon-central California coast ESU
- San Francisco dusky-footed woodrat
- Tidewater goby
- Black swift
- Santa Cruz Kangaroo rat

CNNDB SENSITIVE ELEMENT OCCURENCES

- Monarch butterfly

CNDDB PLANT OCCURENCES

- Elongate coopper moss
- Santa Cruz Cypress
- White-rayed pentachaeta
- Ben Lomond spineflower

GHD

Davenport
Recycled Water Study

CNDDB Map: Davenport, Felton and Santa Cruz Quads

Job Number 8410848
Revision 1
Date 12 Nov 2014

Figure 7

G:\11837 - Santa Cruz Sanitation District\11837-8410848 Davenport Recycled Water Study\08-GIS\Maps\Figures\Davenport CNDDB.mxd

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Data source: CNDDB November 2014. Created by:amshows

Appendix B

List of plant species observed on March 18, 2014 for the Davenport Sanitation District project.

Scientific Name	**Common Name**
Aesculus californica	California buckeye
Alnus rubra	Red alder
Anagallis arvensis	Scarlet pimpernel*
Artemisia californica	California sagebrush
Arundo donax	Giant reed*
Avena barbata	Slender wild oats*
Baccharis pilularis	Coyote brush
Bellis perennis	English daisy*
Briza maxima	Large quaking grass*
Bromus diandrus	Ripgut brome*
Bromus hordaeceus	Soft chess*
Bromus sterilis	Sterile brome*
Carduus pycnocephalus	Italian thistle*
Carpobrotus chilensis	Sea fig, iceplant*
Carpobrotus edulis	Iceplant*
Cirsium vulgare	Bull thistle*
Conium maculatum	Poison hemlock*
Cortaderia jubata	Jubata or pampas grass*
Cynara cardunculus var. *scolymus*	Globe artichoke*
Delairea odorata	German ivy*
Dipascus fullonum	Teasel*
Echium candicans	Pride of Madeira*
Equisetum arvense	Common horsetail
Ericameria ericoides	Goldenbush
Erigeron glaucus	Seaside daisy
Eriophyllum staechadifolium	Lizard-tail
Erodium cicutarium	Red-stemmed filaree*
Eschscholzia californica	California poppy
Eucalyptus globulus	Blue gum*
Festuca perennis	Ryegrass*
Ficus carica	Common fig*
Foeniculum vulgare	Fennel*
Grindelia stricta var. *platyphylla*	Coastal gum plant
Helminthotheca echioides	Bristly ox-tongue*
Hesperocyparis macrocarpa	Monterey cypress
Holcus lanatus	Velvet grass*
Hordeum marinum ssp. *gussoneanum*	Mediterranean barley*
Hordeum murinum ssp. *leporinum*	Hare barley*
Hypochaeris glabra	Smooth cat's-ear*
Hypochaeris radicata	Rough cat's-ear*
Lobularia maritima	Allissum*
Malva sp.	Mallow*
Marah fabaceus	Wild cucumber, Man root
Medicago polymorpha	Bur clover*

Melilotus albus	White sweet clover*
Myoporum laetum	Myoporum, Ngaio tree*
Nasturtium officinale	Water cress
Oxalis pes-caprae	Bermuda buttercup*
Pinus radiata	Monterey pine
Plantago coronopus	Cut-leaf plantain*
Plantago lanceolata	English plantain*
Polypogon monspeliensis	Rabbit's-foot grass*
Raphanus sativus	Wild radish*
Rorippa curvisiliqua	Yellow water cress
Rosmarinus officinalis	Rosemary*
Rubus armeniacus	Himalayan blackberry*
Rubus parviflorus	Thimbleberry
Rubus ursinus	California blackberry
Salix laevigata	Red willow
Salix lasiolepis	Arroyo willow
Schoenoplectus californicus	California bulrush
Scrophularia californica	California bee plant
Senecio vulgaris	Common groundsel*
Sonchus asper	Prickly sow thistle*
Sonchus oleraceus	Common sow thistle*
Toxicodendron diversilobum	Poison oak
Tropaeolum majus	Nasturtium*
Typha latifolia	Cattails
Urtica dioica	Stinging nettles
Vicia sp.	Vetch*
Zantedeschia aethiopica	Calla lily*

* = Non-native species

Attachment 3

Historical Aerial Photos of the Project Area

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1972

May 1979

June 1987

April 1993

October 2005

Attachment 4

Phase 1 Archaeological Survey

for the

Recycled Water Feasibility Study of the Davenport Wastewater Treatment Plant, Davenport, Santa Cruz County, California

December 4, 2014

and

April 11, 2014

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ARCHAEOLOGICAL CONSULTING

P.O. BOX 3377
SALINAS, CA 93912
(831) 422-4912

PHASE 1 ARCHAEOLOGICAL SURVEY FOR THE RECYCLED WATER FEASIBILITY STUDY FOR THE DAVENPORT WASTEWATER TREATMENT PLANT, DAVENPORT, SANTA CRUZ COUNTY, CALIFORNIA

by

Mary Doane, B.A., and Gary S. Breschini, Ph.D., RPA

December 4, 2014

Prepared for

GHD-USA
and
Davenport County Sanitation District

SUMMARY: AC PROJECT 4856
RESULTS: NEGATIVE, SEE TEXT
ACRES: ±33
LINEAR: ±3 MILES
SITES: NEAR CA-SCR-50, CA-SCR-169 AND CA-SCR-194H
UTMG: NW 5.7035/40.9750; SE 5.7160/40.9615; ADDITIONAL AREA 5.7077/40.9730
MAP: USGS 7.5 MINUTE DAVENPORT QUADRANGLE

For Planning Department:		Yes	No	N/A	See text
Evidence of:	Sacred/Religious site			X	
	Native American Remains		X		
	Anything of Archaeological Significance				X
	Findings of Historical Significance		X		

INTRODUCTION

In October 2013 Archaeological Consulting was authorized by the GDH-USA to prepare a Phase 1 Archaeological Survey report for the Davenport Recycled Water Feasibility Study in Davenport, Santa Cruz County, California. In October 2014, an additional potential water storage area was added to the project.

As part of our methodology in the preparation of this report, we have conducted: 1) a background records search of the files of the Northwest Information Center of the California Historical Resources Information System, located at Sonoma State University; 2) a Sacred Lands file search through the Native American Heritage Commission and consultation with locally affiliated Native Americans; and 3) field surveys of the proposed project impact area. The following report contains the results of these investigations as well as our conclusions and recommendations.

PROJECT LOCATION AND DESCRIPTION

The project area is in and near the town of Davenport in northern Santa Cruz County, California (see Map 1 and Figure 1). The Universal Transverse Mercator Grid (UTMG) coordinates for the approximate ends of the largely linear project area are as follows: northwest end 5.7035/40.9750 and southeast end 5.7160/40.9615 on the USGS 7.5 minute Davenport Quadrangle (1955; photo-revised 1968). The UTMG coordinates for the center of the proposed additional storage area are 5.7077/40.9730 on the USGS 7.5 minute Davenport Quadrangle.

The project is studying the feasibility of developing recycled wastewater infrastructure for potential agricultural and industrial use, and possibly for residential landscaping use in the town of Davenport and along the state highway.

The project proposes future pipelines for water conveyance including bores under State Route 1 and the railroad track, ponds, disposal areas and potential highway landscaping. The supplemental area north of the town is for added water storage.

Because the future pipeline will run under existing roads, the exposed soil adjacent to existing pavements was examined along several streets subject to future project impacts. Surface visibility was fair in the existing disposal area, along the agricultural frontage road south of the highway, along portions of Cement Plant Road and other neighborhood streets. Road cuts and gopher throw augmented surface visibility. Overall, soil visibility was considered adequate for the purposes of this survey.

Surface visibility in the proposed additional storage area was fair to good. A well and pump shed were located in the lower part of that area. The field contained mowed coarse stubble with taller grasses in the panhandle east of new town. Copious gopher throw and some larger burrows augmented surface visibility. Overall, soil visibility was considered adequate for the purposes of this survey.

PROJECT METHODOLOGY

The methodology used in the preparation of this report included three primary steps, as follows:

Background Research

The background research for this project included a search of the archaeological site records, maps, and project files of the Northwest Information Center of the California Historical Resources Information System (CHRIS), located at Sonoma State University. In addition, our extensive files and maps were examined for supplemental information, such as rumors and locations of historic or prehistoric resources in the general area.

These literature searches are undertaken to determine if there are any recorded archaeological or historical resources within the project area and whether the area has been included in any previous archaeological research or reconnaissance projects.

Established by the California Office of Historic Preservation, the regional Information Centers are the local repository for all reports prepared under cultural resource management regulations. A literature search at the Information Center is required by state guidelines and current professional standards. Following completion of a project, a copy of the report must be filed there.

Native American Consultation

A Sacred Lands File search was initiated with the Native American Heritage Commission (NAHC) on December 10, 2013. Following their file search, the commission recommended consultation with locally affiliated Native Americans and provided a list of individuals from several bands to contact for such consultation. Initial contact was made by mail or email on January 9, 2014, followed by a telephone call and/or additional email if a timely response was not received. A second consultation request for the expanded area north of the town was sent out on November 7, 2014 with follow-up on December 4, 2014.

Field Survey

The original field survey, initiated by Mary Doane on January 20, 2014 and completed by Patrick Cave and Gina Kay on April 10, 2014, consisted of a "general surface reconnaissance" of all accessible project areas which could reasonably be expected to contain visible cultural resources and which could be viewed without major vegetation removal or excavation. The CEMEX property was not available for examination at the time of our survey.

Mary Doane completed the supplemental field survey on October 22, 2014.

RESULTS OF THE SURVEY

Background Research

The project area lies within the currently recognized ethnographic territory of the Costanoan (often called Ohlone) linguistic group. Discussions of this group and their territorial boundaries can be found in Breschini, Haversat, and Hampson (1983), Kroeber (1925), Levy (1978), Margolin (1978), and other sources. In brief, the group followed a hunting and gathering subsistence pattern with partial dependence on the natural acorn crop. Habitation is considered to have been semi-sedentary and occupation sites can be expected most often at the confluence of streams, other areas of similar topography along streams, or in the vicinity of springs. These original sources of water may no longer be present or adequate. Resource gathering and processing areas and associated temporary campsites are frequently found on the coast and in other locations containing resources utilized by the group. Factors that may influence the locations of these sites include the presence of suitable exposures of rock for bedrock mortars or other milling activities, ecotones, the presence of specific resources (oak groves, marshes, quarries, game trails, trade routes, etc.), proximity to water, and the availability of shelter. Temporary camps or other activity areas can also be found along ridges or other travel corridors.

The research at the Northwest Information Center found nine prehistoric and historic archaeological sites recorded within the overall project area (see Attachment 1). CA-SCR-169, a light lithic scatter, and CA-SCR-194H, the Davenport Whaling Station, are located in the Future Development Area south of Highway 1. P-44-380, a planked culvert is located southwest of the CEMEX entrance and south of the highway. CA-SCR-50 (P-44-55), "a low density chert flake and tool scatter" is located just northwest of the dry pond at the northwestern end of the future pipeline.

CA-SCR-18, a major prehistoric habitation site, is recorded along San Vicente Creek on the southeastern edge of Davenport. CA-SCR-227 (P-44-229), consisting of two chert scrapers, is recorded at a sewer pump station on the southeast edge of town. These sites do not appear to be in the currently proposed project impact area.

The old town of Davenport is recorded as historic site P-44-379. Portions of two other recorded historic resources, Highway 1, P-44-406, and the Southern Pacific Railroad Tracks, P-44-377, run through the project area. The potential disposal area and pond on the CEMEX property are within the recorded boundaries of the historic Santa Cruz Portland Cement Plant, site P-44-376.

Several other sites are recorded northwest of the project area, including prehistoric CA-SCR-117 (P-44-121) at the mouth of the creek. The proposed additional storage area north of town contains no recorded cultural resources.

The California Inventory of Historical Resources (March 1976), California Historical Landmarks, and the National Register of Historic Places were checked for listed historic resources in the project area. Listed structures within the National Register old town of Davenport include the Davenport jail, which has been determined eligible as an individual property. Several other structures appear eligible including the Blacksmith Shop, St. Vincent De Paul Church, Crocker Hospital and Foresters Hall. The Box Factory and Davenport Ice House have been submitted as part of a Reconnaissance Survey, but have not yet been evaluated. Forester's Hall and the Davenport Whaling Station are listed in the California Inventory.

Structures in the old town of Davenport, the Portland Cement plant, the original highway alignment and the Southern Pacific Railroad tracks, as well as a rail spur up San Vicente Creek, are depicted on the USGS Santa Cruz, Calif. map (edition of 1902, reprinted 1939). The 1943 USACOE map depicts additional development in the Old Town and Cement plant, new railroad spurs heading into

the mountains, the west side neighborhood of Davenport and buildings on the south side of the highway north of town. The 1955 USGS 7.5 Minute Davenport Quad depicts most of the current development of Davenport and environs, except for some excavations on the CEMEX property and the improved highway.

Portions of the current project area have been included in previous archaeological studies. Parts of the northwestern end of the agricultural fields were included in two studies (Roop 1976; Tinsley 2001). One parcel south of the highway opposite the old town has been surveyed (Doane and Haversat 1997). Several surveys have included portions of the CEMEX property (Dietz 1977; ARM 1980; Cartier 1982; Doane and Haversat 1999; Holson 2000). Several studies have concentrated on the southeastern part of Davenport, primarily for properties containing site CA-SCR-18 (Edwards 1976; Roop 1977; Gifford and Savage 1978; Dietz 1980; Marshall 1981; Clark 1999; Doane and Breschini 2010; D'Oro 2012). A water project survey included many parts of the western neighborhood as well as most of the streets in the old town (Doane and Breschini 2010).

Native American Consultation

The Native American Heritage Commission Sacred Lands File Search found no recorded Sacred Sites in the project area. Correspondence and consultation with several of the Native Americans resulted in no new site-specific information but raised concerns about the project area and potential impacts to known sites in the area (see Attachment 2). Patrick Orozco, Chairman of the Costanoan Ohlone Rumsen-Mutsen Tribe, and Val Lopez, Chairman of the Amah Mutsun Tribal Band, both responded by email with specific concerns. Patrick Orozco is aware of the significance and previous disturbance of the CA-SCR-18 site, as well as the importance of several other sites on the north coast. Val Lopez reported that his great-great-grandmother, the last Awaswas speaker, was from Davenport. He considers Davenport to be a very important area and recommends Native American monitoring of all earth disturbance within 400 feet of a natural waterway.

Telephone follow-up was made with several additional consultants. Michelle Zimmer of the Amah Mutsun Tribal Band of Mission San Juan Bautista said that Davenport was an important area in which excavations should be monitored. She also recommended cultural sensitivity training for the construction crews on the project. Anne Marie Sayers of the Indian Canyon Mutsun Band of Costanoan recommended that all earth work in the near vicinity of recorded sites and waterways be subject to monitoring by archaeological and Native American monitors.

Follow-up voicemail and emails were left with several other Native Americans on the contacts list, but additional responses have not been received.

Additional requests for consultation were sent on November 7, 2014. Patrick Orozco responded by email to caution us that there are recorded sites in the Davenport area and there could be more that are not yet identified. Telephone calls were made on December 4 to the listed consultants with phone numbers. No new information or recommendations were received.

Field Survey

None of the materials frequently associated with prehistoric cultural resources in this area (dark greasy or ashy midden soil, fragments of weathered marine shell, flaked or ground stone, fire-affected rock, bone fragments, etc.) were observed during the initial field surveys in the potential infrastructure impact areas identified in Figure 1. Soil was generally light to medium brown silt.

None of the materials frequently associated with prehistoric cultural resources in this area were observed during the field survey of the expanded water storage area north of new town. Topsoil in the field was light brown silt. The eastern panhandle had been previously graded, revealing tan shaley clay subsoil.

No evidence of potentially significant Historic Period resources was seen in the soil during any part of the surface survey.

CONCLUSIONS AND RECOMMENDATIONS

Based upon the background research, the Native American consultation and the field reconnaissance, we have concluded that there is no surface evidence of significant prehistoric or historic archaeological resources within the proposed project impact areas for pipelines, disposal areas, jack and bore highway crossings and storage ponds, including the additional expanded storage area north of new town. The several archaeological and historic resources recorded in the general project area are not located directly within the proposed project impact areas.

Nevertheless, potentially significant historic materials or features could be encountered during this project, especially near the listed historic structures in the town of Davenport. The proposed project impacts under existing pavements will not directly affect the "integrity of setting" or the "integrity of feeling" of the historic structures within the historic Town of Davenport.

The Future Development areas south of the highway and in the CEMEX property contain recorded resources that will require potential impact assessment with an eye to avoidance of impacts prior to approval of Future Development plans.

Because of the preliminary nature of this feasibility study project, we recommend that the study proceed. Any future changes in potential impact areas should be field surveyed for cultural resources.

Because of the possibility of unidentified (e.g., buried) cultural resources being found during any construction involving earth disturbance, we recommend that the following standard language, or the equivalent, be included in any permits issued within the project area:

- If archaeological resources or human remains are unexpectedly discovered during construction, work shall be halted within 50 meters (±160') until the discovery can be evaluated by a qualified professional archaeologist. If the find is determined to be significant, appropriate mitigation measures shall be formulated, with the concurrence of the Lead Agency, and implemented.

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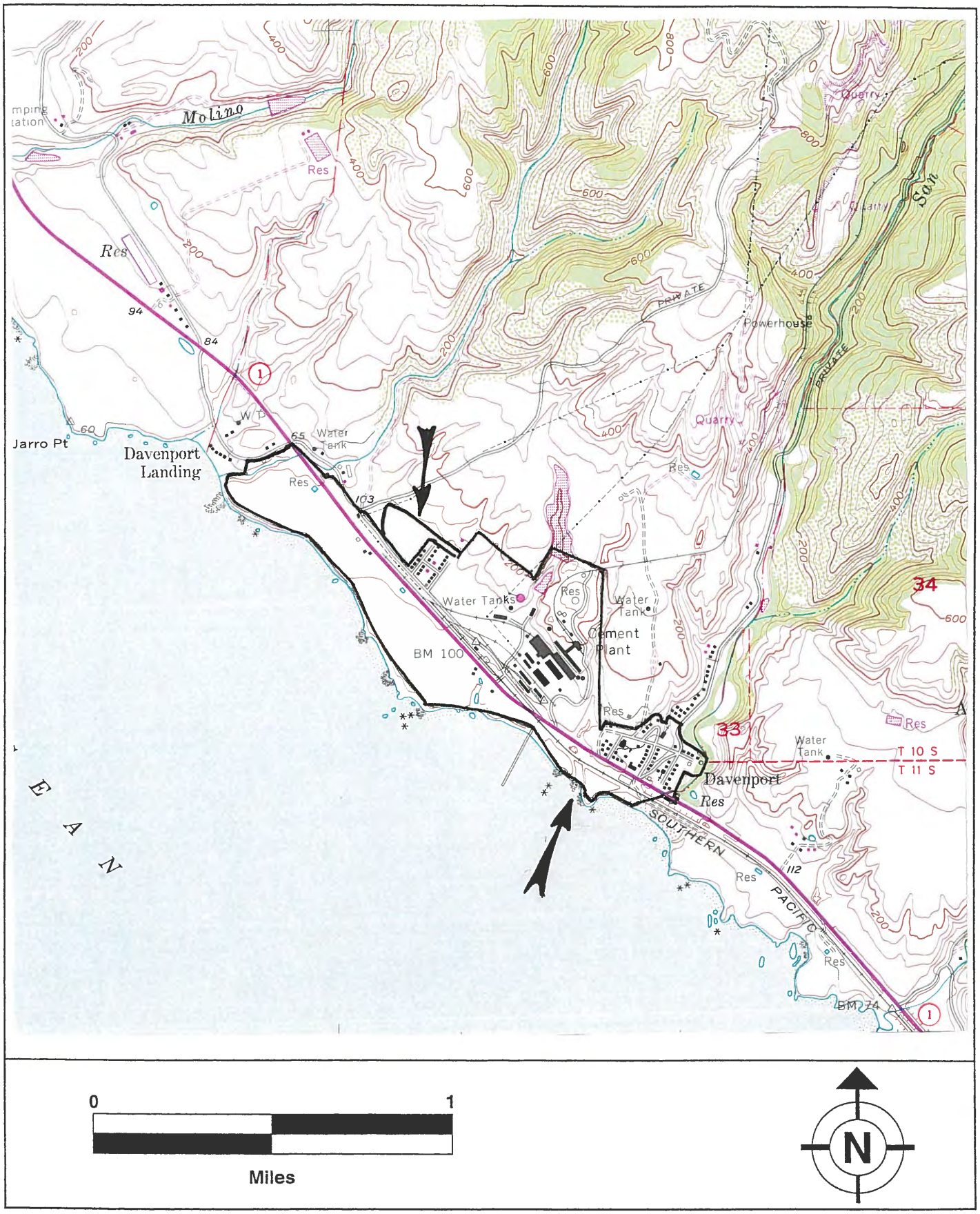
Treathaway, R., G. Breschini and R. Edwards

1974 **Evaluation of the Archaeological Resources of the Coastal Zone of Monterey, Santa Cruz, and San Mateo Counties, California.** Report on file with the Northwest Information Center, Sonoma State University.



Map 1. Project Location.

Paper Size 22" x 34" (ANSI D)

0 100 200 400 600

Feet

Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California III FIPS 0403 Feet

Legend

- Jack and Bore HWY/RR
- Future Pipeline
- Disposal Area
- Potential HWY Landscape Area
- Ponds
- Potential Disposal Area
- Project Limits
- # Property Boundary & ID
- Stream

Santa Cruz Sanitation District
Davenport Recycled Water Study

Job Number 8410848
Revision A
Date 30 Jan 2014

Recycled Water Concept Plan

Figure 1

\\ghdnetghd\US\Santa Rosa\Projects\11837 - Santa Cruz Sanitation District\11837-8410848 Davenport Recycled Water Study\06-GIS\Maps\Figures\Feasibility Study\RW Concept Plan- Large Format.mxd
© 2012. While every care has been taken to prepare this map, GHD (and DATA CUSTODIAN) make no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and cannot accept liability and responsibility of any kind (whether in contract, tort or otherwise) for any expenses, losses, damages and/or costs (including indirect or consequential damage) which are or may be incurred by any party as a result of the map being inaccurate, incomplete or unsuitable in any way and for any reason.
Data source: Data Custodian, Data Set Name/Title, Version/Date. Created by:mremillard

2235 Mercury Way Suite 150 Santa Rosa CA 95407 USA T 707 523 1010 F 707 527 8679 E santarosa@ghd.com W www.ghd.com

ATTACHMENT 1

CHRIS DOCUMENTATION

CALIFORNIA HISTORICAL RESOURCES INFORMATION SYSTEM

ALAMEDA, COLUSA, CONTRA COSTA, DEL NORTE, HUMBOLDT, LAKE, MARIN, MENDOCINO, MONTEREY, NAPA, SAN BENITO, SAN FRANCISCO, SAN MATEO, SANTA CLARA, SANTA CRUZ, SOLANO, SONOMA, YOLO

Northwest Information Center
Sonoma State University
150 Professional Center Drive, Suite E
Rohnert Park, California 94928-3609
Tel: 707.588.8455
nwic@sonoma.edu
http://www.sonoma.edu/nwic

DATE: December 5, 2013

NWIC File No.: 13-0811

TO: Mary Doane

FROM: Bryan Much

Re: AC 4856, 4862, 4870 (Davenport and environs, 777 Amesti Rd., Watsonville, Jessie St., Santa Cruz)

Davenport, Watsonville West, Santa Cruz 7.5' Quads
AC 4856

Resources In	There are seven resources within the project area: P-44-000024, P-44-000055, P-44-000229, P-44-000376, P-44-000377, P-44-000379, and P-44-000406. These resources have been mapped and a listing provided for concordance.
Resources within 5/8-mile radius	There are seven resources within the radius of the project area: P-44-000050, P-44-000053, P-44-000121, P-44-000171, P-44-000196, P-44-000378, and P-44-000380. These resources have been mapped and a listing provided for concordance.
Reports In	There are 15 reports within the project area. These reports have been mapped and a listing provided for concordance.
OHP HPD	The HPD listings for Davenport (and vicinity) have been provided.
OHP ADOE	Santa Cruz County provided.
California Inventory	The listings for Davenport (and vicinity) have been provided listings in project area or radius.
Local Inventories	None.
Historic Maps	Relevant portion of the 1:125000 Santa Cruz USGS quadrangle, 1:62500 Ben Lomond US ACOE quadrangle, and the 1:24000 Davenport quadrangle provided.

ATTACHMENT 2

NATIVE AMERICAN CONSULTATION

ARCHAEOLOGICAL CONSULTING

P.O. BOX 3377
SALINAS, CA 93912
(831) 422-4912
Fax (831) 422-4913

December 4, 2014

AC 4856

Ted Whiton
GHD, Inc.
2235 Mercury Way, Suite 150
Santa Rosa, CA 95407

Re: Davenport Recycled Water Feasibility Study Project

Dear Mr. Whiton:

At your request we initiated a record search of the sacred lands file with the Native American Heritage Commission (NAHC) on December 20, 2013. Attached please find a copy of the response, dated January 8, 2014 from Debbie Pilas Treadway of the NAHC. As you will see there was no specific site information found in their files regarding the project area, which lies within traditional Ohlone territory. She recommended that we make additional contacts with other Native American sources of information regarding the potential for cultural resources in the project area. Because these Native American peoples are not a federally recognized tribe, there is no single person or group who represents all of them. A sample copy of the letters regarding your project that were sent on January 9 to the Native American contacts on the NAHC list is also attached.

I have received email responses from Patrick Orozco, Chairman of the Costanoan Ohlone Rumsen-Mutsen Tribe, and Val Lopez, Chairman of the Amah Mutsun Tribal Band. Both had specific concerns about the Davenport area. Patrick Orozco is aware of the significance and previous disturbance of the CA-SCR-18 site, as well as the importance of several other sites on the north coast. Val Lopez stated that his great-great-grandmother, the last Awaswas speaker, was from Davenport. He considers it to be a very important area and recommends Native American monitoring of all earth disturbance within 400 feet of a natural waterway.

I discussed the project with other consultants. Michelle Zimmer of the Amah Mutsun Tribal Band of Mission San Juan Bautista said that Davenport was an area important to her group and excavations should be monitored. She and her mother Irene Zwierlein recommend that work crews receive cultural sensitivity training when working in the vicinity of cultural sites and waterways. Anne Marie Sayers of the Indian Canyon Mutsun Band of Costanoan, also recommends archaeological and Native American monitoring of work in close proximity to recorded resources.

I called and left messages with the remainder of the listed Native Americans to call or email me with any information or concerns they might have about the project.

On November 7, 2014 I initiated a supplemental request for information on the expanded acreage for potential water storage north of the town. Patrick Orozco again responded to advise us of the location of several sites in Davenport and to caution that there could be more sites as yet undiscovered. I discussed the additional area with Val Lopez, Michelle Zimmer, Ann Marie Sayers, and Ramona Garibay and left messages with the rest who had working phones. None of the consultants had concerns about the expanded area.

Although the Native Americans offered no additional information specific to the recorded sites in the project area, they all wished to know of any significant discoveries during any projects. Because of their concern for the preservation of the cultural resources which comprise their heritage, the listed Native Americans should be informed of the of the discovery of any previously unknown cultural resources which may occur during the course of this project. A continuing sensitivity to their concerns and the inclusion of interested Native Americans in this project, including monitoring, will be greatly appreciated by them. I have attached an updated Native American Contacts list.

If I should receive further information or requests for consultation from other Native Americans, I will provide a supplement to this summary letter.

Please feel free to call if you have any further questions or need additional information in this matter.

Yours truly,

Mary Doane

Mary Doane

Cc. Native American Heritage Commission

ARCHAEOLOGICAL CONSULTING

P.O. BOX 3377
SALINAS, CA 93912
(831) 422-4912
Fax (831) 422-4913

December 20, 2013

AC 4856

Debbie Pilas Treadway
State Of California
Native American Heritage Commission
Via email: nahc@pacbell.net

Re: Davenport Recycled Water Project

Dear Debbie:

We have initiated an Archaeological Survey for the proposed Davenport Recycled Water project in Davenport on the north coast of Santa Cruz County. We are contacting your office for information on possible Native American Sacred sites in the project area. Would you please search your Inventory of Sacred Lands to determine whether the current project area, in Township 10S, Range 3W, contains any such resources (see attached map from the USGS 7.5 Minute Davenport Quadrangle). Also please provide me with a Native American contacts list for this part of Santa Cruz County.

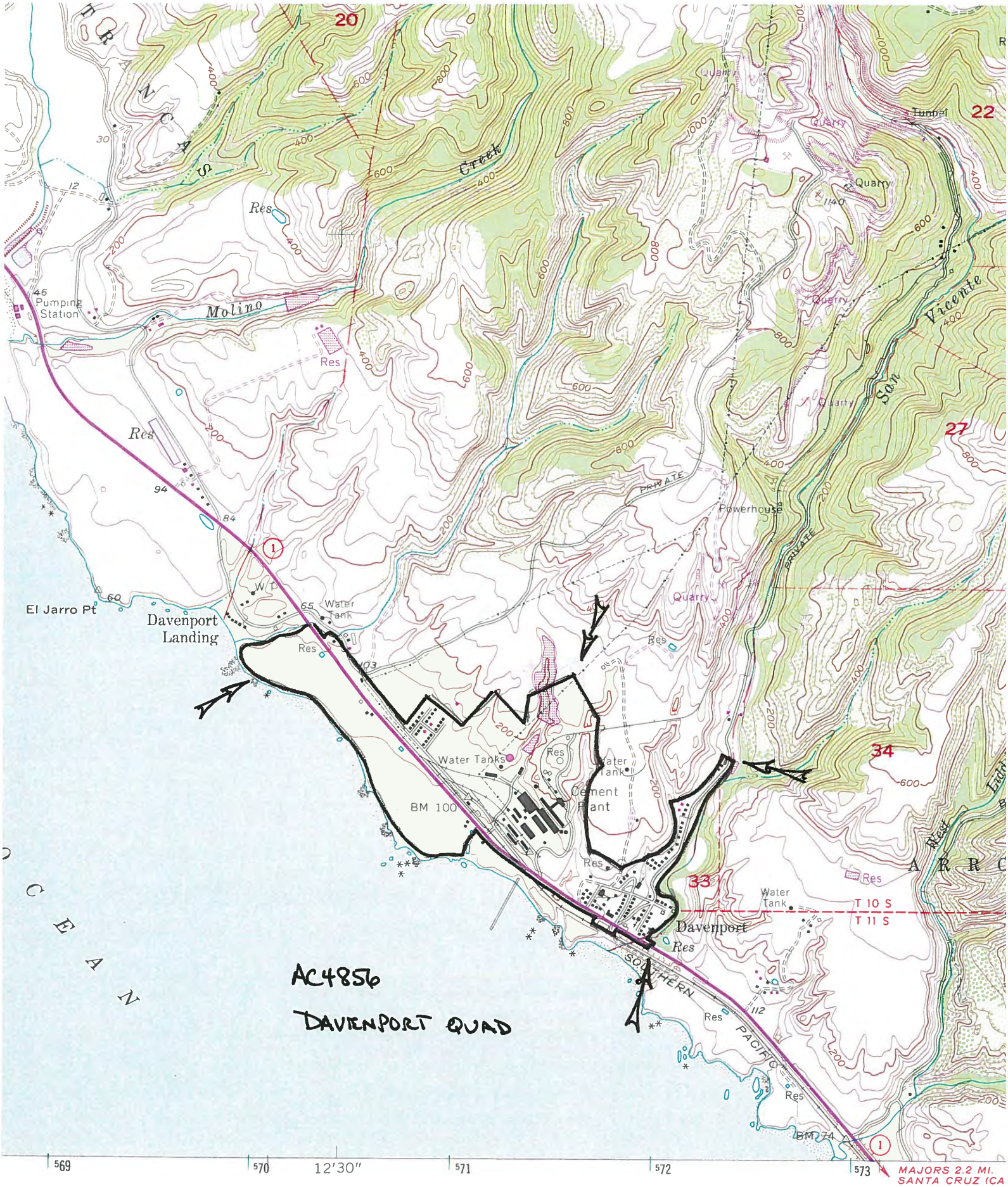
If you have any questions about this request, please do not hesitate to contact our office.

Yours truly,

Mary Doane

Mary Doane

Attachment


AC4856
DAVENPORT QUAD
Davenport Landing
El Jarro Pt
Molino Creek
San Vicente Creek
Pumping Station
Water Tank
Water Tanks
Cement Plant
Powerhouse
Tunnel
Quarry
Davenport
SOUTHERN PACIFIC
PRIVATE
BM 100
BM 74
T 10 S
T 11 S
MAJORS 2.2 MI.
SANTA CRUZ (CA
12'30"
SCALE 1:24000
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 KILOMETRE
GN
MN
0°29'
9 MILS
17°
302 MILS

NATIVE AMERICAN HERITAGE COMMISSION
1550 Harbor Blvd.
West Sacramento, CA 95691
(916) 373-3710
Fax (916) 373-5471

January 8, 2014

Mary Doane
Archaeological Consulting
P.O.Box 3377
Salinas, CA 93912

By Fax: 831-422-4913

Number of Pages: 2

Re: Davenport Recycled Water project, Santa Cruz County

Dear Ms. Doane,

A record search of the sacred land file has failed to indicate the presence of Native American cultural resources in the immediate project area. The absence of specific site information in the sacred lands file does not indicate the absence of cultural resources in any project area. Other sources of cultural resources should also be contacted for information regarding known and recorded sites.

Enclosed is a list of Native Americans individuals/organizations who may have knowledge of cultural resources in the project area. The Commission makes no recommendation or preference of a single individual, or group over another. This list should provide a starting place in locating areas of potential adverse impact within the proposed project area. I suggest you contact all of those indicated, if they cannot supply information, they might recommend others with specific knowledge. By contacting all those listed, your organization will be better able to respond to claims of failure to consult with the appropriate tribe or group. If a response has not been received within two weeks of notification, the Commission requests that you follow-up with a telephone call to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from any of these individuals or groups, please notify me. With your assistance we are able to assure that our lists contain current information. If you have any questions or need additional information, please contact me at (916) 373-3713.

Sincerely,

Debbie Pilas-Treadway
Environmental Specialist III

Native American Contacts
Santa Cruz County
January 2, 2014

Jakki Kehl
720 North 2nd Street
Patterson , CA 95363
(209) 892-1060

Ohlone/Costanoan

Amah MutsunTribal Band of Mission San Juan Bautista
Michelle Zimmer
789 Canada Road
Woodside , CA 94062
amahmutsuntribal@gmail.com
(650) 851-7747 - Home

650-332-1526 - Fax

Ohlone/Costanoan

Linda G. Yamane
1585 Mira Mar Ave
Seaside , CA 93955
rumsien123@yahoo.com
831-394-5915

Ohlone/Costanaon

Costanoan Ohlone Rumsen-Mutsen Tribe
Patrick Orozco, Chairman
644 Peartree Drive
Watsonville , CA 95076
yanapvoic@earthlink.net
(831) 728-8471

Ohlone/Costanoan

Amah MutsunTribal Band
Valentin Lopez, Chairperson
PO Box 5272
Galt , CA 95632
vlopez@amahmutsun.org
916-743-5833

Ohlone/Costanoan

Indian Canyon Mutsun Band of Costanoan
Ann Marie Sayers, Chairperson
P.O. Box 28
Hollister , CA 95024
ams@indiancanyon.org
831-637-4238

Ohlone/Costanoan

Amah MutsunTribal Band
Edward Ketchum
35867 Yosemite Ave
Davis , CA 95616
aerieways@aol.com

Ohlone/Costanoan
Northern Valley Yokuts

Muwekma Ohlone Indian Tribe of the SF Bay Area
Rosemary Cambra, Chairperson
PO Box 360791
Milpitas , CA 95036
muwekma@muwekma.org
408-205-9714
510-581-5194

Ohlone / Costanoan

Amah MutsunTribal Band of Mission San Juan Bautista
Irene Zwierlein, Chairperson
789 Canada Road
Woodside , CA 94062
amahmutsuntribal@gmail.com
(650) 851-7747 - Home
650-400-4806 cell preferred
650-332-1526 - Fax

Ohlone/Costanoan

Trina Marine Ruano Family
Ramona Garibay, Representative
30940 Watkins Street
Union City , CA 94587
510-972-0645-home

soaprootmo@comcast.net

Ohlone/Costanoan
Bay Miwok
Plains Miwok
Patwin

This list is current only as of the date of this document.

Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code

This list is only applicable for contacting local Native Americans with regard to cultural resources for the proposed Davenport Recycled Water project, Santa Cruz County

ARCHAEOLOGICAL CONSULTING

P.O. BOX 3377
SALINAS, CA 93912
(831) 422-4912
Fax (831) 422-4913

January 9, 2014

AC Project 4856

Valentin Lopez
Amah Mutsun Tribal Band
P.O. Box 5272
Galt, CA 95632

Re: Davenport Recycled Water Project

Dear Mr. Lopez:

We are working on a Phase 1 archaeological survey for the Davenport Recycled Water Project in Santa Cruz County (see Map 1, a section of the USGS Davenport quad map attached). The project is a study to determine whether capturing and recycling sewer water to be treated and used for agricultural irrigation and landscape watering is feasible for the town of Davenport. The latest project map, which does not include the agricultural fields that will receive the treated water, is also attached.

We have contacted the Native American Heritage Commission for information on recorded sites in the project area. Their search found no Sacred Lands recorded there. The commission provided us with a list of local Native Americans to contact for additional information. If you should have any information about cultural resources within or in the vicinity of the project area, please contact this office not later than January 31 with your information or comments.

We know that there is one recorded archaeological site, CA-SCR-18, at the eastern end of Old Town on the west bank of San Vicente Creek.

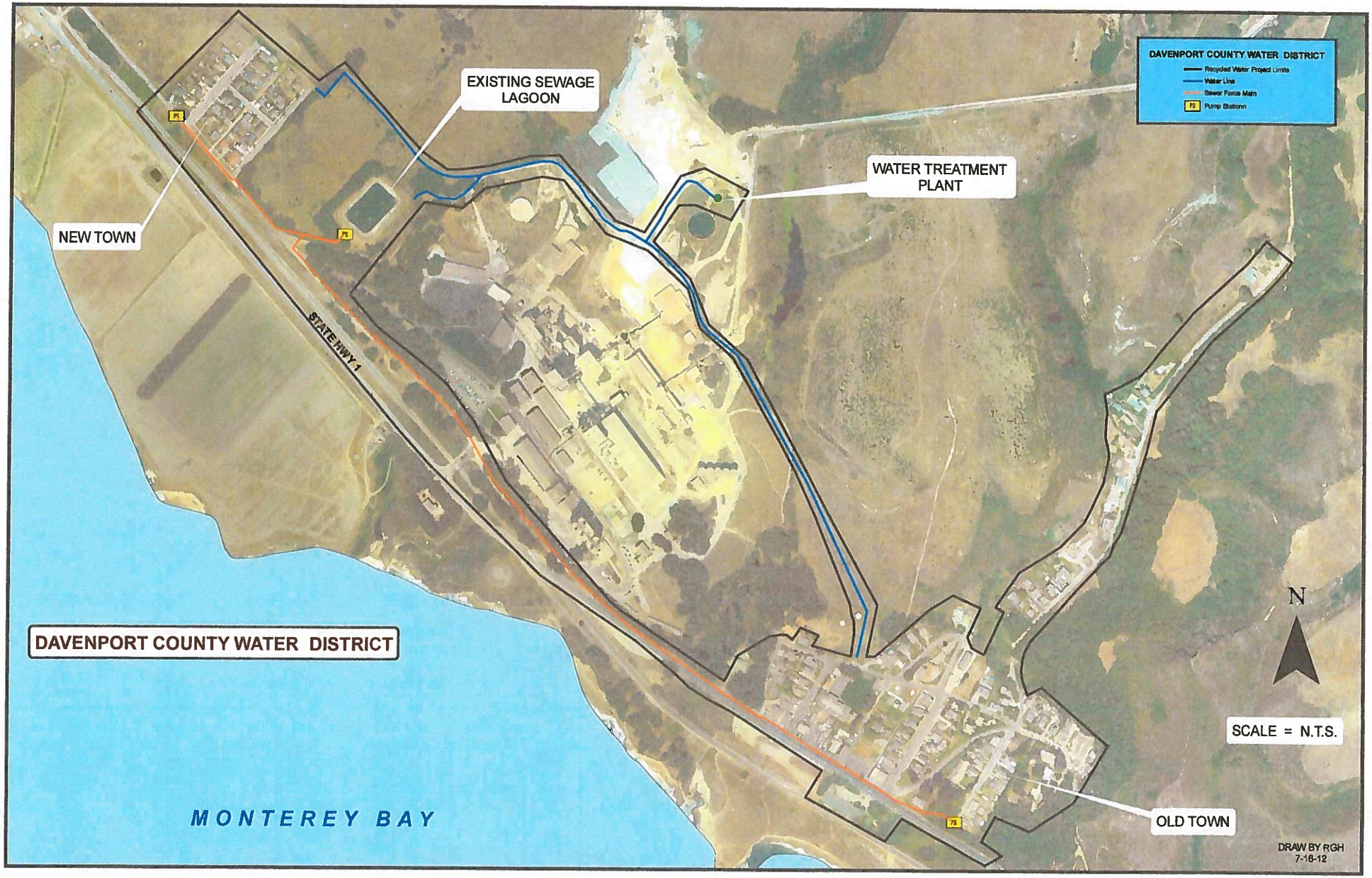
If you have any questions about this request, please do not hesitate to contact me at your earliest convenience.

Yours truly,

Mary Doane

Mary Doane
Project Manager

AC4856
DAVENPORT QUAD
AG FIELDS
Davenport Landing
El Jarro Pt
Pumping Station
Molino
Creek
Res
Water Tank
Water Tanks
Cement Plant
Powerhouse
Quarry
Tunnel
San Vicente
PRIVATE
Davenport
SOUTHERN PACIFIC
T 10 S
T 11 S
BM 100
BM 74
OCEAN
12'30"
MAJORS 2.2 MI.
SANTA CRUZ (CA
SCALE 1:24000
7000 FEET
1 KILOMETRE
GN
MN
0°29'
9 MILS
17°
302 MILS


DAVENPORT COUNTY WATER DISTRICT
Recycled Water Project Limits
Water Line
Sewer Force Main
PS Pump Stations
EXISTING SEWAGE LAGOON
WATER TREATMENT PLANT
NEW TOWN
STATE HWY 1
DAVENPORT COUNTY WATER DISTRICT
MONTEREY BAY
N
SCALE = N.T.S.
OLD TOWN
DRAW BY RGH
7-16-12

X-Original-To: flame.razzolinkcom@mstore68.nyc1.bluetie.com
Delivered-To: flame.razzolinkcom@mstore68.nyc1.bluetie.com
X-BT-Recipient: flame@razzolink.com
X-CMAE-Score: 0.00
X-CMAE-Analysis: v=2.1 cv=NqPoLatJ c=1 sm=1 tr=0
a=1epIwjsFoo/6dIvzhBPI9A==:117 a=mzQMmzbmhvbhVKyQ6tCzvQ==:17 a=5Up8faWwAAAA:8
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a=CjuIK1q_8ugA:10
Subject: Re: Project consultation, Davenport
From: patrick orozco <yanapvoic@earthlink.net>
Date: Tue, 14 Jan 2014 15:51:28 -0800
To: Mary Doane <flame@razzolink.com>
X-ELNK-Trace:
59974bc36715f04b81b09582c12b02407e972de0d01da94050265f11cc27060efe123697fdba60a5350badd9bab72f9c350badd9bab72f9c350badd9bab72f9c
X-Originating-IP: 64.105.137.75
X-BtMT: Tue, 14 Jan 2014 18:52:01 -0500 (EST)

HELLO MARY

YES CA-SCR-18 THREE BURIALS AND STONE TOOLS WERE REMOVED FROM THIS SITE AND A NUMBER OF BURIALS. THEN THERES THE SAND HILL BLUFF SC-SCR-7 AND CA-SCR 117 , SC-SCR-227, CA-SCR- 169 , SC-SCR-50 THESE ARE SITES IN THE AREA . PATRICK

On Jan 9, 2014, at 12:29 PM, Mary Doane wrote:

> Hello Patrick.
>
> I have sent you a letter regarding a recycled water project study underway in Davenport, Santa Cruz, County. Please let me know if you have any information regarding this area that you would like included in our report.
>
> Regards.
> Mary<4856 NA Letter 07.pdf>

X-Original-To: flame.razzolinkcom@mstore68.nyc1.bluetie.com
Delivered-To: flame.razzolinkcom@mstore68.nyc1.bluetie.com
X-BT-Recipient: flame@razzolink.com
X-CMAE-Score: 0.00
X-CMAE-Analysis: v=2.1 cv=ZvjUdbLG c=1 sm=1 tr=0
a=fEogWGqKX82J6kcywItGoA==:117 a=fEogWGqKX82J6kcywItGoA==:17 a=f5113yIGAAAA:8
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a=t51HkmqKAAAA:8 a=Ba2H09QG8VKqIvyIBg8A:9 a=wPNLvfGTeEIA:10 a=wfLZMA5XoPoA:10
a=2WVCU03voR8A:10 a=OJ4n5Q4xFl8A:10
Date: Sun, 16 Mar 2014 07:12:05 -0600
From: vlopez@amahmutsun.org
To: Mary Doane <flame@razzolink.com>
Subject: Re: Davenport water project
X-Identified-User: {1971:box476.bluehost.com:amahmuts:amahmutsun.org} {sentby:smtp auth 127.0.0.1 authed with vlopez@amahmutsun.org}
X-BtMT: Sun, 16 Mar 2014 09:13:26 -0400 (EDT)

Hi Mary,

Thanks for sending this letter regarding the Davenport Project.
Davenport was an important site as it was the hope of the Catoni Tribe who were Awaswas speakers. My G-G-Grandmother was the last speaker of Awaswas and is recognized for this at by the Smithsonian Institute.

We consider this area to be very sensitive and therefore request that a NA monitor be used for all ground disturbance within 400 feet of a natural waterway.

Please feel free to call me if you should have questions.

Valentin Lopez, Chairman
Amah Mutsun Tribal Band
(916) 743-5833

Quoting Mary Doane <flame@razzolink.com>:

> Hi Val,
>
> Here is the letter regarding the Davenport project we discussed earlier. The project has been slightly scaled back but the area is mostly the same. Please call or email me with your comments and any concerns you may have.
>
> Regards,
> Mary

ARCHAEOLOGICAL CONSULTING

P.O. BOX 3377
SALINAS, CA 93912
(831) 422-4912
Fax (831) 422-4913

November 7, 2014

AC Project 4856b

Patrick Orozco
Costanoan Ohlone Rumsen-Mutsen Tribe
644 Peartree Dr.
Watsonville, CA 95076

Re: Davenport Recycled Water Project

Dear Mr. Orozco:

In January of this year I wrote you regarding a Phase 1 archaeological survey for the Davenport Recycled Water Project in Santa Cruz County (see Map 1, a section of the USGS Davenport quad map attached). The project is a study to determine whether capturing and recycling sewer water to be treated and used for agricultural irrigation and landscape watering is feasible for the town of Davenport.

We now have an expanded area on the north end of town for possible water storage. The latest project map, which includes the expanded storage area, is attached. There are no recorded archaeological sites within 1,000 feet of the expanded storage are.

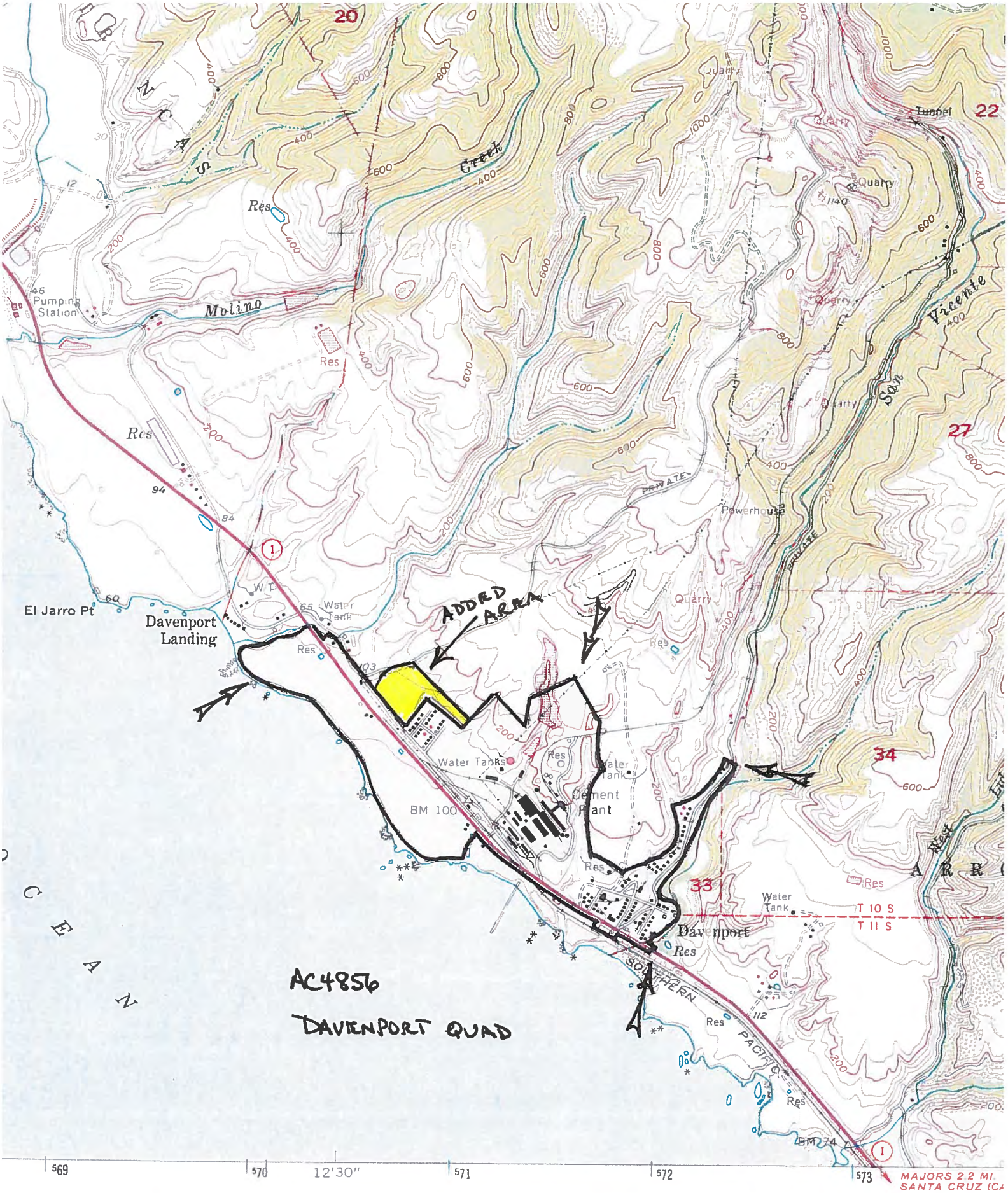
If you should have any information about cultural resources within or in the vicinity of the project area, please contact this office as soon as possible with your information or comments.

If you have any questions about this request, please do not hesitate to contact me at your earliest convenience.

Yours truly,

Mary Doane

Mary Doane
Project Manager



ADDED AREA
AC4856
DAVENPORT QUAD
Davenport Landing
El Jarro Pt
Pumping Station
Molino Creek
Water Tanks
Cement Plant
Davenport
Powerhouse
Quarry
Tunnel
Res
BM 100
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T 10 S
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SANTA CRUZ (CA
SCALE 1:24000
7000 FEET
1 KILOMETRE
GN
MN
0°29'
9 MILS
17°
302 MILS

X-Original-To: flame.razzolinkcom@mstore68.nyc1.bluetie.com
Delivered-To: flame.razzolinkcom@mstore68.nyc1.bluetie.com
X-BT-Recipient: flame@razzolink.com
X-CMAE-Score: 0.00
X-CMAE-Analysis: v=2.1 cv=bpx1Wiqi c=1 sm=1 tr=0
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a=A5a0G8zhDwilytKFWEUA:9 a=CjuIK1q_8ugA:10
Subject: Re: Consultation request
From: patrick orozco <yanapvoic@earthlink.net>
Date: Fri, 7 Nov 2014 18:37:16 -0800
To: Mary Doane <flame@razzolink.com>
X-ELNK-Trace:
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72f9c350badd9bab72f9c
X-Originating-IP: 66.167.204.64
X-BtMT: Fri, 07 Nov 2014 21:37:18 -0500 (EST)

HELLO MARY

I DO KNOW THAT THERE ARE FIVE RECORDED SITES IN THE DAVEN PORT AREA CA-SCR 169 CA-SCR 227 CA-SCR 18. IN THE AREA YOU MARKED FOR EXPANDING THERE IS CA-SCR 117 AND CA-SCR 50 SO ITS POSSIBLE THAT THERE MAYBE MORE SITES IN THAT AREA. PATRICK

On Nov 7, 2014, at 3:06 PM, Mary Doane wrote:

> Hi Patrick,
>
> Attached is a consultation request for an expanded footprint of the Davenport Recycled Water Project. Please let me know if you have any questions, information or concerns.
>
> Thanks,
> Mary<4856 NA Letter 07 supp.pdf>

ARCHAEOLOGICAL CONSULTING

P.O. BOX 3377
SALINAS, CA 93912
(831) 422-4912

PHASE 1 ARCHAEOLOGICAL SURVEY FOR THE RECYCLED WATER FEASIBILITY STUDY OF THE DAVENPORT WASTEWATER TREATMENT PLANT, DAVENPORT, SANTA CRUZ COUNTY, CALIFORNIA

by

Mary Doane, B.A., and Gary S. Breschini, Ph.D., RPA

April 11, 2014

DRAFT

Prepared for

GHD-USA
and
Davenport County Sanitation District

SUMMARY: AC PROJECT 4856
RESULTS: NEGATIVE, SEE TEXT
ACRES: ±20
LINEAR: ±3 MILES
SITES: NEAR CA-SCR-50, CA-SCR-169 AND CA-SCR-194H
UTMG: NW END 5.7035/40.9750; SE END 5.7160/40.9615
MAP: USGS 7.5 MINUTE DAVENPORT QUADRANGLE

For Planning Department:		Yes	No	N/A	See text
Evidence of:	Sacred/Religious site	___	___	_X_	_____
	Native American Remains	___	_X_	___	_____
	Anything of Archaeological Significance	___	___	___	___X___
	Findings of Historical Significance	___	_X_	___	_____

INTRODUCTION

In October 2013 Archaeological Consulting was authorized by the GDH-USA to prepare a Phase 1 Archaeological Survey report for the Davenport Recycled Water Feasibility Study in Davenport, Santa Cruz County, California.

As part of our methodology in the preparation of this report, we have conducted: 1) a background records search of the files of the Northwest Information Center of the California Historical Resources Information System, located at Sonoma State University; 2) a Sacred Lands file search through the Native American Heritage Commission and consultation with locally affiliated Native Americans; and 3) a field survey of the proposed project impact area. The following report contains the results of these investigations as well as our conclusions and recommendations.

PROJECT LOCATION AND DESCRIPTION

The project area is in and near the town of Davenport in northern Santa Cruz County, California (see Map 1 and Figure 1). The Universal Transverse Mercator Grid (UTMG) coordinates for the approximate ends of the largely linear project area are as follows: northwest end 5.7035/40.9750 and southeast end 5.7160/40.9615 on the USGS 7.5 minute Davenport Quadrangle (1955; photorevised 1968).

The project is studying the feasibility of developing recycled wastewater infrastructure for potential agricultural and industrial use, and possibly for residential landscaping use in the town of Davenport and along the state highway. The project proposes future pipelines for water conveyance including bores under State Route 1 and the railroad track, ponds, disposal areas and potential highway landscaping.

Because the future pipeline will run under existing roads, the exposed soil adjacent to existing pavements was examined along several streets subject to future project impacts. Surface visibility was fair in the existing disposal area, along the agricultural frontage road south of the highway, along portions of Cement Plant Road and other neighborhood streets. Road cuts and gopher throw augmented surface visibility. Overall, soil visibility was considered adequate for the purposes of this reconnaissance.

PROJECT METHODOLOGY

The methodology used in the preparation of this report included three primary steps, as follows:

Background Research

The background research for this project included a search of the archaeological site records, maps, and project files of the Northwest Information Center of the California Historical Resources Information System (CHRIS), located at Sonoma State University, Rohnert Park. In addition, our own extensive files and maps were examined for supplemental information, such as rumors and locations of historic or prehistoric resources in the general area. These literature searches are undertaken to determine if there are any recorded archaeological or historical resources within the project area and whether the area has been included in any previous archaeological research or reconnaissance projects.

Established by the California Office of Historic Preservation, the regional Information Centers are the local repository for all reports prepared under cultural resource management regulations. A literature search at the Information Center is required by state guidelines and current professional standards. Following completion of a project, a copy of the report must be filed there.

Native American Consultation

A Sacred Lands File search was initiated with the Native American Heritage Commission (NAHC) on December 10, 2013. Following their file search, the commission recommended consultation with locally affiliated Native Americans and provided a list of individuals from several bands to contact for such consultation. Initial contact was made by mail or email on January 9, 2014, followed by a telephone call and/or additional email if a timely response was not received.

Field Survey

The field survey, initiated by Mary Doane on January 20, 2014 and completed by Patrick Cave and Gina Kay on April 10, 2014, consisted of a "general surface reconnaissance" of all accessible project areas which could reasonably be expected to contain visible cultural resources and which could be viewed without major vegetation removal or excavation. The CEMEX property was not available for examination at the time of our survey.

RESULTS OF THE SURVEY

Background Research

The research at the Northwest Information Center found nine prehistoric and historic archaeological sites recorded within the overall project area (see Attachment 1). CA-SCR-169, a light lithic scatter, and CA-SCR-194H, the Davenport Whaling Station, are located in the Future Development Area south of Highway 1. P-44-380, a planked culvert is located southwest of the CEMEX entrance and south of the highway. CA-SCR-50 (P-44-55), "a low density chert flake and tool scatter" is located just northwest of the dry pond at the northwestern end of the future pipeline.

CA-SCR-18, a major prehistoric habitation site, is recorded along San Vicente Creek on the southeastern edge of Davenport. CA-SCR-227 (P-44-229), consisting of two chert scrapers, is recorded at a sewer pump station on the southeast edge of town. These sites do not appear to be in the currently proposed project impact area.

The old town of Davenport is recorded as historic site P-44-379. Portions of two other recorded historic resources, Highway 1, P-44-406, and the Southern Pacific Railroad Tracks, P-44-377, run through the project area. The potential disposal area and pond on the CEMEX property are within the recorded boundaries of the historic Santa Cruz Portland Cement Plant, site P-44-376.

Several other sites are recorded northwest of the project area, including prehistoric CA-SCR-117 (P-44-121) at the mouth of the creek.

The project area lies within the currently recognized ethnographic territory of the Costanoan (often called Ohlone) linguistic group. Discussions of this group and their territorial boundaries can be found in Breschini, Haversat, and Hampson (1983), Kroeber (1925), Levy (1978), Margolin (1978), and other sources. In brief, the group followed a general hunting and gathering subsistence pattern with partial dependence on the natural acorn crop. Habitation is considered to have been semi-sedentary and occupation sites can be expected most often at the confluence of streams, other areas of similar topography along streams, or in the vicinity of springs. These original sources of water may no longer be present or adequate. Resource gathering and processing areas and associated temporary campsites are frequently found on the coast and in other locations containing resources utilized by the group. Factors that may influence the locations of these sites include the presence of suitable exposures of rock for bedrock mortars or other milling activities, ecotones, the presence of specific resources (oak groves, marshes, quarries, game trails, trade routes, etc.), proximity to water, and the availability of shelter. Temporary camps or other activity areas can also be found along ridges or other travel corridors.

The California Inventory of Historical Resources (March 1976), California Historical Landmarks, and the National Register of Historic Places were checked for listed historic resources in the project area. Listed structures within the National Register old town of Davenport include the Davenport jail, which has been determined eligible as an individual property. Several other structures appear eligible including the Blacksmith Shop, St. Vincent De Paul Church, Crocker Hospital and Foresters Hall. The Box Factory and Davenport Ice House have been submitted as part of a Reconnaissance Survey, but have not yet been evaluated. Forester's Hall and the Davenport Whaling Station are in the California Inventory.

Structures in the old town of Davenport, the Portland Cement plant, the original highway alignment and the Southern Pacific Railroad tracks, as well as a rail spur up San Vicente Creek, are depicted on the USGS Santa Cruz, Calif. map (edition of 1902, reprinted 1939). The 1943 USACOE map depicts additional development in the Old Town and Cement plant, new railroad spurs heading into the mountains, the west side neighborhood of Davenport and buildings on the south side of the highway north of town. The 1955 USGS 7.5 Minute Davenport Quad depicts most of the current development of Davenport and environs, except for some excavations on the CEMEX property and the improved highway.

Portions of the current project area have been included in previous archaeological studies. Parts of the northwestern end of the agricultural fields were included in two studies (Roop 1976; Tinsley 2001). One parcel south of the highway opposite the old town has been surveyed (Doane and Haversat 1997). Several surveys have included portions of the CEMEX property (Dietz 1977; ARM 1980; Cartier 1982; Doane and Haversat 1999; Holson 2000). Several studies have concentrated on the southeastern part of Davenport, primarily for properties containing site CA-SCR-18 (Edwards 1976; Roop 1977; Gifford and Savage 1978; Dietz 1980; Marshall 1981; Clark 1999; Doane and Breschini 2010; D'Oro 2012). A water project survey included many parts of the western neighborhood as well as most of the streets in the old town (Doane and Breschini 2010).

Native American Consultation

The Native American Heritage Commission Sacred Lands File Search found no recorded Sacred Sites in the project area. Correspondence and consultation with several of the Native Americans resulted in no new site-specific information but raised concerns about the project area and potential impacts to known sites in the area (see Attachment 2). Patrick Orozco, Chairman of the Costanoan Ohlone Rumsen-Mutsen Tribe, and Val Lopez, Chairman of the Amah Mutsun Tribal Band, both responded by email with specific concerns. Patrick Orozco is aware of the significance and previous disturbance of the CA-SCR-18 site, as well as the importance of several other sites on the north coast. Val Lopez reported that his great-great-grandmother, the last Awaswas speaker, was from Davenport. He considers Davenport to be a very important area and recommends Native American monitoring of all earth disturbance within 400 feet of a natural waterway.

Telephone follow-up was made with several additional consultants. Michelle Zimmer of the Amah Mutsun Tribal Band of Mission San Juan Bautista said that Davenport was an important area in which excavations should be monitored. She also recommended cultural sensitivity training for the construction crews on the project. Anne Marie Sayers of the Indian Canyon Mutsun Band of Costanoan recommended that all earth work in the near vicinity of recorded sites and waterways be subject to monitoring by archaeological and Native American monitors.

Follow-up voicemail and emails were left with several other Native Americans on the contacts list, but responses have not yet been received. Any information received after submittal of the draft report will be included in the final report.

Field Survey

None of the materials frequently associated with prehistoric cultural resources in this area (dark greasy or ashy midden soil, fragments of weathered marine shell, flaked or ground stone, fire-affected rock, bone fragments, etc.) were observed in the potential infrastructure impact areas identified in Figure 1. Soil was generally light to medium brown silt.

CONCLUSIONS AND RECOMMENDATIONS

Based upon the background research, the Native American consultation and the field reconnaissance, we have concluded that there is no surface evidence of significant prehistoric or historic archaeological resources within the proposed project impact areas for pipelines, disposal areas, jack and bore highway crossings and storage ponds. The several archaeological and historic resources recorded in the general project area are not located directly within the proposed impact areas.

Nevertheless, potentially significant historic materials or features could be encountered during this project, especially near the listed historic structures in the town of Davenport. The proposed project impacts under existing pavements will not directly affect the "integrity of setting" or the "integrity of feeling" of the historic structures within the historic Town of Davenport.

The Future Development areas south of the highway and in the CEMEX property contain recorded resources that will require potential impact assessment with an eye to avoidance of impacts prior to approval of Future Development plans.

Because of the preliminary nature of this feasibility study project, we recommend that the study proceed. Any changes in potential impact areas should be field surveyed for cultural resources.

Because of the possibility of unidentified (e.g., buried) cultural resources being found during any construction involving earth disturbance, we recommend that the following standard language, or the equivalent, be included in any permits issued within the project area:

- If archaeological resources or human remains are unexpectedly discovered during construction, work shall be halted until it can be evaluated by a qualified professional archaeologist. If the find is determined to be significant, appropriate mitigation measures shall be formulated, with the concurrence of the Lead Agency, and implemented.

REFERENCES

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D'Oro S.
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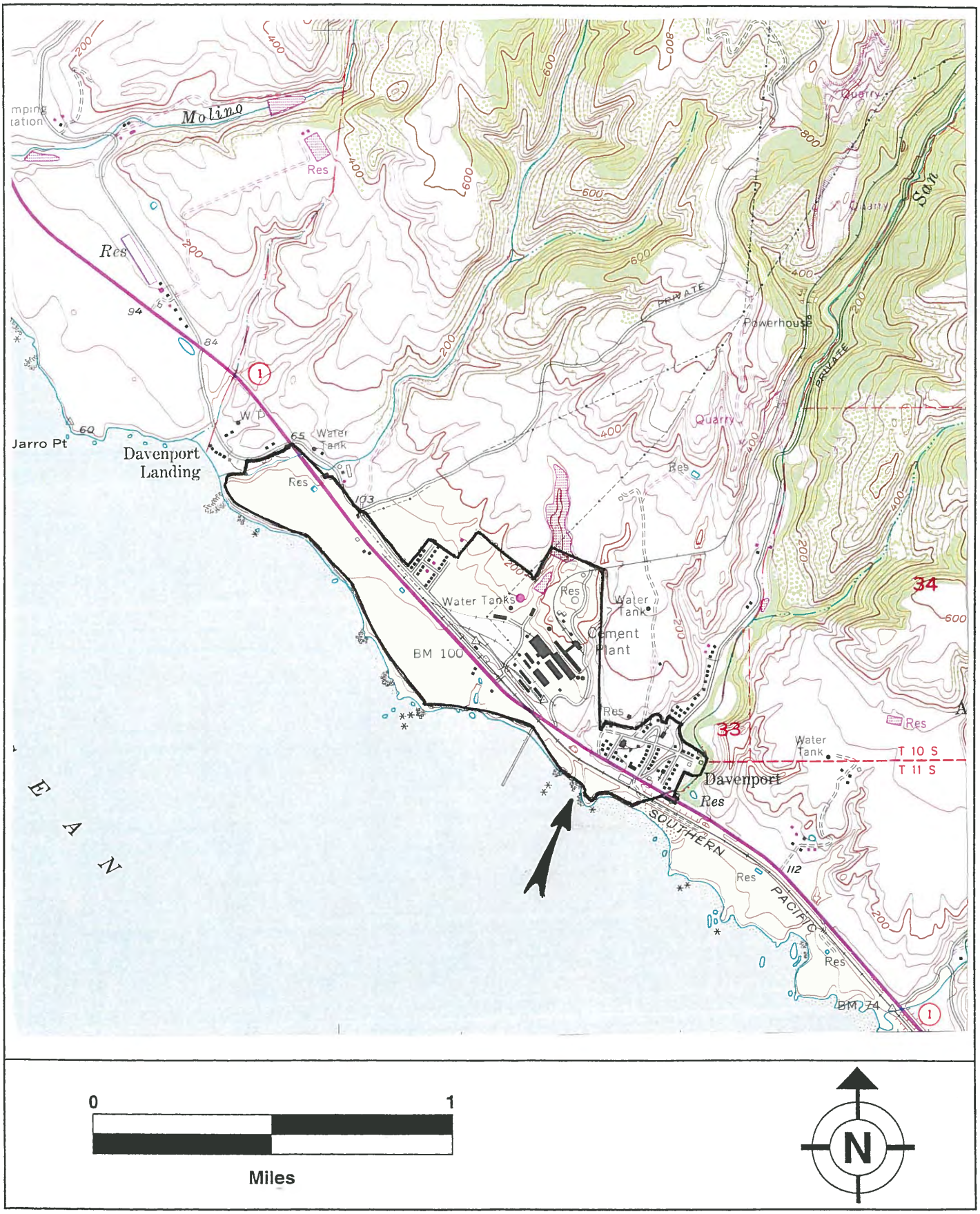


Map 1. Project Location.

Paper Size 22" x 34" (ANSI D)

0 100 200 400 600

Feet

Map Projection: Lambert Conformal Conic
Horizontal Datum: North American 1983
Grid: NAD 1983 StatePlane California III FIPS 0403 Feet

Legend

- Jack and Bore HWY/RR
- Future Pipeline
- Disposal Area
- Potential HWY Landscape Area
- Ponds
- Potential Disposal Area
- Project Limits
- Property Boundary & ID
- Stream

Santa Cruz Sanitation District
Davenport Recycled Water Study

Job Number 8410848
Revision A
Date 30 Jan 2014

Recycled Water Concept Plan

Figure 1

\\ghdnet\ghd\US\Santa Rosa\Projects\11837 - Santa Cruz Sanitation District\11837-8410848 Davenport Recycled Water Study\08-GIS\Maps\Figures\Feasibility Study\RW Concept Plan- Large Format.mxd
© 2012. While every care has been taken to prepare this map, GHD (and DATA CUSTODIAN) make no representations or warranties about its accuracy, reliability, completeness or suitability for any particular purpose and cannot accept liability and responsibility of any kind (whether in contract, tort or otherwise) for any expenses, losses, damages and/or costs (including indirect or consequential damage) which are or may be incurred by any party as a result of the map being inaccurate, incomplete or unsuitable in any way and for any reason.
Data source: Data Custodian, Data Set Name/Title, Version/Date. Created by:rmremillard

2235 Mercury Way Suite 150 Santa Rosa CA 95407 USA T 707 523 1010 F 707 527 8679 E santarosa@ghd.com W www.ghd.com

ATTACHMENT 1

CHRIS DOCUMENTATION

CALIFORNIA HISTORICAL RESOURCES INFORMATION SYSTEM

ALAMEDA
COLUSA
CONTRA COSTA
DEL NORTE
HUMBOLDT
LAKE
MARIN
MENDOCINO
MONTEREY
NAPA
SAN BENITO
SAN FRANCISCO
SAN MATEO
SANTA CLATA
SANTA CRUZ
SOLANO
SONOMA
YOLO

Northwest Information Center
Sonoma State University
150 Professional Center Drive, Suite E
Rohnert Park, California 94928-3609
Tel: 707.588.8455
nwic@sonoma.edu
http://www.sonoma.edu/nwic

DATE: December 5, 2013

NWIC File No.: 13-0811

TO: Mary Doane

FROM: Bryan Much

Re: AC 4856, 4862, 4870 (Davenport and environs, 777 Amesti Rd., Watsonville, Jessie St., Santa Cruz)

Davenport, Watsonville West, Santa Cruz 7.5' Quads
AC 4856

Resources In	There are seven resources within the project area: P-44-000024, P-44-000055, P-44-000229, P-44-000376, P-44-000377, P-44-000379, and P-44-000406. These resources have been mapped and a listing provided for concordance.
Resources within 5/8-mile radius	There are seven resources within the radius of the project area: P-44-000050, P-44-000053, P-44-000121, P-44-000171, P-44-000196, P-44-000378, and P-44-000380. These resources have been mapped and a listing provided for concordance.
Reports In	There are 15 reports within the project area. These reports have been mapped and a listing provided for concordance.
OHP HPD	The HPD listings for Davenport (and vicinity) have been provided.
OHP ADOE	Santa Cruz County provided.
California Inventory	The listings for Davenport (and vicinity) have been provided listings in project area or radius.
Local Inventories	None.
Historic Maps	Relevant portion of the 1:125000 Santa Cruz USGS quadrangle, 1:62500 Ben Lomond US ACOE quadrangle, and the 1:24000 Davenport quadrangle provided.

ATTACHMENT 2

NATIVE AMERICAN CONSULTATION

ARCHAEOLOGICAL CONSULTING

P.O. BOX 3377
SALINAS, CA 93912
(831) 422-4912
Fax (831) 422-4913

April 11, 2014
AC 4856

Ted Whiton
GHD, Inc.
2235 Mercury Way, Suite 150
Santa Rosa, CA 95407

Re: Davenport Recycled Water Feasibility Study Project

Dear Mr. Whiton:

At your request we initiated a record search of the sacred lands file with the Native American Heritage Commission (NAHC) on December 20, 2013. Attached please find a copy of the response, dated January 8, 2014 from Debbie Pilas Treadway of the NAHC. As you will see there was no specific site information found in their files regarding the project area, which lies within traditional Ohlone territory. She recommended that we make additional contacts with other Native American sources of information regarding the potential for cultural resources in the project area. Because these Native American peoples are not a federally recognized tribe, there is no single person or group who represents all of them. A sample copy of the letters regarding your project that were sent on January 9 to the Native American contacts on the NAHC list is also attached.

I have received email responses from Patrick Orozco, Chairman of the Costanoan Ohlone Rumsen-Mutsen Tribe, and Val Lopez, Chairman of the Amah Mutsun Tribal Band. Both had specific concerns about the Davenport area. Patrick Orozco is aware of the significance and previous disturbance of the CA-SCR-18 site, as well as the importance of several other sites on the north coast. Val Lopez stated that his great-great-grandmother, the last Awaswas speaker, was from Davenport. He considers it to be a very important area and recommends Native American monitoring of all earth disturbance within 400 feet of a natural waterway.

I discussed the project with other consultants. Michelle Zimmer of the Amah Mutsun Tribal Band of Mission San Juan Bautista said that Davenport was an area important to her group and excavations should be monitored. She and her mother Irene Zwierlein recommend that work crews receive cultural sensitivity training when working in the vicinity of cultural sites and waterways. Anne Marie Sayers of the Indian Canyon Mutsun Band of Costanoan, also recommends archaeological and Native American monitoring of work in close proximity to recorded resources.

I called and left messages with the remainder of the listed Native Americans to call or email me with any information or concerns they might have about the project.

Although the Native Americans offered no additional information specific to the recorded sites in the project area, they all wished to know of any significant discoveries during any projects. Because of their concern for the preservation of the cultural resources which comprise their heritage, the listed Native Americans should be informed of the of the discovery of any previously unknown cultural resources which may occur during the course of this project. A continuing sensitivity to their concerns and the inclusion of interested Native Americans in this project, including monitoring, will be greatly appreciated by them. I have attached an updated Native American Contacts list.

If I should receive further information or requests for consultation from other Native Americans, I will provide a supplement to this summary letter.

Please feel free to call if you have any further questions or need additional information in this matter.

Yours truly,

Mary Doane

Mary Doane

Cc. Native American Heritage Commission

ARCHAEOLOGICAL CONSULTING

P.O. BOX 3377
SALINAS, CA 93912
(831) 422-4912
Fax (831) 422-4913

December 20, 2013

AC 4856

Debbie Pilas Treadway
State Of California
Native American Heritage Commission
Via email: nahc@pacbell.net

Re: Davenport Recycled Water Project

Dear Debbie:

We have initiated an Archaeological Survey for the proposed Davenport Recycled Water project in Davenport on the north coast of Santa Cruz County. We are contacting your office for information on possible Native American Sacred sites in the project area. Would you please search your Inventory of Sacred Lands to determine whether the current project area, in Township 10S, Range 3W, contains any such resources (see attached map from the USGS 7.5 Minute Davenport Quadrangle). Also please provide me with a Native American contacts list for this part of Santa Cruz County.

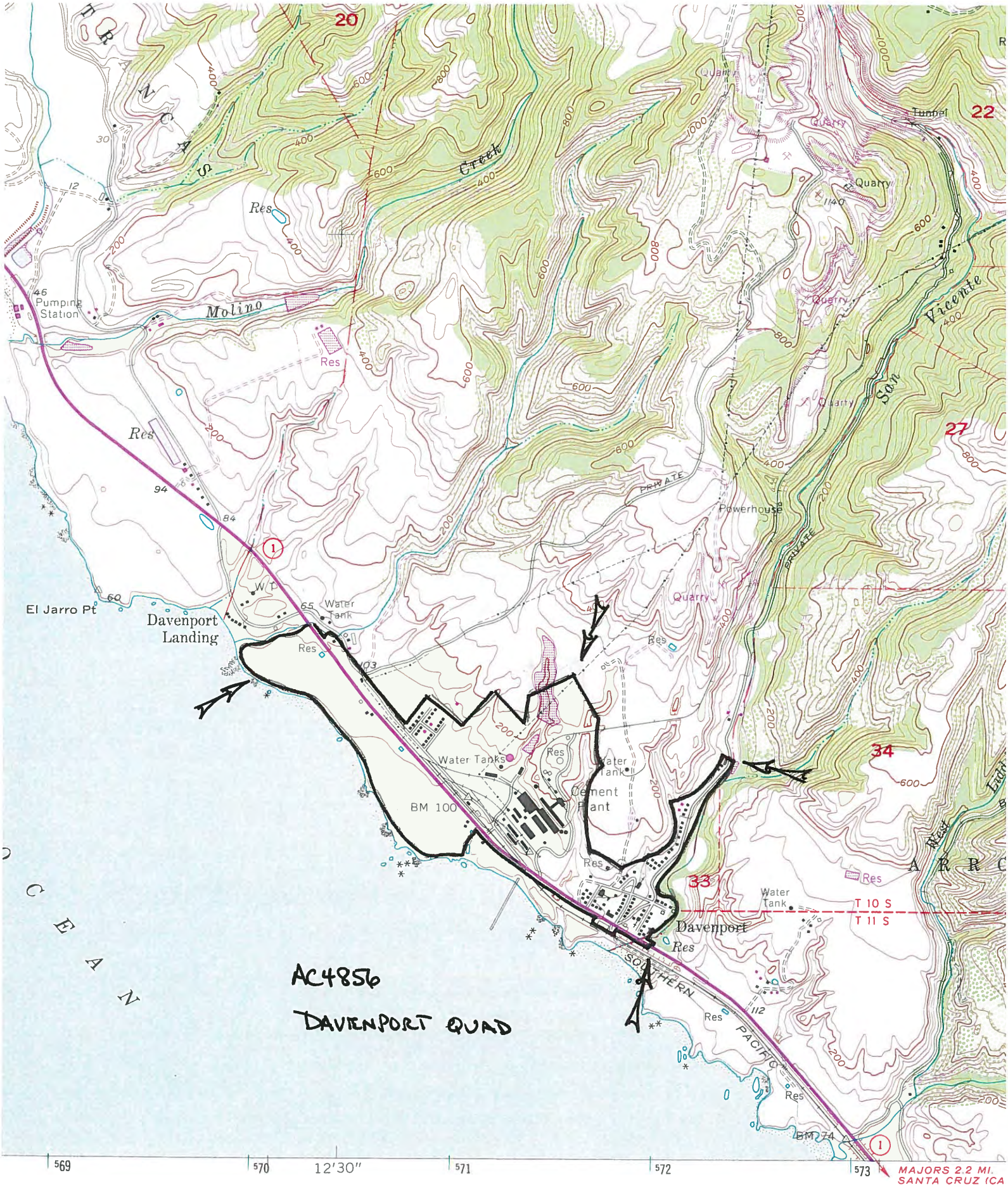
If you have any questions about this request, please do not hesitate to contact our office.

Yours truly,

Mary Doane

Mary Doane

Attachment


AC4856
DAVENPORT QUAD
Davenport Landing
El Jarro Pt
Molino Creek
San Vicente Creek
Pumping Station
Water Tank
Water Tanks
Cement Plant
Powerhouse
Tunnel
Quarry
Davenport
SOUTHERN PACIFIC
PRIVATE
BM 100
BM 74
T 10 S
T 11 S
MAJORS 2.2 MI.
SANTA CRUZ (CA
12'30"
SCALE 1:24000
1000 0 1000 2000 3000 4000 5000 6000 7000 FEET
1 KILOMETRE
GN
MN
0°29'
9 MILS
17°
302 MILS

NATIVE AMERICAN HERITAGE COMMISSION
1550 Harbor Blvd.
West Sacramento, CA 95691
(916) 373-3710
Fax (916) 373-5471

January 8, 2014

Mary Doane
Archaeological Consulting
P.O.Box 3377
Salinas, CA 93912

By Fax: 831-422-4913

Number of Pages: 2

Re: Davenport Recycled Water project, Santa Cruz County

Dear Ms. Doane,

A record search of the sacred land file has failed to indicate the presence of Native American cultural resources in the immediate project area. The absence of specific site information in the sacred lands file does not indicate the absence of cultural resources in any project area. Other sources of cultural resources should also be contacted for information regarding known and recorded sites.

Enclosed is a list of Native Americans individuals/organizations who may have knowledge of cultural resources in the project area. The Commission makes no recommendation or preference of a single individual, or group over another. This list should provide a starting place in locating areas of potential adverse impact within the proposed project area. I suggest you contact all of those indicated, if they cannot supply information, they might recommend others with specific knowledge. By contacting all those listed, your organization will be better able to respond to claims of failure to consult with the appropriate tribe or group. If a response has not been received within two weeks of notification, the Commission requests that you follow-up with a telephone call to ensure that the project information has been received.

If you receive notification of change of addresses and phone numbers from any of these individuals or groups, please notify me. With your assistance we are able to assure that our lists contain current information. If you have any questions or need additional information, please contact me at (916) 373-3713.

Sincerely,

Debbie Pilas-Treadway
Environmental Specialist III

Native American Contacts
Santa Cruz County
January 2, 2014

Jakki Kehl
720 North 2nd Street
Patterson , CA 95363
(209) 892-1060

Ohlone/Costanoan

Amah MutsunTribal Band of Mission San Juan Bautista
Michelle Zimmer
789 Canada Road
Woodside , CA 94062
amahmutsuntribal@gmail.com
(650) 851-7747 - Home

650-332-1526 - Fax

Ohlone/Costanoan

Linda G. Yamane
1585 Mira Mar Ave
Seaside , CA 93955
rumsien123@yahoo.com
831-394-5915

Ohlone/Costanaon

Costanoan Ohlone Rumsen-Mutsen Tribe
Patrick Orozco, Chairman
644 Peartree Drive
Watsonville , CA 95076
yanapvoic@earthlink.net
(831) 728-8471

Ohlone/Costanoan

Amah MutsunTribal Band
Valentin Lopez, Chairperson
PO Box 5272
Galt , CA 95632
vlopez@amahmutsun.org
916-743-5833

Ohlone/Costanoan

Indian Canyon Mutsun Band of Costanoan
Ann Marie Sayers, Chairperson
P.O. Box 28
Hollister , CA 95024
ams@indiancanyon.org
831-637-4238

Ohlone/Costanoan

Amah MutsunTribal Band
Edward Ketchum
35867 Yosemite Ave
Davis , CA 95616
aerieways@aol.com

Ohlone/Costanoan
Northern Valley Yokuts

Muwekma Ohlone Indian Tribe of the SF Bay Area
Rosemary Cambra, Chairperson
PO Box 360791
Milpitas , CA 95036
muwekma@muwekma.org
408-205-9714
510-581-5194

Ohlone / Costanoan

Amah MutsunTribal Band of Mission San Juan Bautista
Irene Zwierlein, Chairperson
789 Canada Road
Woodside , CA 94062
amahmutsuntribal@gmail.com
(650) 851-7747 - Home
650-400-4806 cell preferred
650-332-1526 - Fax

Ohlone/Costanoan

Trina Marine Ruano Family
Ramona Garibay, Representative
30940 Watkins Street
Union City , CA 94587
510-972-0645-home

soaprootmo@comcast.net

Ohlone/Costanoan
Bay Miwok
Plains Miwok
Patwin

This list is current only as of the date of this document.

Distribution of this list does not relieve any person of statutory responsibility as defined in Section 7050.5 of the Health and Safety Code, Section 5097.94 of the Public Resources Code and Section 5097.98 of the Public Resources Code

This list is only applicable for contacting local Native Americans with regard to cultural resources for the proposed Davenport Recycled Water project, Santa Cruz County

ARCHAEOLOGICAL CONSULTING

P.O. BOX 3377
SALINAS, CA 93912
(831) 422-4912
Fax (831) 422-4913

January 9, 2014

AC Project 4856

Valentin Lopez
Amah Mutsun Tribal Band
P.O. Box 5272
Galt, CA 95632

Re: Davenport Recycled Water Project

Dear Mr. Lopez:

We are working on a Phase 1 archaeological survey for the Davenport Recycled Water Project in Santa Cruz County (see Map 1, a section of the USGS Davenport quad map attached). The project is a study to determine whether capturing and recycling sewer water to be treated and used for agricultural irrigation and landscape watering is feasible for the town of Davenport. The latest project map, which does not include the agricultural fields that will receive the treated water, is also attached.

We have contacted the Native American Heritage Commission for information on recorded sites in the project area. Their search found no Sacred Lands recorded there. The commission provided us with a list of local Native Americans to contact for additional information. If you should have any information about cultural resources within or in the vicinity of the project area, please contact this office not later than January 31 with your information or comments.

We know that there is one recorded archaeological site, CA-SCR-18, at the eastern end of Old Town on the west bank of San Vicente Creek.

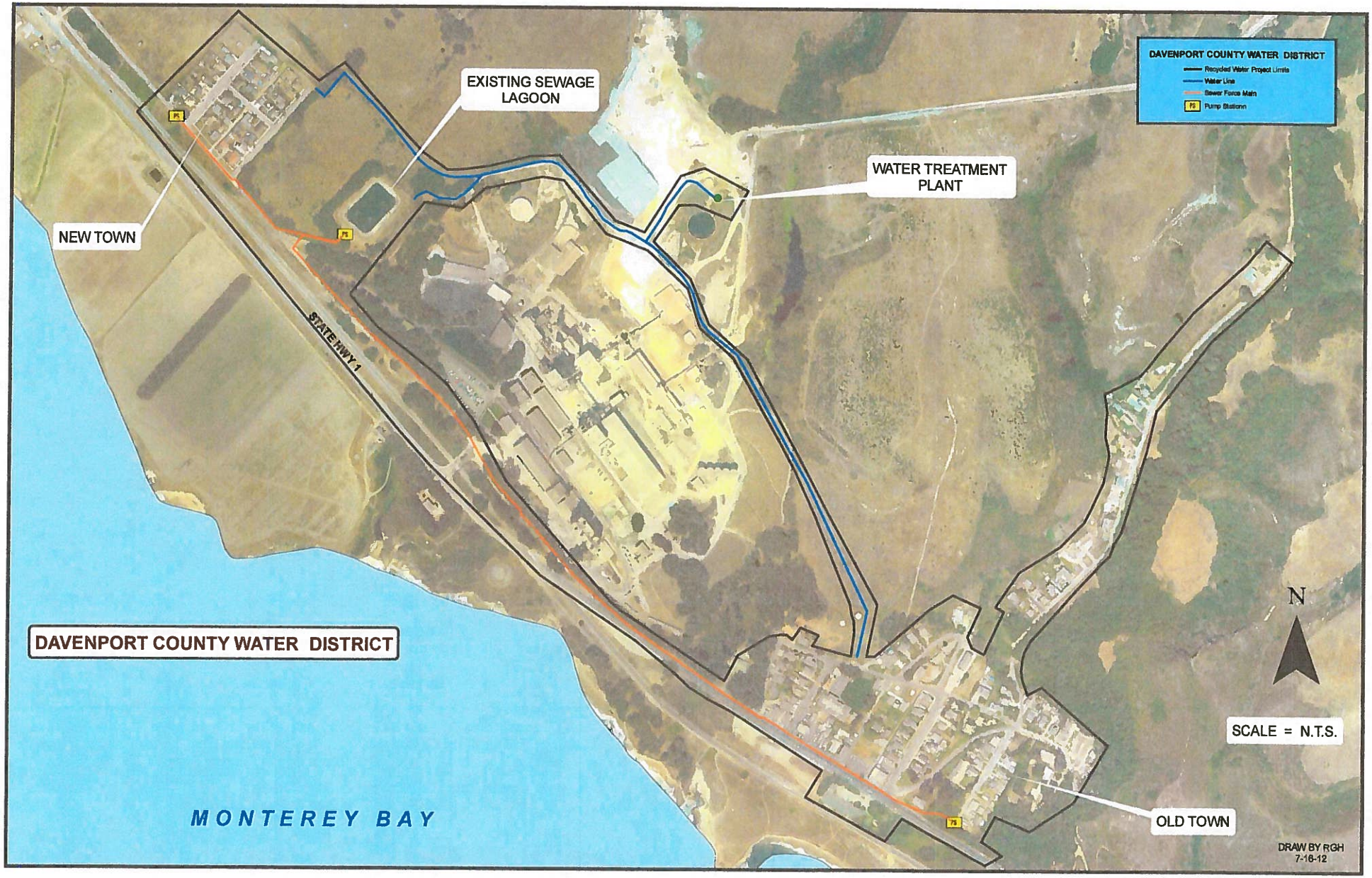
If you have any questions about this request, please do not hesitate to contact me at your earliest convenience.

Yours truly,

Mary Doane

Mary Doane
Project Manager

AC4856
DAVENPORT QUAD
AG FIELDS
Davenport Landing
El Jarro Pt
Pumping Station
Molino
Creek
Res
Water Tank
Water Tanks
Cement Plant
Powerhouse
Quarry
Tunnel
San Vicente
PRIVATE
Davenport
SOUTHERN PACIFIC
T 10 S
T 11 S
BM 100
BM 74
OCEAN
12'30"
MAJORS 2.2 MI.
SANTA CRUZ (CA
SCALE 1:24000
7000 FEET
1 KILOMETRE
GN
MN
0°29'
9 MILS
17°
302 MILS


DAVENPORT COUNTY WATER DISTRICT
Recycled Water Project Limits
Water Line
Sewer Force Main
PS Pump Stations
EXISTING SEWAGE LAGOON
WATER TREATMENT PLANT
NEW TOWN
STATE HWY 1
DAVENPORT COUNTY WATER DISTRICT
MONTEREY BAY
N
SCALE = N.T.S.
OLD TOWN
DRAW BY RGH
7-16-12

X-Original-To: flame.razzolinkcom@mstore68.nyc1.bluetie.com
Delivered-To: flame.razzolinkcom@mstore68.nyc1.bluetie.com
X-BT-Recipient: flame@razzolink.com
X-CMAE-Score: 0.00
X-CMAE-Analysis: v=2.1 cv=NqPoLatJ c=1 sm=1 tr=0
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a=CjuIK1q_8ugA:10
Subject: Re: Project consultation, Davenport
From: patrick orozco <yanapvoic@earthlink.net>
Date: Tue, 14 Jan 2014 15:51:28 -0800
To: Mary Doane <flame@razzolink.com>
X-ELNK-Trace:
59974bc36715f04b81b09582c12b02407e972de0d01da94050265f11cc27060efe123697fdba60a5350badd9bab72f9c350badd9bab72f9c350badd9bab72f9c
X-Originating-IP: 64.105.137.75
X-BtMT: Tue, 14 Jan 2014 18:52:01 -0500 (EST)

HELLO MARY

YES CA-SCR-18 THREE BURIALS AND STONE TOOLS WERE REMOVED FROM THIS SITE AND A NUMBER OF BURIALS. THEN THERES THE SAND HILL BLUFF SC-SCR-7 AND CA-SCR 117 , SC-SCR-227, CA-SCR- 169 , SC-SCR-50 THESE ARE SITES IN THE AREA . PATRICK

On Jan 9, 2014, at 12:29 PM, Mary Doane wrote:

> Hello Patrick.
>
> I have sent you a letter regarding a recycled water project study underway in Davenport, Santa Cruz, County. Please let me know if you have any information regarding this area that you would like included in our report.
>
> Regards.
> Mary<4856 NA Letter 07.pdf>

X-Original-To: flame.razzolinkcom@mstore68.nyc1.bluetie.com
Delivered-To: flame.razzolinkcom@mstore68.nyc1.bluetie.com
X-BT-Recipient: flame@razzolink.com
X-CMAE-Score: 0.00
X-CMAE-Analysis: v=2.1 cv=ZvjUdbLG c=1 sm=1 tr=0
a=fEogWGqKX82J6kcywItGoA==:117 a=fEogWGqKX82J6kcywItGoA==:17 a=f5113yIGAAAA:8
a=QoHJ8kPOAAAA:8 a=28Nhbo5EPgsA:10 a=xwYNoZ5W9-UA:10 a=BLceEmwcHowA:10
a=8nJEP1OIZ-IA:10 a=iXH1aTTZAAAA:8 a=cNaOj0WVAAAA:8 a=O2VgXs2RyAQA:10
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a=2WVCU03voR8A:10 a=OJ4n5Q4xFl8A:10
Date: Sun, 16 Mar 2014 07:12:05 -0600
From: vlopez@amahmutsun.org
To: Mary Doane <flame@razzolink.com>
Subject: Re: Davenport water project
X-Identified-User: {1971:box476.bluehost.com:amahmuts:amahmutsun.org} {sentby:smtp auth 127.0.0.1 authed with vlopez@amahmutsun.org}
X-BtMT: Sun, 16 Mar 2014 09:13:26 -0400 (EDT)

Hi Mary,

Thanks for sending this letter regarding the Davenport Project.
Davenport was an important site as it was the hope of the Catoni Tribe who were Awaswas speakers. My G-G-Grandmother was the last speaker of Awaswas and is recognized for this at by the Smithsonian Institute.

We consider this area to be very sensitive and therefore request that a NA monitor be used for all ground disturbance within 400 feet of a natural waterway.

Please feel free to call me if you should have questions.

Valentin Lopez, Chairman
Amah Mutsun Tribal Band
(916) 743-5833

Quoting Mary Doane <flame@razzolink.com>:

> Hi Val,
>
> Here is the letter regarding the Davenport project we discussed earlier. The project has been slightly scaled back but the area is mostly the same. Please call or email me with your comments and any concerns you may have.
>
> Regards,
> Mary

Attachment 5

Phase I and Limited Phase II
Environmental Site Assessment
Cemex Property

February 29, 2012

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PHASE I AND LIMITED PHASE II ENVIRONMENTAL SITE ASSESSMENT

CEMEX Property

APNs 058-071-03, 058-071-04, 058-072-01, 058-072-02, 058-022-14, 058-122-10, 058-031-01, 063-122-05, 063-122-06, 063-122-07, 063-122-09, 063-122-10, 063-121-07, 063-132-08, & 063-132-09
Santa Cruz County, California

Prepared for:
Sproutwerx
Palo Alto, California

Prepared by:
RRM, Inc.
2560 Soquel Avenue, Suite 202
Santa Cruz, California 95062

February 29, 2012

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Attachment C EDR Historical Topographic Map Report
Attachment D Certified Analytical Reports and Soil Boring Logs

GLOSSARY OF ACRONYMS

Agency or Trade Acronyms

AAI	All Appropriate Inquiry Rule
APN	Assessor Parcel Number
AST	Above-ground storage tank
ASTM	American Society for Testing and Materials
Cal-DHS	California Department of Health Services
Cal-EPA	California Environmental Protection Agency
CERC-NFRAP	CERCLIS, no further remedial action planned
CERCLIS System	Comperhensive Environmental Response, Compensation, and Liability Information
CDLC	Coast Dairies and Land Company
CHMIRS	California Hazardous Material Incident Report System
CKD	Cement Kiln Dust
CUPA	Certified Unified Program Agencies
DTSC	California Department of Toxic Substance Control
EMI	California Emissions Inventory
ENF	Enforcement Action Listing
ERNS	Emergency Response Notification System
ESA	Environmental Site Assessment
EDR	Environmental Data Resources
FID	Facility Inventory Database
FINDS	Facility Index System
HAZNET	Hazardous Waste Information System
HMMP	Hazardous Materials Management Plan
ICIS	Integrated Compliance Information System
LDS	land disposal site

LUST	leaking underground storage tank
NPDES	National Pollution Discharge Elimination System
NPL	National Priorities List
REC	Recognized Environmental Condition
RRM	Remediation Risk Management, Inc.
RWQCB	Regional Water Quality Control Board
SCCEHS	Santa Cruz County Environmental Health Services
SWEEPS	Statewide Environmental Evaluation and Planning System
SWF/LF	Solid Waste Facility/Landfill Facility
SWIS	Solid Waste Information System
SWRCB	California State Water Resources Control Board
TSCA	Toxic Substances Control Act
US EPA	United States Environmental Protection Agency
UST	Underground Storage Tank
WDS	Waste Discharge System
WMUDS/SWAT	Waste Management Unit Database System/

Metals or Contaminants, Measurements

Be	Beryllium
Cd	Cadmium
Cr(VI)	Hexavalent chromium
Cu	Copper
Ni	Nickel
Pb	Lead
Se	Selenium
Zn	Zinc
MEK	Methyl ethyl ketone
PCE	Tetrachloroethene

TPH	Total petroleum hydrocarbons
TPHd	Diesel-range petroleum hydrocarbons
PAH	Poly-aromatic hydrocarbon
PCB	Poly-chlorinated biphenyl
VOCs	Volatile organic compounds

ppm	Parts per million
mg/kg	Milligram per kilogram or parts per million
ug/kg	Microgram per kilogram or parts per million
mg/l	Microgram per liter
ug/l	Milligram per liter

1.0 EXECUTIVE SUMMARY

Sproutwerx (client) requested this Phase I Environmental Site Assessment (ESA) for the real property located on parcels to the west and east of Highway 1 near Davenport in Santa Cruz County, California, herein referred to as the CEMEX Property (Property). The subject Property is comprised of fifteen parcels totaling approximately 594 acres, approximately 194 acres of which are industrial and coast parcels located along Highway 1 immediately northwest of the town of Davenport. The remaining 400 acres, referred to in this report as the quarry parcels, are located approximately 2.75 miles northeast of Davenport, east of Bonny Doon Road (Figures 1 & 2).

Remediation Risk Management, Inc. (RRM) performed the ESA in accordance with the United State Environmental Protection Agency (US EPA) All Appropriate Inquiry Rule (AAI) and the American Society of Testing and Materials (ASTM) Standard Practice E 1527-05. As required by AAI and the ASTM Standard, investigative methods included records review, site reconnaissance, interviews, and report preparation. Site features of potential environmental concern were physically tested.

The information presented in this report identifies potential areas of environmental concern, and describes the physical testing of those areas identified as potential Recognized Environmental Conditions (RECs).

As the subject property has been used for a considerable period of time by a large industrial operation, many features of potential environmental concern were identified. By way of inspection, records research, interviews and physical testing, RRM reduced the aggregate list to the following confirmed RECs:

Coal Pile: Located on the north side of the property. Based on air photos and the Plant history, the kiln was switched from bunker fuel to coal around 1981. Coal was brought in by rail and stored outside on bare ground. There is no significant quantity of coal remaining, although a thin layer still coats the entire storage area.

Soil and groundwater sampling was conducted within this area. Soil sample results indicate the presence of minor concentrations of petroleum hydrocarbons (less than 300 mg/kg and elevated pH (up to 11.49). Groundwater sample results were consistent with the soil results with the exception of elevated lead concentrations in groundwater.

Iron Ore and Slag Storage: Located on the north side of the property adjacent to the coal pile. Iron ore and slag was stored in covered and uncovered piles at this location. The covered areas appear to have concrete slab floors and the outside piles appear to be on bare ground. Significant piles of iron slag are still present.

This area overlaps with the coal pile, and sampling results are discussed in the coal pile section above.

Diesel Storage, Rock Storage Area: Located adjacent to the rock storage area. There are two unauthorized releases documented for this fuel storage area. In 1998 a driver inadvertently spilled approximately 1,350 gallons of diesel in the secondary containment and approximately 150 gallons on bare ground. 7,333 cubic yards of soil were excavated and burned in the kiln (under permit).

In August 2008 an unknown quantity of diesel fuel was released and breached the secondary containment. Impacted sand feedstock and native soils were excavated and stockpiled in the rock storage area. Confirmation samples were reportedly collected, but the data is not available in the County files. This release is still an active County case.

Machine Shop: A large machine shop is present in the central portion of the industrial buildings. The machine shop consists of metal fabricating, milling, and welding equipment, all of which are still in use. Presently, there are several portable, self-contained degreasers that use a citrus-based solvent. There are no indications of other solvents, cleaning areas, or sumps within the shop. Plant personnel indicated that larger parts were cleaned at the steam-cleaning pit.

Since there were no records or visible indications of solvent use, sub-slab vapor samples were collected at three locations to screen for potential subsurface contamination. A variety of solvents were detected, including tetrachloroethene (PCE), acetone, and methyl ethyl ketone (MEK). All compounds detected were below applicable screening levels. However, the presence of volatile organic compounds (VOCs) in soil gas beneath the machine shop indicate that these compounds were used and/or stored at this facility sometime in the past, and that they were released into the surrounding environment. The nature and extent of the release are unknown and may require additional investigation if site use changes.

Hazardous materials were observed at various locations under conditions that did not indicate either a historical or potential future release, and other de minimus conditions were observed as described in Section 7.2.

Other environmental considerations were noted that do not qualify as RECs but are possibly noteworthy in association with the contemplated acquisition. These considerations are as follows:

Site Closure Plan: Santa Cruz County does not have formal site closure requirements or standards, but does require the preparation of a Closure Plan describing the intention, objective and methodologies of closure-related activities. The closure plan is used to demonstrate that hazardous materials used and stored at the facility will be removed or disposed of in an appropriate manner, the threat to public health or the environment at the facility is eliminated or minimized, and monitoring of hazardous materials usage and handling is no longer required. Materials covered under the closure plan generally include all hazardous or potentially hazardous materials, tanks, and process equipment.

The implemented closure plan would likely be required to include further investigation to characterize the extent of solvent contamination at the machine shop when the overlying structure is demolished, sampling for asbestos in structures proposed for demolition or development, removal of fueling systems no longer in use, and removal of hazardous materials from all storage areas. The plan would also likely include a proposal to close or upgrade the storm water ponds to prevent infiltration to groundwater and potential contamination, and closure of the open diesel spill case. The Phase II sampling data collected as part of this assessment can be incorporated into the closure plan.

Active Landfill and CKD Pile: California regulations require the proper closure of the active cement kiln dust (CKD) landfill. Closure standards require the construction of a final cover system to minimize water infiltration and soil erosion. Closure activities are described in a plan submitted to the Regional Water Quality Control Board (RWQCB). Such a plan typically consists of: an estimate of the maximum inventory

of waste on site, an estimate of the areal extent of the landfill requiring cover, and a description of the final cover design and its installation methods and procedures. Post-closure monitoring activities typically consist of activities required to ensure the integrity and effectiveness of the final cover system, water runoff collection system, and groundwater monitoring system. The required post-closure care period is 30 years from site closure.

Storm Water and Surface Water Collection and Treatment: Surface water and storm water runoff from the site is currently regulated under a National Pollution Discharge Elimination System (NPDES) permit. As part of the permit requirements, surface and storm water runoff must be properly collected and monitored prior to ocean discharge. Currently, these requirements include monitoring of discharge volumes and pH. Since the pH tends to exceed discharge requirements, a pH treatment system consisting of a carbon dioxide injection tube within a concrete basin operates continuously.

This system will likely be necessary for the foreseeable future. It is possible that removal of all raw materials (residual coal material and iron ore and slag) along with proper capping and closure of the active CKD landfill, will cause surface and storm water to revert to background conditions allowing for the discontinuation of the carbon dioxide treatment and NPDES requirements.

2.0 INTRODUCTION

2.1 Purpose of this Assessment

The purpose of this ESA was to identify recognized environmental conditions (RECs) on or near the subject property. A REC is a feature or observation indicating the presence or likely presence of hazardous substances or petroleum products on a property under conditions that could cause or create an existing release, a past release, or a material threat of a release into structures on the property or into the ground, groundwater, or surface water of the property. This includes hazardous substances or petroleum products even under conditions in compliance with applicable laws. It does not include de minimus conditions, those spills or releases that generally do not present a material risk of harm to public health or the environment, and that generally would not be the subject of an enforcement action if brought to the attention of appropriate governmental agencies. Conditions determined to be de minimus are not recognized environmental concerns.

This ESA has been prepared for Sproutwerx in association with the contemplated acquisition of the subject property.

2.2 Detailed Scope of Services

The steps included for this ESA are as follows:

- **Site Reconnaissance.** Accessible areas of the Property and Property vicinity were physically inspected in order to identify possible hazardous waste storage, dumping, or contamination.
- **Records Review.** A review of reasonably ascertainable records was conducted; sources included regulatory agency files, lists and databases, topographical maps, and aerial photographs.

- **Interviews.** The current Property owner and occupants of the Property were interviewed in order to establish current and previous Property uses, current and previous use of hazardous materials, and hazardous waste practices at the Property.
- **Report Preparation.** The information gathered for this ESA was compiled, and the findings are presented in this report.

Each of the steps of the Phase I ESA is described in detail in Sections 3.0 through 7.0; the findings of the ESA are presented in Section 9.0; opinions regarding the findings are presented in Section 10.0, and the conclusions of this assessment are presented in Section 11.0. The qualifications and signatures of environmental professionals performing the ESA are presented in Section 12.0.

2.3 Exceptions and Limitations

RRM has developed and performed appropriate inquiries in conformance with the standards and practices set forth in 40 CFR Part 312 and as defined in ASTM Practice E1527-05. This Phase I ESA is based strictly on the information obtained during this assessment. This ESA does not include the testing or sampling of asbestos, radon, molds, or polychlorinated biphenyls. Phase II soil and groundwater sampling activities were conducted as described in Section 8.0. While the scope of work completed was reasonable and appropriate to establish and understanding of potential releases, determining all historic hazardous materials and/or hazardous waste practices for the Property is not practicable and is beyond the scope of this assessment.

2.4 Significant Assumptions

RRM interviewed long-term Property employee Kenneth O'Connell and other CEMEX staff, Santa Cruz County Environmental Health Services (SCCEHS) staff, and Central Coast Regional Water Quality Control Board (RWQCB) staff to obtain details regarding the Property conditions, the historic use of the Property, and hazardous materials handling practices at the Property. By presenting this reported information about uses of the Property, RRM has assumed that the aforementioned individuals have been forthright and truthful regarding their knowledge of the conditions, uses, and materials handling practices at the Property.

The cement plant facility was significantly reconstructed between 1979 and 1981 according to CEMEX staff. Records of the plant configuration and hazardous materials usage were not available for the pre-1981 configuration from either CEMEX or the County, therefore the findings, conclusions, and recommendations are primarily based on observations and information concerning the current plant configuration and the limited information from historical air photos. Because of several changes in corporate ownership since that time and the lack of County records, assessment of the pre-1981 facility is not feasible.

RRM relied upon maps, verbal descriptions and title documents provided by the Client to establish property line locations. For the purposes of this ESA, RRM did not attempt to independently verify the information provided and assumes the boundaries are correct.

2.5 User Reliance

This report was prepared for use solely and exclusively by Sproutwerx. This Phase I ESA may be provided by Sproutwerx, in its sole discretion, to other third parties in connection with the acquisition of the land or portions thereof and may be relied upon by these third parties to the same extent that this report may be relied upon by Sproutwerx. No other use or disclosure is intended or authorized by RRM. In the preparation of this ESA, RRM has used the degree of care and skill ordinarily exercised by a reasonably prudent environmental professional in the same community and in the same time frame given the same or similar facts and circumstances. No other warranties are made to any third party, either express or implied.

3.0 SITE DESCRIPTION

3.1 Location and Legal Description

The subject Property is comprised of fifteen parcels totaling approximately 594 acres, approximately 194 acres of which are industrial and coast parcels located along Highway 1 immediately northwest of the town of Davenport. The remaining 400 acres, referred to in this report as the quarry parcels, are located approximately 2.75 miles northeast of Davenport, east of Bonny Doon Road. The Property location and site vicinity is shown on Figure 1. The San Cruz County Assessor's office identifies the subject Properties as assessor parcel numbers (APNs) 058-071-03, 058-071-04, 058-072-01, 058-072-02, 058-022-14, 058-122-10, 058-031-01, 063-122-05, 063-122-06, 063-122-07, 063-122-09, 063-122-10, 063-121-07, 063-132-08, & 063-132-09.

3.2 Property and Vicinity General Characteristics

The Property and vicinity are dominated by coastal terraces and rolling hills of shrub rangeland and chaparral, interspersed with wooded areas along creeks and drainages. The surface elevation at the Property ranges from approximately 50 feet above msl at the coastal bluffs adjacent to Highway 1, to approximately 1,100 feet above msl at the limestone quarry parcels. The industrial parcels are bordered to the southwest by the Pacific Ocean and to southeast by San Vicente Creek; the limestone quarry parcels are located to the north of the upper reaches of Liddell Creek. Other surface waters located on the Property include spring-fed and man-made ponds and reservoirs, a County drinking water impoundment, and a County wastewater treatment pond.

3.3 Current Use of the Property

The developed portions of the Property were used for cement production and raw materials storage, quarry operations, and office and administration space until 2008; all buildings and machinery are currently still in place. Several parcels adjacent to the limestone quarry are currently residential properties, and a small parcel adjacent to the cement plant is under lease to the town of Davenport and occupied by the Davenport Fire Department. These parcels are part of the contemplated transaction.

3.4 Descriptions of Structures, Roads, Other Improvements on Property

The property consists of many heavy industrial improvements used for the production, storage, and shipment of cement products, and for quarrying and transport of raw materials. The cement plant is separated from the quarry operations by approximately 3 miles of undeveloped property; an elevated conveyor is used to transport raw materials from the quarry to the plant. Structures and improvements present on the property include: the burner, heater, and kiln equipment; a finish mill; machine and electrical shops; an electrical substation; several diesel fuel storage areas; a control building and laboratory; raw material stockpile and handling areas; finished product storage and shipping facilities; two solid waste landfills (for the disposal of cement kiln dust); and a 1 million gallon above ground storage tank formerly used to store bunker fuel. County records indicate that there are approximately 2,000 pieces of equipment located on the property that require lubricants such as oil and grease.

In addition to the cement production and quarry facilities, several portions of the property are leased to the County for operation of a wastewater treatment facility, a potable water treatment plant, and a fire station.

Site maps of the cement plant parcels and the quarry parcels are presented as Figures 2 and 3, respectively. A detailed plant diagram was not available for incorporation into this ESA. Significant plant features and details indentified from air photos and site reconnaissance are shown on Figure 4.

3.5 Current Uses of the Adjoining Properties

Cement Plant and Coast Property

Northwest: The portion of property west of US Highway 1 is bounded to the northwest by residential properties and parcel 058-021-03, owned by California State Parks and currently used for agriculture.

North and East: The portion of the property east of US Highway 1 is bounded to the north and east by open space and agriculture parcels owned by the Coast Dairies and Land Company (CDLC).

Southeast: The town of Davenport borders the southeast property boundary.

Southwest: the portion of the property west of US Highway 1 is bordered on the southeast by the Pacific Ocean.

Limestone Quarry Property

West and South: The properties to the west and south of the quarry are primary open space and are owned by the CDLC. A portion of the property was previously leased by CEMEX (predecessor companies) for quarry operations.

East and North: The properties to the east and north of the limestone quarry are privately owned undeveloped and rural properties zoned for residential and agricultural uses.

4.0 USER PROVIDED INFORMATION

Sproutwerx is the User of this report as defined by AAI and ASTM. As part of the assessment, CEMEX staff provided the following answers to the questionnaire that is part of ASTM 1527-05.

4.1 Title Records

The current owner of the parcels is CEMEX USA (CEMEX). CEMEX acquired the property from RMC Pacific Materials in 2005. Several portion of the property are reported by CEMEX to be under lease to other entities for uses not related to the plant. These include parcel 058-071-03 which is leased to the County and used by the Davenport Fire Department; a portion of parcel 058-071-04 currently used by the County for the Davenport wastewater treatment plant; and another portion of parcel 058-071-04 used by the County for the Davenport potable water treatment and supply facility. The lease status of parcel 058-072-01, currently used for agriculture, is unknown.

4.2 Environmental Liens or Activity and Use Limitations

CEMEX did not provide and had no knowledge of any information regarding environmental liens. Based on rules of regulation of both the open and closed landfills on the property, it is likely that CEMEX has some sort of financial assurance (typically a Surety Bond) program in place with the State. While this bond is not an indication of a REC, the obligation is important to note in association with these features.

4.3 Specialized Knowledge

CEMEX staff reported that they are not aware of any specialized knowledge or experience that is material to RECs in connection with the Property as defined by 40 CFR 312.28.

4.4 Commonly Known or Reasonably Ascertainable Information

While there are RECs associated with the Property as defined by 40 CFR 312.28, CEMEX staff provided minimal documentation of known issues. CEMEX did not provide any documentation that was not readily available at County and State regulatory agencies.

4.5 Valuation Reduction for Environmental Issues

CEMEX and Sproutwerx did not provide any information regarding the value of the property or any potential value modifications based on known environmental conditions. While requested, this information was not provided.

4.6 Owner, Property Manager, and Occupant Information

The property is owned and managed by CEMEX.

4.7 Reason for Performing Environmental Site Assessment

The purpose of this ESA was the identification of RECs on or near the subject property in association with a contemplated property transaction. The ESA was performed at the request of Sproutwerx.

5.0 RECORDS REVIEW

The purpose of the records review was to obtain and review records in order to identify recognized environmental conditions associated with the Property and conditions on surrounding properties that may have resulted in contamination to soil or groundwater at the subject Property. Information obtained from the following sources has been incorporated into this assessment:

- EDR Report
- Santa Cruz County Environmental Health (SCCEH) File Review
- Historical Topographic Maps
- Historical Aerial Photographs
- Historical Address Listings

RRM requested Historical Sanborn Fire Insurance Maps from Environmental Data Resources, Inc. (EDR); however, EDR reported that Sanborn maps were not available for the Property vicinity.

5.1 Standard Environmental Record Sources

EDR provides a research service that examines databases maintained by the US EPA, the California Department of Toxic Substances Control (DTSC), California Environmental Protection Agency (Cal-EPA), California Integrated Waste Management Board, California Department of Health Services (Cal-DHS), the California State Water Resources Control Board (SWRCB), and other federal, state and local agencies. Listed below is a summary of findings of the EDR Report. The search radius for each of these lists is determined by ASTM standard E 1527-05 (for the ASTM specified Federal, State, and Local records) or was determined by EDR based on the type of records searched.

Although the EDR report shows the subject Property at 700 Highway 1 plotted within parcel 058-122-10 near one of the quarry sites, this destination was used as an approximate center point to encompass the entire Property and surrounding areas within the search radii. 700 Highway 1, the address associated with the subject Property, is located adjacent to Highway 1 at the CEMEX facility. The EDR report lists the Property under the names RMC Pacific Materials, RMC Lonestar Santa Cruz Cement, RMC Pacific Materials DBA CEMEX, 700 Hwy 1, RMC Pacific Materials Inc., and Lone Star Industries Cement Plant.

The subject Property is reported by EDR as the location of a TSCA, NPDES, ENF, ICIS, FINDS, AST, CHMIRS, WDS, ERNS, HAZNET, EMI, CERC-NFRAP, SWF/LF, WMUDS/SWAT, CUPA Listings, LDS, and Notify 65 listings associated with former cement plant operations at the Property. Plant operations were mainly limited to a portion of the Property identified as parcel 058-071-04; other plant operations took place in nearby quarries used by the facility.

Additional information regarding the databases searched, including the types of records contained in each database, and the search radius for each list, can be obtained from the EDR Report, which is presented as Attachment B.

EDR Records Search Findings

Review of readily ascertainable information from governmental environmental databases revealed several entries within the search radii from the Property. The records search performed by EDR resulted in the following listings:

- One CERC–NFRAP site was identified within 1-mile of the Property. CERC–NFRAP is a list of sites that have been removed from and archived from the inventory of CERCLIS sites; the EPA has determined that no further steps will be taken to list these sites on the National Priorities List (NPL).
- One ERNS site was identified at the subject Property. The Emergency Response Notification System (ERNS) records and stores information on reported releases of oil and hazardous substances.
- One SWF/LF site was identified within 1-mile of the Property. SWF/LF or Solid Waste Information System (SWIS) is an inventory of active, closed, and inactive solid waste disposal facilities or landfills.
- Three leaking underground storage tank (LUST) sites were identified within 1-mile of the Property. LUST records contain an inventory of sites where incidents of leaking underground storage tanks have been reported.
- One above ground storage tank (AST) site was identified at the subject Property. AST sites are active aboveground storage tank facilities recognized by local regulatory agencies.
- One WMUDS/SWAT site was identified within 1-mile of the Property. WMUDS/SWAT is a network of several databases used by the state water boards for program tracking and inventory of waste management units.
- Three CA FID UST sites were identified within 1-mile of the Property. The Facility Inventory Database (FID) contains a historical listing of active and inactive UST locations from the SWRCB.
- Five HIST UST sites were identified within 1-mile of the Property. HIST UST is a historical listing of UST sites.
- Nine SWEEPS UST sites were identified within 1-mile of the Property. SWEEPS UST is a list of underground storage tank (UST) sites updated in the early 1990s. The listing is no longer updated or maintained; local agencies are the contact for SWEEPS UST sites. One of these sites included the subject Property.
- Three CHMIRS sites were identified within 1-mile of the Property; one of these listings included the subject Property. CHMIRS sites are listed within the California Hazardous Material Incident Report System that contains information on reported hazardous materials incidents, i.e., accidental releases or spills.
- One LDS site was identified within 1-mile of the Property. LDS is a land disposal site listing part of the Land Disposal program which regulates waste discharge to land for treatment, storage and disposal in waste management units.
- One TSCA listing was identified at the subject Property. The Toxic Substances Control Act identifies manufacturers and importers of chemical substances included on the TSCA Chemical Substance Inventory List. It includes data on the production volume of these substances by plant site.
- One ICIS listing was identified at the subject Property. The Integrated Compliance Information System (ICIS) supports the information needs of the national enforcement and compliance program as well as the unique needs of the National Pollutant Discharge Elimination System (NPDES) program.

- Three FINDS sites were identified within 1-mile of the Property; one of these listings included the subject Property. The Facility Index System contains facility information on several different databases. For a listing of FINDS databases searched for this report, please refer to page GR-20 of the EDR Radius Map.
- Four WDS sites were identified within 1-mile of the Property; one of these listings included the subject Property. The Waste Discharge System (WDS) is a listing of sites which have been issued waste discharge requirements.
- One NPDES listing was identified at the subject Property. This listing is part of a database that have been issued National Pollutant Discharge Elimination System (NPDES) permits, including stormwater.
- One HIST CORTESE site was identified within 1-mile of the Property. These sites are listed in a database designated by the SWRCB, the Integrated Waste Board, and the DTSC.
- One Notify 65 site was identified within 1-mile of the Property. Notify 65 records contain facility notifications about any release which could impact drinking water and thereby expose the public to a potential health risk.
- One ENF listing was identified at the subject Property. Enforcement Action Listing (ENF) is a listing of Water Board enforcement actions.
- Thirteen HAZNET sites were identified within 1-mile of the Property. HAZNET is a listing of sites that have filed a hazardous waste manifest with DTSC.
- One California Emissions Inventory (EMI) site was listed within 1-mile of the Property. EMI is a listing of sites where toxics and criteria pollutant emissions data has been collected by the California Air Resources Board and local air pollution agencies.

Several of the 56 entries were listed on more than one database. All on-site listings were reviewed with respect to on site inspections, interviews, and other records reviews. No database entry was observed to be associated with a feature or file not reviewed/examined and reported elsewhere in this ESA.

Orphan Sites and Review of EDR Site Listing Relevance

The EDR report also contained a list of orphan sites. The location of orphan sites could not be identified by EDR based on available site location information contained in various databases. There were 37 orphan sites listed. RRM review found that 10 of the listings were associated with the cement plant activities (under both current and previous ownership) that were previously identified. None of the remaining orphan sites listed appeared to be located at the Property or within close enough proximity to have had an effect on soil and groundwater conditions at the Property.

5.2 SCCEHS File Review

The Santa Cruz County Environmental Health Services department is the local agency responsible for the implementation of many environmental rules and regulations pertaining to the operation of the subject property. RRM reviewed all available information on file at the SCCEHS. Although the manufacture and distribution of cement and cement materials at the site of the CEMEX plant date back to the early 1900s, the earliest record on file available at SCCEHS pertaining to plant operations is from a 1983 hazardous materials disclosure form, provided to SCCHES by Lone Star Industries, Inc (Lone Star).

A description of file records is presented by condition category in the sections below.

Petroleum Storage and Fueling Systems

Coast and Cement Plant Properties

On August 30, 1988, two 6,000-gallon gasoline USTs were removed from the Property under oversight from a SCCEHS inspector. The two 6,000-gallon USTs were located on parcel 058-071-04, near a building identified as a firehouse in the UST removal report. Four soil samples were collected from the excavation of the two gasoline USTs. None of the samples contained petroleum hydrocarbons above laboratory detection limits, and the inspector from SCCEHS noted that the gasoline USTs appeared to be in good condition, with no evidence of leakage into adjacent soils.

Diesel Storage Area, Burner Building: A November 1994 Unauthorized Release Form is on file with the County. According to this form, a release occurred from a break in a ¾" diesel line leading to a decommissioned boiler (~1980). The line was immediately disconnected and emptied. The quantity released is unknown. It appears at least one attempt was made to investigate this area, however the shallow depth to bedrock precluded sample collection. There are no records regarding closure of this release case.

Diesel Storage Area, Rock Storage Area: In August of 2008, an unauthorized release of an unknown quantity of diesel fuel was report at this location. A fuel hose was accidentally left on the ground with the locking mechanism engaged on the fuel nozzle. An unknown quantity of fuel was released when the pumps were turned on. At the time of discovery, diesel fuel was overflowing the secondary containment and had saturated the adjacent soil and sand piled in the rock storage area. The impacted soil and sand was removed and is currently stockpiled on site. Final confirmation samples have not been collected and the case is still an active unauthorized release case with the County.

Limestone Quarry

In August 1988, one 10,000-gallon diesel UST was removed from the Property under oversight from a SCCEHS inspector. The UST was located at the quarry, adjacent to a building identified as a pump house in the UST removal report. Four soil samples were collected from the excavation of the two gasoline USTs. None of the samples contained petroleum hydrocarbons above laboratory detection limits, and the inspector from SCCEHS noted that the gasoline USTs appeared to be in good condition, with no evidence of leakage into adjacent soils. Two soil samples were collected from the excavation of the diesel UST; one soil sample, collected at 14 feet below ground surface (bgs) contained 1,400 parts per million (ppm) high boiling point hydrocarbons, or typically diesel-range total petroleum hydrocarbons (TPHd). The second soil sample collected from the stockpile generated from the excavation contained 500 ppm of high boiling point hydrocarbons. According to the SCCEHS inspector notes, the piping of the diesel tank at the quarry appeared to have leaked, as evidenced from odors and discoloration present in surrounding soils. The second 10,000-gallon diesel UST adjacent to the one removed was scheduled to be removed at a later date.

In September 1988, additional investigation and excavation was conducted in the area of the diesel UST removal site, where soil was found to be impacted with TPHd during UST excavation activities. An inspector from SCCEHS was present during the investigation to direct soil sampling. Five soil samples were collected from the bottom and sidewalls of the excavation on September 20, 1989. Only one

sample, collected at 19 feet bgs, contained diesel above laboratory detection limits at a concentration of 1.0 ppm.

On February 9, 1989, the remaining 10,000-gallon diesel UST was removed from the Property under oversight from SCCEHS. Five soil samples were collected from the UST excavation. The depths bgs where soil samples were collected were not available in the files at SCCEHS. Three of the five soil samples contained TPHd in concentrations of 19 ppm, 43 ppm, and 98 ppm. Although the consultant performing the investigation recommended the UST case be closed based on TPHd concentrations in soil, a letter from SCCEHS concurring with this recommendation was not available.

Non Fuel-Related Records

Hazardous Materials Storage

The most recent Hazardous Materials Management Plan (HMMP) at the time the facility was operating was dated September 2009. Several chemicals were listed in the HMMP as being stored and/or used in plant operations or in the quarries. Chemicals with a storage of 55-gallons, 550 pounds, or 200 cubic feet or more included chlorine gas, unleaded gasoline, acetylene, oxygen, motor oil and assorted lubricants, diesel, diethylene glycol, calcium hydroxide, non-electric caps, nitrogen, SWD urethane, DTC lime builder, kerosene, engine coolant, carbon dioxide, boosters/detonators, ammonium nitrate, used oil, argon/methane, carbon monoxide, RDX explosive, and calcium oxide. Smaller amounts of chemicals listed in the HMMP listed in amounts smaller than 55-gallons, 550 pounds, or 200 cubic feet included paints and thinners, various lubricants, adhesives, degreasers, sealants, weed killer, waste oils, resins, battery cleaners, engine and brake fluids, cleaners, antifreeze, insecticides, solvents, lime builders, water treatment compounds, coolants, acids, and anti-rust compounds.

Plant Inspection Records

Sporadic plant inspection field records were present in the file. The inspection records generally fell into three categories: the fuel leaks discussed above, the UST system closures discussed above, and secondary containment inspections. There were no other records of spills or leaks other than those discussed above.

Hexavalent Chrome

In 2008, hexavalent chrome [Cr(VI)] was detected above the Proposition-65-based air concentration at sampling locations in Davenport. The SCCEHS subsequently investigated this issue. CEMEX was identified as the probable source, associated with the cement kiln operation, and the storage and processing of kiln-fired by products and finished cement. CEMEX temporarily discontinued operation and complied with SCCEHS investigations.

Testing was conducted both in Davenport and on the CEMEX property in three phases: phase one, with no facility activity and truck loading operations at one-fifth of normal operating capacity; phase 2, during clinker recycling activities; and phase 3, during normal plant operations.

All samples collected both on site and in Davenport were below the Proposition-65 concentration for all three phases, with the exception of samples collected from two days on the property during phase 3

(normal operation). The results suggest that airborne Cr(VI) is only an issue during full scale cement production.

5.3 Santa Cruz County District Attorney Files

In 1992 a former employee filed a complaint with the County stating that from 1965 to approximately 1982 waste oil and grease was dumped into the closed landfill area. Then in 1982 or 1983 approximately 500 to 1,500 55-gallon drums of petroleum wastes were dumped on or near a back road leading to Davenport and covered over (within the general area of the landfill). The complaint also states that additional drums were buried between the silos and the Davenport Fires Station, and a 60' to 70' trench was dug, waste placed in it, and then built up as a berm. It was also reported that some wastes have been placed in tunnels and subsequently buried. The complaint also stated that that fire bricks containing chromium were dumped in the areas around or above the slurry ponds (active CKD landfill).

Available documents suggest that a stipulated judgment was negotiated, but a final judgment was not on file. Correspondence and draft judgments suggest that the terms included full compliance with any and all investigation and cleanup as required by the RWQCB, and payment of a monetary assessment.

Since landfill closure activities began in 1994, and the areas stated in the complaint appear to be either within or adjacent to the landfill, the RWQCB approved the landfill closure without requiring further investigation or removal of the hazardous waste indentified in the complaint based on several factors: no evidence except the testimony of one former employee; existing groundwater monitoring wells were already in place; monitoring had not detected any contamination; if present, they would be encased in CKD and 'entombed'; and the act or removing alleged containers could itself pose hazards.

Investigation reports and documents related to landfill closure activities were not on file. Additionally, CEMEX did not provide access to archived files reportedly stored at their USA headquarters in Texas. Post closure monitoring reports suggest that if claims in the complaint have merit, the wastes are not impacting groundwater adjacent to the landfill.

5.4 RWQCB File Review

Publicly available files in the RWQCB electronic database were reviewed and consisted only of recent groundwater monitoring reports and site inspection records for both the active and closed landfills. There were no violations recorded on the site inspection forms, although several areas of concern were noted. In 2010 it was noted that a discharge was within 50 feet of the property line and that increased pollutants are causing impairment. Although not specifically described, it is assumed that both these issues are related to CKD stockpiling in the active landfill area. Also noted on 2010 and 2011 site inspection forms are damaged monitoring well seals/vaults, non-critical repair to the CKD pile intermediate cover, minor ponding in waste area, and the potential need to update the facility closure and monitoring plan.

5.5 Physical Setting and Historical Use Sources

Several sources were used to evaluate the physical setting and historical uses of the Property. These sources included historical topographic maps, historical aerial photographs, and interviews with persons knowledgeable about the Property. The following details RRM's inquiry regarding the physical setting and historical uses of the Property. Historical Topographic Maps

Topographic Maps (topos) are created by the United States Geological Survey. Historical topos for the Property and Property vicinity were obtained from EDR. EDR reported that topographic maps for the Property vicinity were available for the years 1902, 1948, 1955, 1968, 1991, and 1997. On the topos from 1955 to 1997, the Property was not entirely shown; portions of parcels 058-071-04, 058-072-01, and 063-121-07 were not available.

At the time of the 1902 topo, the portion of the Property currently occupied by the former cement plant was shown as an undeveloped area northwest of the town of Davenport. Railroad tracks were present along the ocean bluffs to the southwest of Davenport, and terminated to the north of the town on the south side of Molino Creek. Bonny Doon Road and Smith Grade Road were shown, intersecting at the northwest corner of parcel 063-122-09; a structure was shown on this parcel, near the intersection of the two roads.

The next available topo in the series, dated 1948, showed several structures within parcel 058-071-04 that were associated with the former cement plant. The Highway 1 corridor was present along the railroad tracks that appeared in the topo from 1902. The town of Davenport appeared to have undergone additional development since 1902. An ocean pier was present between the town and the cement plant. A rail line leading from the cement plant parcel and following the contours of San Vicente Creek was present, and terminated just north of the fork in the creek. Two structures were shown on the parcel at the intersection of Bonny Doon Road and Smith Grade Road. A structure was present on the adjacent parcel that was accessed by an unimproved or unpaved road leading from Smith Grade Road.

By 1955, several additional structures were shown in the parcel occupied by the cement plant. Several of the structures appeared to have undergone modification or restructuring. Parcels in the northeast portion of the Property at the intersection of Bonny Doon Road and Smith Grade Road appeared generally the same as in 1948, with the exception of an additional structure, which was shown on parcel 063-122-10. Two quarries were present in areas to the north of the Property near the terminus of the rail line leading from the cement plant.

Features on the topo from 1968 were generally the same as in 1955, with the exception of an additional structure shown along the unpaved roadway leading into parcel 063-122-07. Several quarries were present along the rail line adjacent to the west of San Vicente Creek.

On the topo from 1991, some of the structures associated with the cement plant had been removed or modified. Development in the town of Davenport appeared to have increased since 1968. One additional structure was shown in the northeastern portion of the Property, within parcel 063-122-06. A large area identified as a quarry was shown within parcels 063-132-08 and 063-132-09.

Features on the topo from 1997 appeared generally the same as in 1991. A copy of the EDR Historical Topographic Map Report is presented in Attachment C.

5.6 Aerial Photograph Review

An aerial photograph review was conducted using aerial photographs scanned from the collection of the University of California, Santa Cruz. Aerial photographs of the Property reviewed for the years 1928, 1940, 1948, 1956, 1963, 1975, 1985, 1997, and 2007. The purpose of the aerial photograph review was to determine historical Property uses and to verify the information collected from other sources. The

results of this review are presented on the following pages; there were no features or conditions noted that were not addressed in other site records. Selected air photos are included in Attachment A.

1928

1:12,000

Parcels shown in the photograph available from 1928 include 058-072-01 (southeastern portion), 058-072-02, 058-071-04 (southeastern portion), 058-022-08, 058-022-09, 058-022-10, 058-071-02, 058-071-03, and 058-031-01. The majority of parcel 058-071-04 appeared to be occupied by buildings and structures associated with the cement production facility, which was operated by Santa Cruz Portland Cement during this era. Parcels to the southwest of Highway 1 appeared to be occupied by roads leading across the highway from the cement plant. Two large circular structures appeared to be present on parcel 058-072-01 near the edge of the ocean bluffs. These features are reported to be bunker fuel tanks. A structure appeared to be present behind these circular structures, toward the highway and was reportedly used as a hospital for both the cement plant employees and local residents. To the southeast of the circular structures there appeared to be a structure with access from the cement plant, continuing in a circular driveway around the structure, located on the ocean bluffs. A conveyor or narrow rail line appeared to lead from the cement plant around a circular reservoir before continuing to the east into higher elevations. Parcels 058-022-08, 058-022-09 and 058-022-10 appeared to be drainages. Parcel 058-031-01 appeared to be vacant land. Parcels 058-071-02 and 058-071-03 appeared to be vacant areas of land alongside a drainage on the southeast boundary of the cement plant.

June 17, 1940

1:18,000

The parcels occupied by the cement plant appear generally the same as in the photo from 1928. The north portion of parcel 058-072-01, located to the southwest of Highway 1, appeared to be in use for agricultural fields. This parcel also appeared to be occupied by two circular structures and a smaller structure as described in the photo from 1928. A larger circular structure located to the south was present on the ocean bluffs; this structure was identified in other sources as bulk storage for diesel fuel. An ocean pier that was reportedly used for supplying ships with cement was present to the south of the diesel storage tank. Parcel 058-072-02 and the southern portion of parcel 058-072-01 appeared to be vacant, undeveloped land. Parcels 058-022-08, 058-022-09, and 058-022-10 appeared generally the same as in 1928, and were adjacent to lands that appeared to be developed with agricultural fields. A large portion of parcel 058-031-01 appeared to be cleared of all vegetation, and is identified through other sources as the location of a quarry. Parcels 063-122-06, 063-122-07, 063-122-09, and 063-122-10 located to the south of Smith Grade Road appeared to be partially occupied by orchards; a structure was present in the southern portion of parcel 063-122-06. Parcels 063-122-05, 063-121-07, 063-132-08, and 063-122-09 appeared to be undeveloped land populated by several trees.

April 24, 1948

1:10,000

Parcels in the southwestern portion of the Property, including parcels along the rail line and conveyor, and parcels encompassing the cement plant structures and parcels comprising the bluffs above the ocean southwest of Highway 1 remain generally the same as in 1940. Parcels to the south of Smith

Grade Road remain partially occupied by orchards. Two structures and several parked vehicles appear to be present on the southern portion of parcel 063-122-06, with an access road or driveway leading south into the parcel from Smith Grade Road. At least one structure appeared to be present in the northern portion of parcel 063-122-09. A rectangular feature resembling a reservoir or pond is present to the south of the structure(s).

August 13, 1956
1:10,000

As above.

June 26, 1963
1:10,000

The two bunker fuel tanks identified on parcel 058-072-01 in previous years appeared to have been removed. Parcels in the southwestern portion of the Property, including parcels along the rail line and conveyor, and parcels encompassing the cement plant structures remain generally the same as in 1948. Parcel 058-022-10, which had been identified in previous years as a drainage, appeared to be devoid of vegetation and a portion had been filled in. The ocean pier that had been first identified in the photo from 1940 appeared to have been partially removed. Parcels in the northeastern portion of the Property near Smith Grade Road appear generally as above.

October 24, 1975
1:12,000

With the exception of additional roadways and increased agricultural development of surrounding areas, parcels in the southwestern portion of the Property, including parcels along the rail line and conveyor, parcels encompassing the cement plant structures, and parcels comprising the bluffs above the ocean southwest of Highway 1 remain generally the same as in 1963. The canyon area of parcel 058-022-10 devoid of vegetation in 1963, the infill area appeared slightly larger in 1975. Parcels in the vicinity of Smith Grade Road appeared to be occupied by an additional structure present in the southern portion of parcel 063-122-05. A large area that appeared to be used for mining purposes appeared to be present to the east of Bonny Doon Road in parcels 063-132-09 and 063-132-08; this area is currently occupied by the former quarry associated with cement plant operations.

April 12, 1985
1:31,680

Generally as above. The canyon area of parcel 058-022-10 has been completed filled, and the surface appears to be re-vegetated to match the surrounding grade. The southern portion of the canyon, on the main cement plant parcel, appears to have been damned and infilling continues.

CEMEX staff indicated that the plant underwent extensive reconstruction from approximately 1979 to 1981. The layout of structures, however, appears generally the same as previous, with the exception of the coal pile and adjacent stormwater pond on the northwest portion of the plant.

September 20, 1997
1:24,000

Generally as above. The canyon extending from the cement plant parcel north onto parcel 058-022-10 appears completely filled, and additional stockpiling of cement kiln dust is present on the cement plant parcel.

May 1, 2007[1]
No Scale

The parcels occupied by the former CEMEX plant in 2007 appeared to be generally as today. With the exception of the developed areas, the Property appeared to be open, vacant land. Several quarry areas appeared to be present; a small quarried area appeared to be present within the parcel 058-031-01, northeast of the former CEMEX facility. Further east, within parcel 058-122-10, a quarry appeared to be present along the conveyor line used in former operations associated with Coast Dairies, to the west of Bonny Doon Road. The parcels north of the intersection of Smith Grade Road and Bonny Doon Road appeared to be used for row crops. Developed areas and agricultural fields adjacent to the Property appeared to be generally as they are today.

5.7 Polk and Haines Directories

Polk and Haines City Directories are annual street directories that provide tenant and/or owner information for specific addresses. A limited collection of more recent Haines City Directories that included listings for the Property and vicinity was available at the Santa Cruz Public Library. The address coverage in the earlier Polk and Haines directories did not extend to the rural portion of Santa Cruz County that includes the subject Property. Addresses were searched in the Haines City Directories in approximate 5-year intervals beginning with 1977, the earliest directory available that contained address information for the Property.

Addresses at the Property are associated with parcels 058-071-04, 058-071-03, 063-122-05, 063-122-06, 063-122-07, and 063-122-09. Parcel 058-071-04 encompasses the cement plant and was listed in the directory from 2011 as 700 Highway 1, in Davenport. In the directories from 2006 and 2001 the cement plant was operating as RMC Pacific Materials, and was associated with the address 3502 Highway 1, Davenport. In the directory from 1996, the cement plant was operating as RMC Lone Star, at 3502 Highway 1, Davenport. The directory from 1991 did not list an address number for the cement plant; RMC Lone Star was listed but not associated with a street number. The directories from 1985, 1981, and 1977 listed the cement plant as Lone Star Industries without an associated street number.

Parcel 058-071-03 is associated with 75 Marine View Avenue, in Davenport. The Davenport Fire Station was first listed as the occupant at this address in 1996, and was listed in the directories from 2001, 2006, and 2011. The address and fire station were not listed in directories searched prior to 1996.

[1] *Source:* "700 California 1, Davenport, CA 95017." lat 37.016267º lon –122.198894º. **Google Earth.** May 1, 2011. November 16, 2011.

The address 4453 Smith Grade Road is associated with parcel 063-122-05, and was first listed in the directory from 1977. The occupant at this address was listed as DV Sola in 1977, and in directories from 1981, 1985, 1991, and 1996, the occupant listed was J Sola. The address 4453 was not listed on Smith Grade Road in the directories from 2001, 2006, and 2011.

4801 Smith Grade Road is associated with parcel 063-122-06 and was first listed as occupied by Ralph Lovato, in the directory from 1991. The directory from 1996 listed the street number with no occupant, and in 2001, the directory listed the occupant as James T Vandusen. The directories from 2006 and 2011 did not list any occupants associated with 4801 Smith Grade Road.

Parcel 063-122-07 is associated with the address 4799 Smith Grade Road, and was first listed in the directory from 1981. The occupant at this address during 1981 was Arthur Dalbey, who was listed as the occupant in the directories from 1985, 1991, and 1996. The street number was not listed on Smith Grade Road in the directories from 2001 and 2006. Cynthia Nelson was listed as the occupant in the directory from 2011.

Parcel 063-122-09 is associated with the address 4901 Smith Grade Road, and was first listed in the directory from 1977. David L Whitesell was listed at the occupant in all the directories searched from 1977 to 2011.

No information in the directories indicates the presence of a REC not observed by activities described elsewhere in this report.

5.8 Historical Use Summary for the Property and Adjoining Parcels

Aerial photographs, historic topographic maps and records, and interviews with persons knowledgeable about the Property were used to ascertain former Property uses. From these sources, it appears that the majority of the Property and adjoining parcels remained vacant, undeveloped land since at least 1867, the year of the earliest record reviewed for this assessment. In 1867 a settlement and shipping pier were established at Davenport Landing, north of the Property. The surrounding parcels were developed and used for agricultural purposes by the Coast Dairies and Land Company (CDLC) around the turn of the century. In 1915 the CDLC constructed the town of San Vicente, what is now Davenport, immediately south of the cement plant property to house plant employees and their families.

Construction of the cement plant and quarry operations began at the property in 1905; the Southern Pacific Railroad was extended to the property at this time. In 1934, a 2,327-foot pier was constructed to transport materials by barge in addition to rail and truck. In 1969 an approximately 3-mile long elevated conveyor was installed to transport limestone and shale from the quarry properties northeast of the plant.

The cement plant was completely reconstructed in 1981 to increase efficiency and production. The pre-heater, kiln, and kiln dust collection system were all replaced. The previous kiln was heated using bunker fuel; the new kiln operated using coal. The coal offloading and storage area were installed at this time and the bunker fuel tank on the north side of the plant was reportedly drained.

In 2008, the plant was temporarily shutdown due to the discovery of hexavalent chrome in airborne dust on and adjacent to the plant in Davenport. Plant staff indicated that the hexavalent chrome was due to a change from iron ore to iron slag from a separate source in Washington State. Naturally occurring chrome

in the new iron source was converted to hexavalent chrome in the kiln and emitted to the atmosphere. The plant did not re-open, and was officially closed in 2010 due to economic conditions and increasing problems with cement quality.

Since 1905, the cement plant has operated under a variety of owners. The timeline of plant ownership is as follows:

- 1905 to 1956: Santa Cruz Portland Cement Plant
- 1956 to 1965: Pacific Coast Aggregates
- 1965 to 1987: Lonestar Industries
- 1987 to 2000: RMC Lonestar
- 2000 to 2005: RMC Pacific Materials, Inc.
- 2005 to Present: CEMEX

The adjacent parcels have remained largely unchanged since the establishment of the CDLC and the town of Davenport.

6.0 SITE RECONNAISSANCE

6.1 Methodology and Limiting Conditions

The Property was inspected on October 26 and November 17, 2011. Staff from CEMEX was present during both inspections. The purpose of the Property inspection was to further evaluate current and previous environmental conditions for the presence of contamination from hazardous materials, petroleum hydrocarbons, and hazardous waste.

Due to the scale of the Property and rugged topography that characterizes the Property and vicinity, the physical inspection of the Property was limited to the areas that were accessible by vehicle or on foot and that could be observed within a reasonable time frame for conducting site reconnaissance. Therefore, the following areas of the Property were not physically inspected:

- The conveyor line and some peripheral areas other than views provided from distant hilltops and at the access points to Property;
- Streams, creeks and other waterways that exist in deep ravines on the Property; and
- Unimproved roads and trails other than the ones used to access the Property, primarily in the Quarry parcels area.

6.2 Site Features and Environmental Conditions

Significant plant features are described in this section. All features and observations described in this section that exhibited a potential for a REC were evaluated by physical testing. In areas where physical testing was performed, the methods and results are described in Section 8.0.

Features are described below in relation to the property parcels upon which they occur and shown on Figures 2 and 3.

Coast and Cement Plant Parcels

Parcel 058-072-01

This parcel is comprised of two properties along the coast on the southwest side of Highway 1, across from the cement plant. The north property is currently leased for agriculture and has three small, wooden, presumed seasonal farm worker housing structures. The structures are currently vacant. There is a pad for a propane tank, but there are no indications of any other fueling equipment or chemical storage. The southern property is the location of the hospital building, and historically is the location of the cement plant pier and two ASTs. The ASTs were used to store and transfer bunker fuel for the kiln.

This parcel is also the location the plant storm/surface water monitoring and discharge station, and includes a pH treatment system. The pH treatment system consists of a carbon dioxide injection tube within a concrete basin prior to ocean discharge. The carbon dioxide is stored in an above ground storage tank located next to the hospital building. The discharge daylights in a ravine formerly occupied by a naturally-flowing stream. The stream was engineered in a culvert under US Highway 1 when the road was first constructed.

Parcel 058-072-02

Located southeast of parcel 058-072-01 along the coast, this parcel is referred to by CEMEX as the 'hammerhead' property. The parcel consists of unimproved coastal bluff and beach.

Parcel 058-071-03

This parcel is located on the southeastern corner of the cement plant property along Highway 1. Since 1997 this parcel has been leased to the County as the location of the Davenport Fire Department.

Parcel 058-022-09

This is an undeveloped parcel along the northern portion of the cement plant.

Parcel 058-022-14

This parcel is an approximately 3,000-foot long former rail line extending northeast off of the cement plant.

Parcel 058-071-04

The main cement plant parcel lies northwest of the town of Davenport along Highway 1. The improvements and heavy industrial equipment associated with the production, storage, and shipment of cement products are located on this parcel. The structures and process areas are described below and shown on Figure 2 and in selected reconnaissance photographs.

Electrical Sub-Station: the electrical power distribution for the site occurs at a sub-station located just north of the kiln. Based on air photo review, the current sub-station was installed sometime between 1975 and 1985. The plant was extensively reconfigured in 1979-1980, and the sub-station was installed in 1979. Since the EPA banned the manufacture of PCBs in 1979, it is unlikely that PCBs were or are present at this location. The presence of transformers with PCB-bearing oil is not a REC. It is recommended, however, to test the oil for the presence of PCBs to ensure appropriate handling at the time of transformer decommissioning.

Belt and Dust Collector Shop: this building is currently used for the storage and maintenance of belts and dust collection equipment. Historically, it appears that this building housed the main electrical distribution equipment. The type and locations of the historical electrical equipment is unknown. Several electrical transformers were observed to be in good condition and all were certified as PCB free.

Coal Pile: Located on the north side of the property. Based on air photos and the Plant history, the kiln was switched from bunker fuel to coal around 1981. Coal was brought in by rail, dumped into a subsurface transfer station, transferred to the storage area via conveyor belt, and stored outside on bare ground. There is no significant quantity of coal remaining, although a thin layer still coats the entire storage area. Physical testing was performed and results are described in Section 8.0.

Iron Ore and Slag Storage: Located on the north side of the property adjacent to the coal pile. Iron ore and slag was stored in covered and uncovered piles at this location. The covered areas appear to have concrete slab floors and the outside piles appear to be on bare ground. Significant piles of iron slag are still present. A subsurface chute in the center of the covered storage area is used to transfer the ore/slag to the kiln. Physical testing was performed and results are described in Section 8.0.

Machine Shop: A large machine shop is present in the central portion of the industrial buildings. The machine shop consists of metal fabricating, milling, and welding equipment, all of which are still in use. Presently, there are several portable, self-contained degreasers that use a citrus-based solvent. There are no indications of other solvents, cleaning areas, or sumps within the shop. Plant personnel indicated that larger parts were cleaned at the steam-cleaning pit. Physical testing was performed and results are described in Section 8.0.

Electrical Shop: A large warehouse type building used for the storage and repair of electrical motors and controls. Several containers of solvents and cleaners were present and properly stored.

Control Building: Three-story building used for office and laboratory space. The laboratory facility has reportedly been decommissioned and cleaned.

Burner, Heater, and Kiln Buildings: These are the primary structures used for the manufacturing of cement products. Various large motors, pumps, blowers, and transformers are present through these buildings. All transformers are labeled and certified PCB free. Significant oil and grease staining was observed adjacent to motors and blowers, but all appeared to be limited to concrete equipment pads and consistent with normal equipment operation.

A large diesel generator is present on the ground floor of the burner building; fuel appears to be piped in from the diesel storage area to the north. Several hydraulic pump units are located on the second floor; oil staining and leaks were observed at all pumps but were all within the secondary containment units. There is also reportedly a subsurface structure used for backflow and bad material storage from the kiln. This structure was not observed.

Finish Mill: Two large roller mills were used to pulverize clinker. Oil and grease leaks and staining were observed adjacent to large motors in this building. Unlabeled 55-gallon drums were also present and were presumably used to store used lubricants.

Lube Shop: The lube shop appears to be relatively new compared to the surrounding facility. This building was used for vehicle and equipment maintenance, and consists of lubricant and oil storage, waste oil storage, two electric vehicle lifts, and a manually drained sump. All materials appeared to be stored properly and there were no signs of leaks or spills.

Unlabeled 55-gallon drums are presently stored outside the building along the wall. All drums are underneath a canopy and on portable secondary containment units. The drums are reportedly used for temporary storage of used oil and lubricants prior to proper disposal or recycling. There was no evidence of staining or any leaks outside of the secondary containment.

Steam Cleaning Pit: Located at the south end of the Plant, the steam cleaning pit consists of pressure/steam cleaning equipment, a large sump, and a clarifier. Adjacent to the north wall of the building there is a secondary containment pad with an approximately 250-gallon waste oil tank. Significant oil and grease staining is present on the inside walls and concrete, and several inches of waste oil and/or sludge remains in the tank. Physical testing was performed and results are described in Section 8.0.

Compressor Building: The compressor building houses several large blowers. Oil and lubricant leaks were observed throughout the building and absorbent was spread on the floor in many areas. All visible spills and leaks were contained on concrete within the building structure and the concrete floor at this location is estimated to be one foot thick or greater. Several unlabeled 55-gallon drums were observed at this location, and were reportedly used for temporary storage of oil and lubricants.

Caustic Storage Area: Between the raw mill and raw storage area are several tanks used to store and pump caustic liquids. Caustic chemicals, primarily sodium hydroxide, were reportedly used to control the cement chemistry and sulfate by-products. All tanks are reported to be empty.

Paint Shed: A small shed in the central portion of the Plant used to store paint. Dozens of containers are stored on shelves, tables and the concrete floor. While potentially hazardous materials are stored in this location, quantities appear to be de minimus and properly handled.

Finish Mill: During the site inspection, various lube oil and grease leaks and staining were observed. Several dozen unlabeled drums were also present. Oil and grease staining was only present on large concrete structures and appeared to be normal or expected based on the size and type of equipment used at this location.

Kerosene Shed: Located behind the break room is a small storage shed referred labeled as kerosene storage. This shed is currently used for the storage of solvent and cleaners. All materials are stored in containers ranging in size from one quart to five gallons. The shed has concrete walls and floor and the larger containers are all stored on portable secondary container units. While hazardous materials are stored in this location, quantities appear to be de minimus and properly handled.

Old Pack House: located along the southern portion of the plant property adjacent to the current loading area and storage silos, this building was historically used for the packing and distribution of finished cement products. Presently, this building appears to be used for collection and storage of quality control samples for finished cement products. Several unlabeled 55-gallon drums are present, as are a variety of

plastic storage and material handling bins. According to site personnel, this building was used only for the storage of finished dry materials; there are no indications of hazardous materials storage.

Storm and Surface Water Pond: Located on the north side of plant, adjacent to the coal pile. Plant and active landfill surface runoff collects in this unlined retention pond, and the overflow piped to an ocean discharge point. Water in this pond is documented as caustic with a pH of approximately 11 due to the kiln dust and iron slag leachate. The impacts to shallow groundwater are not well documented, and based on discussions with RWQCB staff this pond will likely have to be either closed or modified to prevent infiltration to groundwater.

Storm and Surface Water Ponds: Located at the south side of the plant. This pond was constructed in the 1980's to help control surface water runoff in this area of the plant. The pond is constructed of sloped concrete sides and an earthen bottom; water is collected and diverted to the north side of the plant. Water quality in this pond is unknown.

Surface water discharges in the previously described ravine north of the former hospital building. Due to the high pH of the plant property runoff water, carbon dioxide is injected into the effluent stream prior to ocean discharge. The discharge is regulated under an existing NPDES permit.

Water Treatment Plant: Santa Cruz County operates and maintains a potable water treatment plant on this parcel (leasehold). The plant consists of a surface impoundment, water treatment building, and associated conveyance piping.

Waster Water Treatment Plant: Santa Cruz County operates and maintains a waster water treatment facility on the north side of the parcel (leasehold). The facility treats waste water from the town of Davenport.

Active Landfill: The active landfill comprises approximately 5.5 acres on the northeast side of the Plant property. Originally, this area was a canyon oriented north-south. Based on features depicted on air photos, infilling with cement kiln dust (CKD) began in the early 1960's, and a retention wall/materials dam was constructed at the mouth of the canyon sometime in the late 1960's to early 1970's. CKD disposal continued until the canyon was filled to the level with the surrounding terraces, at which point CKD was deposited in a large pile at the southwest portion of the landfill. This pile is present today under tarped cover, holding approximately 200,000 cubic yards of CKD. The canyon infill reportedly encroaches on the adjacent CDLC property to the north.

In 1992 a former employee filed a complaint with the County stating that fire bricks containing chromium were dumped in the areas around or above the slurry ponds (active CKD landfill). The landfill is actively monitored and under regulation by the RWQCB. Since there was no additional evidence of improper disposal, and this area is actively monitored, no further action was required by either the County or the RWQCB.

There are currently 13 monitoring wells used to monitor groundwater on and adjacent to the active landfill. This landfill will need to be properly closed according to state regulations. This typically involves final surface grading of all waster areas, installation of an appropriate cover, and installation of surface water run on/run off controls. Upon closure, post closure monitoring and maintenance will be required for a minimum of 30 years. Post closure activities generally include: periodic monitoring of groundwater,

surface water and storm water; maintaining surface water run on/run off controls and appropriate landfill cover; and maintaining financial assurance in the form of a Surety Bond with the State.

Closed Landfill: The closed landfill lies between the cement plant, the southeastern property line, and Highway 1. The landfill is sub-divided into an upper and lower portion; the lower portion was active from early in the Plant's history. Waste, presumably consisting of CKD, was deposited on the bench above and the slope leading down to a small canyon until sometime in the late 1970's. The upper portion of the landfill was active from the late 1970's to the early 1980's. Waste filled the small canyon in this area and formed an upgradient pond. This pond is drained by a culvert buried beneath the upper portion and discharges to the unfilled canyon adjacent to the lower portion.

In 1992 a former employee filed a complaint with the County stating that from 1965 to approximately 1982 waste oil and grease was dumped into the landfill area. Then, according to the complaint, in 1982 or 1983 approximately 500 to 1,500 55-gallon drums of petroleum wastes were dumped on or near a back road leading to Davenport and covered over (within the general area of the landfill). The landfill is considered closed and is actively monitored and under regulation by the RWQCB.

The RWQCB approved closure of the landfill (with long term monitoring requirements) in 1994 despite the allegations in the complaint because: there was no other evidence except the testimony of one employee; even if present, existing groundwater monitoring wells are already in place; monitoring had not detected any contamination; if they were present, they would be 'entombed' in CKD; and engineered cap is in place to prevent infiltration; and the act of removing the containers could itself pose hazards.

There are currently 5 monitoring wells used to monitor groundwater on and adjacent to this location. This landfill is under current waste discharge and site monitoring requirements under the oversight of the RWQCB. As part of these requirements, the responsible party is required to monitor groundwater and surface water runoff semi-annually with additional storm water monitoring requirements, maintain surface water run on/run off controls and appropriate landfill cover, and maintain financial assurance in the form of a Surety Bond with the State. Post closure monitoring and maintenance will be required for a minimum of 30 years following closure (this facility was closed in 1994).

Fuel Storage Areas:

Diesel Storage, Burner Buidling: Adjacent to burner building, one AST, associated piping, and pumping equipment are still present. Several concrete racks are present indicating that several ASTs were historically used. Current and historic ASTs are located in a concrete pad inside secondary containment. There are two pump pads outside of the secondary containment; both pads have significant hydrocarbon staining. Physical testing was performed and results are described in Section 8.0.

Gasoline Storage, Fire Truck Shed: Two ASTs are located adjacent to fire truck shed; both appear to be emptied and cleaned. Physical testing was performed and results are described in Section 8.0.

Bunker Fuel Storage, Plant: The current bunker fuel storage area consists of a one 1-million gallon AST is located on the north side of plant; a smaller AST was present to the west of this tank up until the mid 1960's/early 1970's. The current one million gallon AST is reported to have been clean and emptied. The pump pad and conveyance lines are still in place. This tank sits on a concrete pad over bedrock with and

earthen berm surrounding the tank pad. Physical testing was performed and results are described in Section 8.0.

Diesel Storage, Rock Storage Area: There is an additional diesel storage area, consisting of one AST and associated dispensing equipment, adjacent to the rock storage area. The AST is reported to be drained and no longer in service, and is the subject of an active unauthorized release case.

Limestone Quarry

Parcel 063-132-08 and -09

These are the main limestone quarry parcels. In addition to the quarry, improvements and developments observed include:

Maintenance Shop: Bulk oil and lubricant are stored in secondary containment under an awning outside of the shop. Staining and leaks were observed on and adjacent to the containment pad. Inside the shop are various oils, lubricants and cleaners, and a 55-gallon oil drum on a portable secondary containment pad.

Diesel Fuel Storage: A large AST is present in a concrete secondary containment pad; the AST is still in use.

Explosive Storage: Solid explosives were used to mine limestone and stored within a concrete bunker surrounded by an earthen berm. Site records indicate that all explosives used were 'dry material' only. This facility was not inspected but it is reported that a licensed contractor removed all materials.

7.0 INTERVIEWS

7.1 Interview with Current Occupants of Property and Persons Knowledgeable About the Property

The purpose of the interviews was to further evaluate current and previous practices so as to identify RECs or other environmental concerns associated with the presence of contamination from hazardous materials, petroleum hydrocarbons, and hazardous waste. The RRM site inspector was accompanied by CEMEX employees during both site inspections and interviews were conducted on an ongoing basis. All information provided by CEMEX staff has been incorporated into this report.

Kenneth O'Connell, current plant superintendent, was interviewed concerning current and historical operations at the property. Mr. O'Connell has been employed at the plant since 1979, and is currently overseeing all the properties and operations at the Davenport facility. Mr. O'Connell also accompanied RRM staff during all site visits and inspections. Additional information was provided by Matthew Brian Siveria, CEMEX's environmental specialist located at the Houston office.

CEMEX staff indicated that the plant reconstruction activities began in approximately 1979 and were complete by 1981. The reconstruction was completed primarily to increase efficiency and reduce dust emissions.

7.2 Interview with Government Officials

The SCCEHS site inspector, Mr. Jose DeAnda, was interviewed to provide additional information regarding site conditions. Mr. DeAnda indicated that he has been the responsible County inspector since the late 1980's. According to Mr. DeAnda, all known environmental issues are documented in the County files (discussed in Sections 6.2 and 6.3). He is unaware of any issues regarding the current or former bunker fuel storage areas. Mr. DeAnda indicated that the County is preparing to request a formal facility closure plan to document removal of all hazardous materials no longer in use, proper disposal or recycling of hazardous materials, and to evaluate any potential remaining threat to human health or the environment.

The RWQCB case work, Mr. Martin Fletcher, was also interview regarding the active and closed landfills, and the plant stormwater collection and discharge. Mr. Fletcher has been the site case worker since approximately 1998; previous case workers were not available for discussion. Mr. Fletcher indicated that CEMEX predecessors had operated out of compliance for several years in the early to mid 2000's (exact dates are unknown). He also stated that since 2008 CEMEX has made significant efforts to restore and maintain compliance with RWQCB requirements. Mr. Fletcher had no knowledge of records beyond those discussed in Section 6.4. Mr. Fletcher indicated there are several issues the RWQCB that will need to be addressed: damaged and missing monitoring wells, an update to the closed landfill monitoring plan, and a closure plan for the active landfill. He did not have details as to what each of these items would require at this time.

Mr. Fletcher also indicated that the RWQCB has a concern regarding the two storm water ponds on the site. He noted that both ponds were unlined, and that historical water samples from the ponds have exceeded water quality goals for at least pH. He indicated that the RWQCB will require the ponds to be either appropriately upgraded or eliminated as part of upcoming revision to the waster discharge requirements for the site.

8.0 LIMITED PHASE II SITE INVESTIGATION

Based on the information obtained and documented above, several areas of potential environmental concern were identified and physically tested. Testing methodology was a function of feature characteristics. Soil, groundwater or soil vapor samples were collected and analyzed where appropriate for the purposes of producing feature-specific environmental quality information. The features, test methods, results and significance of each feature are described below. A site map showing the locations of all samples collected is shown on Figure 4; the sample results are presented in Tables 1, 2, and 3 and certified analytical reports are included in Attachment 4.

Coal Pile Storage Area: The storage of coal outside on bare ground creates the potential for leachate impacts to soil, groundwater, and surface water. Of primary concern are: total petroleum hydrocarbons (TPH), poly-aromatic hydrocarbons (PAHs), sulfate, arsenic, pH, and metals including lead (Pb), beryllium (Be), cadmium (Cd), copper (Cu), nickel (Ni), selenium (Se), and zinc (Zn).

Four temporary soil borings, designated SB-1 through SB-4, were installed in this area using a truck-mounted direct push drill rig. Soil samples were collected from all borings, and a grab groundwater sample was collected from Boring SB-3. PAHs were not detected in shallow soil samples; TPH as diesel

and motor oil was detected in three of the four samples at concentrations up to 300 milligrams per kilogram (mg/kg); pH ranged from 7.54 to 10.45.

Arsenic, copper, lead, nickel, selenium, and zinc were detected in all four soil samples at concentrations consistent with background occurrences of metals. While arsenic was detected at concentrations above regulatory screening levels, all concentrations were well within the range of naturally occurring values for the region[2].

One groundwater sample was collected from this area, at Boring SB-3 located along the southern edge of the coal storage pile in the presumed downgradient direction. TPH and PAHs were not detected; the pH was 7.24. Lead (394 micrograms per liter [ug/l]) and selenium (18.7 ug/l) were detected in a lab filtered and preserved sample.

Based on the high lead concentrations in groundwater, additional investigation and/or monitoring may be necessary to document fate, transport, and potential environmental risk. These evaluative methods can likely be incorporated into the landfill post closure monitoring plan, as groundwater monitoring will be necessary in this portion of the site.

Iron Ore and Slag Storage Area: This location is similar to the coal storage area. The primary concern related to iron ore/slag storage is high arsenic concentrations in runoff and leachate. Temporary soil borings were installed in this area for the collection of soil and shallow groundwater samples.

One soil boring, SB-5, was installed in this area. The boring is located outside of the concrete lined and covered storage area, downslope toward the stormwater pond and coal pile. As with the coal pile area borings, metals were detected in soil but all at concentrations consistent with regional background values. Soil pH was 11.49 and groundwater pH was 11.17. Fluoranthene, a combustion by-product of diesel fuel, was detected at 103 micrograms per kilogram (ug/kg) in soil along with TPH as diesel (164 mg/kg) and motor oil (240 mg/kg).

Metals were detected in groundwater at similar concentrations to SB-3, but also included arsenic (42.0 ug/l), copper (10.9 ug/l), and nickel (13.6 ug/l).

While measured concentrations of ore/slag-derived contaminants are not exceedingly high, soil and groundwater pH, and elevated metals in groundwater will likely require additional characterization, consistent with the adjacent coal pile area.

Machine Shop: A large machine shop is present at the site. It is assumed that a variety of solvents and degreasers have been used at this location over the years. Since there are no indications of possible release scenarios within the shop, sub-slab soil gas samples were collected at this location to screen for shallow soil contamination. Due to the highly volatile nature of solvents and degreasers, if there were releases to the subsurface vapors would accumulate underneath the building floor. Presence/absence screening was conducted to simply evaluate the occurrence/rough magnitude of contamination.

In order to assess this area, three sub-slab monitoring points were installed at roughly equal distances with the machine shop building (Figure 4). The sampling points consisted of a 1”-daimeter core through

[2] Naturally occurring arsenic concentrations in soil for the region are generally up to 40 mg/kg, based on verbal communication with Santa Cruz County Environmental Health Department staff.

the slab fitted with a sealed and valved sample port. The sample points were allowed to equilibrate for one day prior to sample collection. Representative samples were collected in tedlar bags using a vacuum box sampling apparatus.

A variety of solvents were detected, including tetrachloroethene (PCE), acetone, and methyl ethyl ketone (MEK). All compounds were detected below applicable screening levels. The vapor sampling results are shown on Table 2.

The presence of VOCs in soil gas beneath the machine shop indicate that these compounds were used and/or stored at this facility sometime in the past, and that they were released into the surrounding environment. Additional investigation is recommended if this building is demolished or significant remodeling results in direct exposure with the underlying soils. While the detected concentrations were below applicable screening levels, samples were collected for screening purposes only and not intended for use in a complete human health risk assessment. As part of a facility closure plan, the County may require additional characterization of the vapor risk at this location.

Steam Cleaning Pit: A large sump, oil water separator, staining on the concrete floor and walls, and a used oil tank at this location suggest the potential for petroleum compound and solvent beneath and adjacent to this facility.

Three soil borings, SB-8 through SB-10, were installed along the southern edge of the steam cleaning pit and the secondary containment pad for the waste oil tank. All soil samples were non-detect for VOCs and TPH as gasoline, diesel, and motor oil.

Groundwater was only encountered at Boring B-9, a representative sample was no-detect for all VOC and TPH compounds.

The data suggests that all hazardous materials were adequately handled and contained at this location and that further investigation is not necessary.

Fuel Storage Areas

Fueling areas present the potential for petroleum hydrocarbon contamination in both soil and groundwater. Temporary soil borings were installed adjacent to fueling facilities that are not currently known to be a source of contamination.

Diesel Storage, Burner Building: Two soil borings, SB-6 and SB-7, were installed adjacent to the Diesel storage and pumping area west of the kiln and burner (Figure 4). A soil sample was analyzed from SB-6; soil samples were not recovered from SB-7 due to the loose, rocky soils encountered. The sample from SB-6 was non-detect for VOCs and TPH as gasoline. Benzo(b)flouranthene and flouranthene, both PAHs and combustion products of diesel fuel, were detected at 122 ug/kg and 144 ug/kg, respectively.

A groundwater sample from B-7 was non-detect for all PAHs. TPH compounds were detected at 27.1 ug/l (gasoline), 81.1 ug/l (diesel), and 113 ug/l (motor oil). Groundwater was not encountered in B-6.

Gasoline Storage, Fire Truck Shed: One soil boring, SB-11, was installed adjacent to the gasoline storage area on the eastern portion of the plant property near the fire truck garage. The soil sample analyzed did not contain any VOCs or gasoline compounds. Groundwater was not encountered.

Bunker Fuel Storage, Plant: One soil sample was collected adjacent to the outlet and transfer pump assembly of the existing bunker fuel tank located northwest of the kiln. All PAH compounds were non-detect; Diesel was detected at a concentration of 25.1 mg/kg and motor oil at 103 mg/kg; the pH was 8.5. The sample was also analyzed for metals; all detections were within the range of naturally occurring background concentrations. This area sits on a bedrock shelf and groundwater was not encountered.

All sample results from the fuel storage areas are below applicable screening levels and do not warrant further investigation. The data suggests that any release at these locations was limited in nature and extent. However, since the diesel fuel storage area adjacent to the burner building had been the subject of an unauthorized release in 1994, and subsequent investigations, including the one performed as part of this assessment, was limited due to shallow bedrock, additional sampling may be required at the time of fueling equipment decommissioning. The level of additional invested effort required to close this case is not anticipated to be great.

9.0 FINDINGS

The subject Property is comprised of fifteen parcels totaling approximately 594 acres, approximately 194 acres of which are industrial and coast parcels located along Highway 1 immediately northwest of the town of Davenport. The remaining 400 acres, referred to in this report as the quarry parcels, are located approximately 2.75 miles northeast of Davenport, east of Bonny Doon Road

This ESA was performed to identify recognized environmental conditions on or near the subject property. The assessment consisted of site inspections, a review of reasonably ascertainable records, and interviews with property representatives knowledgeable of current and historical site operations.

As the subject property has been used for a considerable period of time by a large industrial operation, many features of potential environmental concern were identified. By way of inspection, records research, interviews and physical testing, RRM reduced the aggregate list to the following confirmed RECs:

Coal Pile: Located on the north side of the property. Based on air photos and the Plant history, the kiln was switched from bunker fuel to coal around 1981. Coal was brought in by rail and stored outside on bare ground. There is no significant quantity of coal remaining, although a thin layer still coats the entire storage area.

Soil and groundwater sampling was conducted within this area. Soil sample results indicate the presence of minor concentrations of petroleum hydrocarbons (less than 300 mg/kg and elevated pH (up to 11.49). Groundwater sample results were consistent with the soil results with the exception of elevated lead concentrations.

Iron Ore and Slag Storage: Located on the north side of the property adjacent to the coal pile. Iron ore and slag was stored in covered and uncovered piles at this location. The covered areas appear to have concrete slab floors and the outside piles appear to be on bare ground. Significant piles of iron slag are still present.

This area overlaps with the coal pile, and sampling results are discussed in the coal pile section above.

Diesel Storage, Rock Storage Area: Located adjacent to the rock storage area. There are two unauthorized releases documented for this fuel storage area. In 1998 a driver inadvertently spilled approximately 1,350 gallons of diesel in the secondary containment and approximately 150 gallons on bare ground. 7,333 cubic yards of soil were excavated and burned in the kiln (under permit).

In August 2008 an unknown quantity of diesel fuel was released and breached the secondary containment. Impacted sand feedstock and native soils were excavated and stockpiled in the rock storage area. Confirmation samples were reportedly collected, but the data is not available in the County files. This release is still an active County case.

Machine Shop: A large machine shop is present in the central portion of the industrial buildings. The machine shop consists of metal fabricating, milling, and welding equipment, all of which are still in use. Presently, there are several portable, self-contained degreasers that use a citrus-based solvent. There are no indications of other solvents, cleaning areas, or sumps within the shop. Plant personnel indicated that larger parts were cleaned at the steam-cleaning pit.

Since there were no records or visible indications of solvent use, sub-slab vapor samples were collected at three locations to screen for potential subsurface contamination. A variety of solvents were detected, including PCE, acetone, and MEK. All compounds detected were below applicable screening levels. However, the presence of VOCs in soil gas beneath the machine shop indicate that these compounds were used and/or stored at this facility sometime in the past, and that they were released into the surrounding environment. The nature and extent of the release are unknown and may require additional investigation if site use changes.

RRM performed a limited inspection of materials used in the construction of the buildings located on the Property. This inspection did not include sampling of materials for lead or asbestos content; however, based on the age of some of the buildings, their materials of construction may contain asbestos or lead.

10.0 OPINION

As required by AAI and ASTM, RRM offers the following opinion as to whether the all appropriate inquiry conducted in accordance with 40 CFR Part 312 has identified conditions indicative of releases or threatened releases of hazardous substances, pollutants, contaminants, petroleum and petroleum products, and controlled substances on, at, in, or to the subject Property.

- Although sites have been identified near the Property where known environmental conditions are present, based on the regulatory status of these sites and the distances and directions of these sites from the Property, it is unlikely that contaminants from any known offsite source have migrated into soil or groundwater at the Property.
- Several known, documented releases of hazardous substances have occurred at the site. These RECs are primarily limited to the cement plant property and include a closed and an active landfill used to dispose of cement kiln dust and possibly other hazardous substances generated at the site, an open contamination case relating to an accidental release of diesel fuel.

- In addition to the known releases at the site, Phase II sampling revealed RECs in the form of solvents in soil beneath the machine shop and elevated lead concentrations in groundwater at the coal and iron ore storage areas.

11.0 CONCLUSIONS AND RECOMMENDATIONS

RRM has performed a Phase I ESA for the referenced Property in conformance with the scope and limitations of the EPA AAI and the ASTM Practice E 1527-05. Any exceptions to, or deletions from, this practice are listed in Section 2.4 of this report. This assessment has revealed evidence of RECs in connection with the Property, as defined by ASTM Standard Practice E 1527-05.

The RECs and their significance are described in the preceding sections of this ESA. Other environmental considerations were noted that do not qualify as RECs but are possibly noteworthy in association with the contemplated acquisition. These considerations are as follows:

Site Closure Plan: Santa Cruz County does not have formal site closure requirements or standards, but does require the preparation of a Closure Plan describing the intention, objective and methodologies of closure-related activities. The closure plan is used to demonstrate that the hazardous materials used and stored at the facility will be removed or disposed of in an appropriate manned, the threat to public health or the environment at the facility is eliminated or minimized, and monitoring of hazardous materials usage and handling is no longer required. Materials covered under the closure plan generally include all hazardous or potentially hazardous materials, tanks, and process equipment.

The implemented closure plan would likely be required to include further investigation to characterize the extent of solvent contamination at the machine shop when the overlying structure is demolished, sampling for asbestos in structures proposed for demolition or development, removal of fueling systems no longer in use, and removal of hazardous materials from all storage areas. The plan should also include a proposal to close or upgrade the storm water ponds to prevent infiltration to groundwater and potential contamination and closure of the open diesel spill case. The Phase II sampling data collected as part of this assessment can be incorporated into the closure plan.

Active Landfill and CKD Pile: California regulations require the proper closure of the active CKD landfill. Closure standards require the construction of a final cover system to minimize water infiltration and soil erosion. Closure activities are described in a plan submitted to the RWQCB. Such a plan typically consists of: an estimate of the maximum inventory of waste on site, an estimate of the areal extent of the landfill requiring cover, and a description of the final cover design and its installation methods and procedures. Post-closure monitoring activities typically consist of activities required to ensure the integrity and effectiveness of the final cover system, water runoff collection system, and groundwater monitoring system. The required post-closure care period is 30 years from site closure.

Storm Water and Surface Water Collection and Treatment: Surface water and storm water runoff from the site is currently regulated under a NPDES permit. As part of the permit requirements, surface and storm water runoff must be properly collected and monitored prior to ocean discharge. Currently, these requirements include monitoring of discharge volumes and pH. Since the pH tends to exceed discharge

requirements, a pH treatment system consisting of a carbon dioxide injection tube within a concrete basin operates continuously.

This system will likely be necessary for the foreseeable future. It is possible that removal of all raw materials (residual coal material and iron ore and slag) along with proper capping and closure of the active CKD landfill, will cause surface and storm water to revert to background conditions allowing for the discontinuation of the carbon dioxide treatment and NPDES requirements.

12.0 SIGNATURES OF ENVIRONMENTAL PROFESSIONALS

We declare that, to the best of our professional knowledge and belief, we meet the definition of Environmental Professional pursuant to 40 CFR.10. We have the specific qualifications based on education, training, and experience to assess a property of the nature, history and setting of the subject Property. We have developed and performed the all appropriate inquiries in conformance with the standards and practices set forth in 40 CFR Part 312.

Sincerely,
RRM, Inc.

Cate Townsend
Staff Geologist

Matt Paulus
Professional Geologist, #8193

Table 1
Soil Analytical Results

CEMEX Property
700 Highway 1
Davenport, California

Sample ID		BT-HA-1-2	SB-1-3	SB-2-3	SB-3-3	SB-4-3	SB-5-3	SB-6-3	SB-8-3	SB-9-3	SB-10-3	SB-11-3
Depth		1'	3'	3'	3'	3'	3'	3'	3'	3'	3'	3'
Date		12/5/11	12/5/11	12/5/11	12/5/11	12/5/11	12/5/11	12/5/11	12/5/11	12/5/11	12/5/11	12/5/11
Volatile Compounds, GC/MS Method SW846 8260B												
All Compounds	ug/kg	*na*	*na*	*na*	*na*	*na*	*na*	**ND**	**ND**	**ND**	**ND**	**ND**
Semi-Voltile Compounds, GC/MS Method SW846 8270C												
Benzo(b)fluoranthene	ug/kg	<120	<60	<60	<240	<60	<60	**122** J	*na*	*na*	*na*	*na*
Fuoranthene	ug/kg	<200	<100	<100	<400	<100	**103** J	**144** J	*na*	*na*	*na*	*na*
Semi-Voltile Compounds, GC Method SW846 8015B M												
TPH (diesel)	mg/kg	**25.1** a	<5.0	**7.88** J a	**83.2** a	**13.7** a	**164** a	**150** a	<5.0	*<5.0*	<5.0	*na*
TPH (motor oil)	mg/kg	**103**	<10	**15.4** J	**300**	**29.2**	**240**	**271**	<10	<10	<10	*na*
General Chemistry												
pH	su	**8.50**	**7.84**	**7.54**	**9.32**	**10.45**	**11.49**	*na*	*na*	*na*	*na*	*na*
Metals Analysis												
Arsenic	mg/kg	5.4	1.8	3.6	11.0	5.8	4.8	*na*	*na*	*na*	*na*	*na*
Beryllium	mg/kg	<0.85	<0.89	<0.94	<0.92	<0.84	<0.91	*na*	*na*	*na*	*na*	*na*
Cadmium	mg/kg	<0.85	<0.89	<0.94	<0.92	<0.84	<0.91	*na*	*na*	*na*	*na*	*na*
Copper	mg/kg	10.9	5.8	9.5	43.9	12.6	8.2	*na*	*na*	*na*	*na*	*na*
Lead	mg/kg	37.5	2.8	3.1	11.6	13.8	10.2	*na*	*na*	*na*	*na*	*na*
Nickel	mg/kg	10.2	5.3	31.4	12.0	10.9	12.2	*na*	*na*	*na*	*na*	*na*
Selenium	mg/kg	<1.7	<1.8	<1.9	<1.8	<1.7	<1.8	*na*	*na*	*na*	*na*	*na*
Zinc	mg/kg	76.0	15.7	43.2	49.9	50.0	28.9	*na*	*na*	*na*	*na*	*na*

Table 1
Soil Analytical Results

CEMEX Property
700 Highway 1
Davenport, California

Sample ID	BT-HA-1-2	SB-1-3	SB-2-3	SB-3-3	SB-4-3	SB-5-3	SB-6-3	SB-8-3	SB-9-3	SB-10-3	SB-11-3
Depth	1'	3'	3'	3'	3'	3'	3'	3'	3'	3'	3'
Date	12/5/11	12/5/11	12/5/11	12/5/11	12/5/11	12/5/11	12/5/11	12/5/11	12/5/11	12/5/11	12/5/11

notes:
ug/kg - micrograms per kilogram
na - not analyzed
ND - not detected at or above laboratory detection limits
J - estimated value
mg/kg - milligrams per kilogram
a - atypical diesel pattern C14-C28
su - standard units

Table 2
Groundwater Analytical Results

CEMEX Property
700 Highway 1
Davenport, California

Sample ID / **Date**		SB-3 12/5/11	SB-5 12/5/11	SB-7 12/5/11	SB-9 12/5/11
Volatile Compounds, GC/MS Method SW846 8260B					
TPHg (gasoline)	ug/l	<25	<25	**27.1** J	<25
All Other Compounds	ug/l	*na*	*na*	*na*	**ND**
Semi-Voltile Compounds, GC/MS Method SW846 8270C					
All Compounds	ug/l	**ND** (1)	**ND** (1)	**ND** (2)	na
Semi-Voltile Compounds, GC Method SW846 8015B M					
TPH (diesel)	mg/l	<0.047	**0.287** a	**0.0811** J	<0.056
TPH (motor oil)	mg/l	<0.094	**0.453**	**0.113** J	<0.11
General Chemistry					
pH	su	**7.24**	**11.17**	*na*	*na*
Metals Analysis (filtered)					
Arsenic		<10	**42.0**	*na*	*na*
Beryllium		<5.0	<5.0	*na*	*na*
Cadmium		<2.0	<2.0	*na*	*na*
Copper		<10	**10.9**	*na*	*na*
Lead		**394**	**239**	*na*	*na*
Nickel		<5.0	**13.6**	*na*	*na*
Selenium		**18.7**	**14.1**	*na*	*na*
Zinc		<20	<20	*na*	*na*

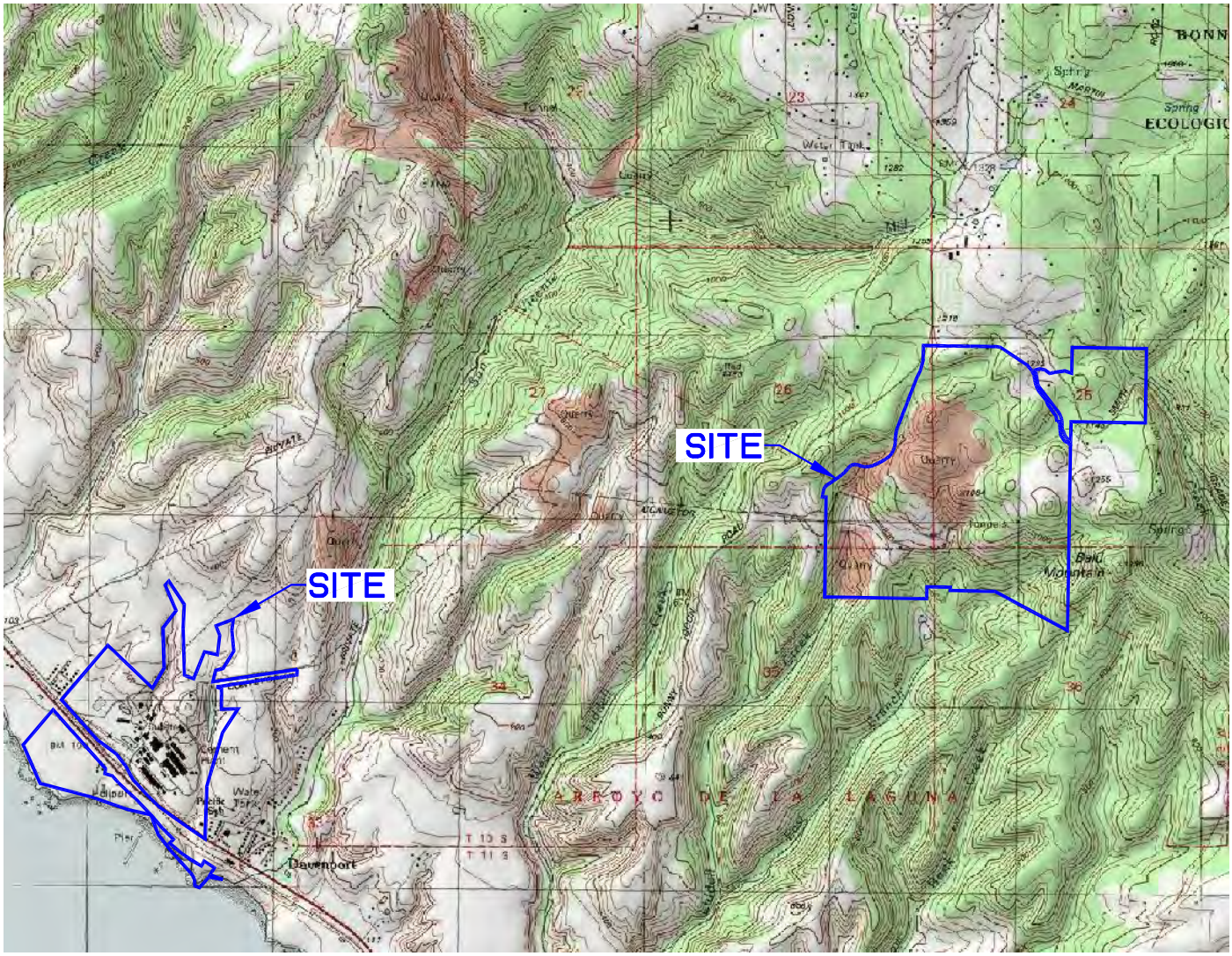
notes:
ug/l - micrograms per liter
na - not analyzed
ND - not detected at or above laboratory detection limits
J - estimated value
(1) - sample analyzed for PAHs only
(2) - sample analyzed for all compounds
mg/kg - milligrams per kilogram
a - atypical diesel pattern C14-C28
su - standard units

Table 3
Soil Gas Analytical Results

CEMEX Property
700 Highway 1
Davenport, California

Sample ID		SG-1	SG-2	SG-3
Depth		1'	1'	1'
Date		12/6/11	12/6/11	12/6/11
Volatile Compounds, GC/MS Method TO-15				
Acetone	ppbv	**200**	**64**	64
Benzene	ppbv	**3.0**	**2.2 J**	**6.9 J**
Carbon disulfide	ppbv	**2.3**	<0.34	**1.1 J**
Chlorobenzene	ppbv	<0.25	<0.25	**1.6 J**
Chloromethane	ppbv	<0.26	<0.36	**2.3 J**
Dichlorodifluoromethane	ppbv	<0.33	**4.3**	<0.33
1,4-Dioxane	ppbv	<0.35	<0.35	**4.4**
Ethanol	ppbv	**110**	**86**	**250**
Ethyl acetate	ppbv	**3.6**	<0.49	**31**
Ethylbenzene	ppbv	**2.6**	**1.8 J**	**5.5**
1-Ethyl-4-methylebenzene	ppbv	<0.44	<0.44	**1.4 J**
n-Heptane	ppbv	**1.3 J**	<0.29	<2.9
Hexachlorobutadiene	ppbv	**2.6**	**2.3 J**	**2.1 J**
Hexane	ppbv	**4.9 J**	**1.6 J**	**4.5 J**
2-Hexanone	ppbv	**1.5 J**	<0.55	<0.55
Isopropyl alcohol	ppbv	**32**	<0.48	**140**
Methylene chloride	ppbv	<0.25	**12**	**25**
Methyl ethyl ketone (MEK)	ppbv	**32**	**20**	<0.65
Methyl isobutyl ketone	ppbv	**2.8**	**1.6 J**	<0.75
Styrene	ppbv	**3.0**	**4.1**	<0.26
Tetrachloroethene (PCE)	ppbv	**26**	**190**	**9.4**
Tetrahydrofuran	ppbv	**1.9 J**	**1.4 J**	**1.2 J**
Toluene	ppbv	**7.8**	**4.2**	**23**
1,2,4-Trichlorobenzene	ppbv	**4.4 J**	**4.1 J**	**4.3 J**
1,1,1-Trichloroethane	ppbv	<0.32	**70**	**1.2 J**
Trichloroethene	ppbv	<0.25	**1.1 J**	<0.25
Trichlorofluoromethane	ppbv	**2.1 J**	**2.1 J**	**3.0**
1,2,4-Trimethylbenzene	ppbv	**1.8 J**	**1.4 J**	**2.5**
1,3,5-Trimethylbenzene	ppbv	<0.60	<0.60	**1.1 J**
Vinyl acetate	ppbv	<0.30	**2.0 J**	**1.2 J**
p- & m-Xylenes	ppbv	<0.55	<0.55	**13**
o-Xylene	ppbv	<0.35	<0.35	**4.0**
Total Xylenes	ppbv	<0.90	<0.90	**17**

notes:
ppbv - parts per billion by volume
J - estimated value



N

SCALE IN FEET

0 3,000

Ref. IA652/IA652-SLM-2.DWG
Base Map from TOPO!© NGH

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SITE LOCATION MAP

CEMEX PROPERTY
Davenport, California

FIGURE:
1
PROJECT:
IA652

PZ-5
PZ-4
APN: 058–022–09
APN: 058–022–10
PZ-2
PZ-3
PZ-8
PZ-1
PZ-6
PZ-10
PZ-12
ACTIVE LANDFILL
BUNKER FUEL STORAGE
PZ-9
POND
MUNICIPAL WATER TREATMENT FACILITY
PZ-13
APN: 058-071-04
PZ-11
APN: 058–071–02
FORMER RAIL LINE
CONVEYOR TO SCALE AND LIMESTONES QUERRIES
CEMENT PLANT ROAD
HIGHWAY 1
3RD AVE.
2ND AVE.
1ST AVE.
PZ-14
PZ-14 (MW1)
MW-5
APN: 058-072-01
STORM WATER MONITORING AND DISCHARGE
HOSPITAL
MW-4
CLOSED LANDFILL
MW-3
COAST
MW-1
MW-2
APN: 058–071–03
FORMER BUNKER FUEL STORAGE
VINCENTE CREEK
PACIFIC OCEAN
FIRE STATION
APN: 058–072–01
MARINE VIEW AVE
OCEAN ST.
CENTER ST.
APN: 058–072–02

EXPLANATION
- ACTIVE GROUNDWATER MONITORING WELL
- CLOSED GROUNDWATER MONITORING WELL

N

SCALE IN FEET
0 500

Ref. IA652/IA652-SITEx500.DWG
Basemap from ALTA/ACSM, RMT, parcel maps & aerial photos

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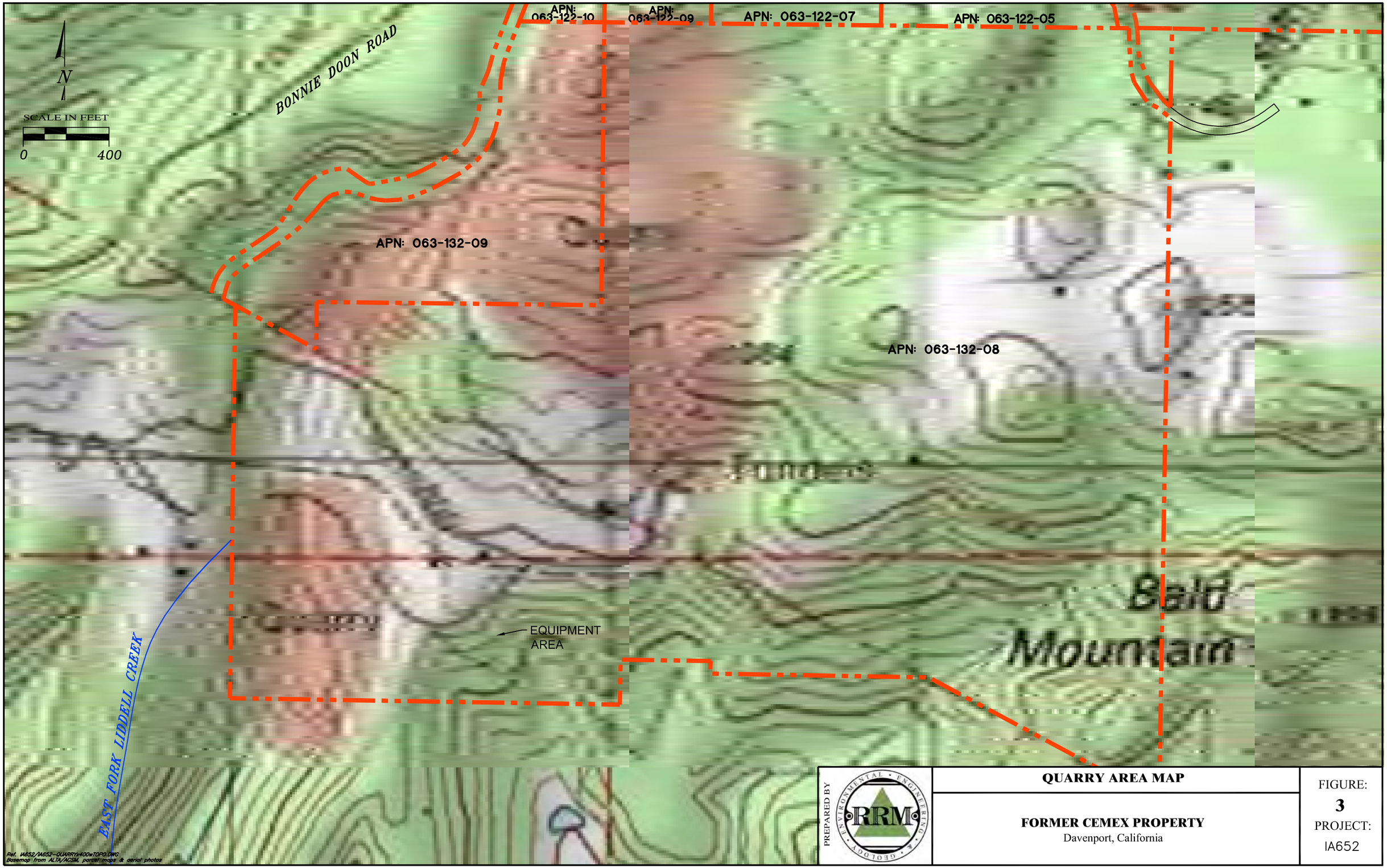
SITE MAP

COAST AND PLANT PROPERTIES
FORMER CEMEX PROPERTY
Davenport, California

FIGURE: **2**
PROJECT: IA652



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QUARRY AREA MAP

FORMER CEMEX PROPERTY
Davenport, California

FIGURE: **3**
PROJECT: IA652

EXPLANATION

- ACTIVE GROUNDWATER MONITORING WELL
- ∅ CLOSED GROUNDWATER MONITORING WELL
- SOIL BORING LOCATION (RRM 2012)

N

SCALE IN FEET
0 200

APN: 058-071-04

POND
CONVEYOR
MUNICIPAL WATER TREATMENT FACILITY
ACTIVE LANDFILL
PZ-9
PZ-6
LANDFILL BOUNDARY
SB-6
∅MW-5
∅MW-3
CLOSED LANDFILL
∅MW-4
SILOS
ROCK STORAGE
TANKS
DIESEL STORAGE
PZ-10
PZ-12
PZ-13
BUNKER FUEL TANK
BT-HA-1
STORAGE
PZ-11
ELECA SUBSTATION
RAW MILL
MAIN PRECIP
SILOS
PRE HEATER
KILN
BURNER BLDG
SB-7
CLINKER STORAGE
FINISH MILL
GASOLINE STORAGE
FIRE TRUCK SHED
SB-11
MUNICIPAL WASTEWATER TREATMENT POND
STORAGE
IRON ORE STORAGE
SB-2
SB-1
SB-3
SB-4
SB-5
COAL PILE
CONTROL BLDG
ELECTRIC SHOP & STORES
BELT & DUST COLLECTOR SHOP
MACHINE SHOP
STORMWATER POND
MECH. SHOP
SB-8
SB-10
SB-9
∅MW-1
MW-2∅
FIRE STATION PROPERTY
OFFICE
PACK HOUSE
CEMENT SILOS
COMP-RESSOR ROOM
PZ-14
PZ-14 (MW1)
COAL UNLOADING
SCALES
CEMENT PLANT ROAD
HIGHWAY 1

Ref: IA652/IA652_SITE-2008.DWG
Basemap from ALTA/ACSM, RMT, parcel maps & aerial photos

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CEMENT PLANT SITE MAP

FORMER CEMEX PROPERTY
Davenport, California

FIGURE: **4**
PROJECT: IA652

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G:\11837 - Santa Cruz Sanitation District\11837-8410848 Davenport Recycled Water Study\04-Technical Work\Feasibility Study\Draft Davenport Report_June 2014.docx

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