Delta Diablo Sanitation District

Antioch/DDSD
Recycled Water Project

Draft Initial Study/Mitigated Negative Declaration

JULY 2006

RMC
Water and Environment

Notice of Completion & Environmental Document Transmittal

Appendix C

Mail to: State Clearinghouse, P. O. Box 3044, Sacramento, CA 95812-3044 (916) 445-0613
For Hand Delivery/Street Address: 1400 Tenth Street, Sacramento, CA 95814

SCH # _____

Project Title: Recycled Water Project

Lead Agency: Delta Diablo Sanitation District — Contact Person: Meg Herston, Greg Baatrup

Mailing Address: 2500 Pittsburg-Antioch Highway — Phone: 925-756-1900

City: Antioch, CA — Zip: 94509 — County: Contra Costa County

Project Location:

County: Contra Costa County — City/Nearest Community: Antioch, CA

Cross Streets: Vicinity of Pittsburg-Antioch Highway, W. 10th Street, Lone Tree Way and Golf Course Road — Zip Code: Multiple

Assessor's Parcel No.: Multiple — Section: 30, 31, 19 — Twp.: 2N — Range: 1E, 2E — Base: None

Within 2 Miles: State Hwy #: Hwy 4 — Waterways: Contra Costa Canal, New York Slough (Delta)

Airports: NA — Railways: 1 — Schools: several (Antioch Unified School District)

Document Type:

CEQA: ☐ NOP ☐ Draft EIR
☐ Early Cons ☐ Supplement/Subsequent EIR
☐ Neg Dec (Prior SCH No.)_____
☒ Mit Neg Dec ☐ Other _____

NEPA: ☐ NOI ☐ EA ☐ Draft EIS ☐ FONSI

Other: ☐ Joint Document ☐ Final Document ☐ Other_____

Local Action Type:

☐ General Plan Update ☐ General Plan Amendment ☐ General Plan Element ☐ Community Plan
☐ Specific Plan ☐ Master Plan ☐ Planned Unit Development ☐ Site Plan
☐ Rezone ☐ Prezone ☐ Use Permit ☐ Land Division (Subdivision, etc.)
☐ Annexation ☐ Redevelopment ☐ Coastal Permit ☒ Other Recycled Water Use

Development Type:

☐ Residential: Units_____ Acres_____
☐ Office: Sq.ft._____ Acres_____ Employees_____
☐ Commercial: Sq.ft._____ Acres_____ Employees_____
☐ Industrial: Sq.ft._____ Acres_____ Employees_____
☐ Educational _____
☐ Recreational _____
Total Acres (approx.)_____

☐ Water Facilities: Type_____ MGD_____
☐ Transportation: Type_____
☐ Mining: Mineral _____
☐ Power: Type_____ MW_____
☐ Waste Treatment: Type_____ MGD_____
☐ Hazardous Waste: Type_____
☒ Other: Pipeline, pump station, storage facility

Project Issues Discussed in Document:

☒ Aesthetic/Visual
☒ Agricultural Land
☒ Air Quality
☒ Archeological/Historical
☒ Biological Resources
☐ Coastal Zone
☐ Drainage/Absorption
☐ Economic/Jobs
☐ Fiscal
☐ Flood Plain/Flooding
☐ Forest Land/Fire Hazard
☒ Geologic/Seismic
☒ Minerals
☒ Noise
☐ Population/Housing Balance
☒ Public Services/Facilities
☐ Recreation/Parks
☒ Schools/Universities
☐ Septic Systems
☐ Sewer Capacity
☒ Soil Erosion/Compaction/Grading
☐ Solid Waste
☒ Toxic/Hazardous
☒ Traffic/Circulation
☒ Vegetation
☒ Water Quality
☒ Water Supply/Groundwater
☒ Wetland/Riparian
☒ Wildlife
☐ Growth Inducing
☒ Land Use
☒ Cumulative Effects
☐ Other _____

Present Land Use/Zoning/General Plan Designation:

GP: Medium low, medium, and high density residential; convenience; neighborhood/community commercial; office; business park; heavy industrial; public/institutional; and open space. Zoning: single and multi-family residence, commercial, park, public institution, and industrial.

Project Description: *(please use a separate page if necessary)*

The DDSD Recycled Water facility proposes to expand its water reuse system. Under the Recycled Water Project (Project), DDSD would extend the recycled water pipeline, using existing pipeline and constructing new pipeline, to establish recycled water service to the Lone Tree Golf Course and for use as landscape irrigation at City parks and other green spaces along the alignment. The facilities include a total of 19,820 feet of underground pipe, a pumpstation, and a storage facilitiy.

Note: The State Clearinghouse will assign identification numbers for all new projects. If a SCH number already exists for a project (e.g. Notice of Preparation or previous draft document) please fill in.

Revised 2004

Reviewing Agencies Checklist

Appendix C, continued

Lead Agencies may recommend State Clearinghouse distribution by marking agencies below with and "X".
If you have already sent your document to the agency please denote that with an "S".

X	Air Resources Board	X	Office of Historic Preservation
	Boating & Waterways, Department of		Office of Public School Construction
	California Highway Patrol	X	Parks & Recreation
X	Caltrans District # 4		Pesticide Regulation, Department of
	Caltrans Division of Aeronautics		Public Utilities Commission
	Caltrans Planning (Headquarters)		Reclamation Board
	Coachella Valley Mountains Conservancy	X	Regional WQCB # 2
	Coastal Commission	X	Resources Agency
	Colorado River Board		S.F. Bay Conservation & Development Commission
	Conservation, Department of		San Gabriel & Lower L.A. Rivers and Mtns Conservancy
	Corrections, Department of		San Joaquin River Conservancy
	Delta Protection Commission		Santa Monica Mountains Conservancy
	Education, Department of		State Lands Commission
	Energy Commission	X	SWRCB: Clean Water Grants
X	Fish & Game Region # 3		SWRCB: Water Quality
	Food & Agriculture, Department of		SWRCB: Water Rights
	Forestry & Fire Protection		Tahoe Regional Planning Agency
	General Services, Department of		Toxic Substances Control, Department of
X	Health Services, Department of	X	Water Resources, Department of
	Housing & Community Development		
	Integrated Waste Management Board		Other
	Native American Heritage Commission		Other
	Office of Emergency Services		

Local Public Review Period (to be filled in by lead agency)

Starting Date July 21, 2006 Ending Date August 21, 2006

Lead Agency (Complete if applicable):

Consulting Firm: RMC Water and Environment
Address: 140 Geary Street, 9th Floor
City/State/Zip: San Francisco, CA 94108
Contact: Karen Frye, AICP
Phone: 925-299-6733

Applicant:
Address:
City/State/Zip:
Phone:

Signature of Lead Agency Representative: **Date:** 7/20/06

NOTICE OF INTENT TO ADOPT A MITIGATED NEGATIVE DECLARATION PURSUANT TO THE CALIFORNIA ENVIRONMENTAL QUALITY ACT

This notice is to advise responsible and trustee agencies as well as interested parties and those potentially affected by the project that the Delta Diablo Sanitation District (DDSD) has prepared an Initial Study/Draft Mitigated Negative Declaration (IS/MND) for the project identified below. DDSD has determined that the project will not result in significant environmental impacts.

Project Description: The DDSD Recycled Water facility proposes to expand its water reuse system. Under the Recycled Water Project (Project), DDSD would extend the recycled water pipeline, using existing pipeline and constructing new pipeline, to establish recycled water service to the Lone Tree Golf Course and for use as landscape irrigation at City parks and other green spaces along the alignment.

Availability of Documents: The IS/MND is available for review at:

- The Antioch Public Library Branch, located at 501 W. 18th Street; Antioch, CA 94509
- Community Development Department, located at W. 3rd and H Street; Antioch, CA 94509
- The City's Public Works Department, located at 1202 W. 4th Street; Antioch, CA 94509
- The City's website at http://www.ci.antioch.ca.us/

- Supporting documentation listed in Section 4, References and Sources, is also available for review during regular business hours at the Community Development Department, located at W. 3rd and H Street; Antioch, CA 94509.

Comment Period: The 30 day comment period for this IS/MND starts on July 21, 2006 and closes on August 21, 2006. You are encouraged to submit written comments regarding the proposed IS/MND and/or the merits of the proposed project. Comments should be sent to the address below and should be received or postmarked no later than August 21, 2006.

Lead Agency Name and Address:

Delta Diablo Sanitation District (DDSD)
2500 Pittsburg-Antioch Highway, Antioch, CA 94509
Contact: Meg Herston
E-mail address: megh@ddsd.org
Phone (925) 756-1900

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Antioch/DDSD Recycled Water Project
Draft Initial Study/Mitigated Negative Declaration

Prepared by:

RMC
Water and Environment

July 2006

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Table of Contents

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Appendices

List of Abbreviations

AFY	acre-feet per year
APE	Area of Potential Effect
BAAQMD	Bay Area Air Quality Management District
BMPs	Best Management Practices
Caltrans	California Department of Transportation
CDFG	California Department of Fish and Game
CEQA	California Environmental Quality Act
CGS	California Geological Survey
CIP	Capital Improvement Program
CMP	Congestion Management Program
CMU	Concrete Masonry Unit
DDSD	Delta Diablo Sanitation District
DEC	Delta Energy Center
DHS	Department of Health Services
DTSC	Department of Toxic Substances Control
EBMUD	East Bay Municipal Utilities District
EPA	US Environmental Protection Agency
FEMA	Federal Emergency Management Agency
gpm	gallons per minute
HCP	Habitat Conservation Plan
IS/MND	Initial Study/Mitigated Negative Declaration
LMEC	Los Medanos Energy Center
MBTA	Migratory Bird Treaty Area
MG	million gallons
mg/L	milligram per liter
mgd	million gallons per day
MRZ	Mineral Resource Zone
NCCP	Natural Conservation Community Plan
NEPA	National Environmental Policy Act
NFIP	National Flood Insurance Program
NIC	Northwest Information Center
NMFS	National Marine Fisheries Service
NPDES	National Pollution Discharge Elimination System
ROG	Reactive Organic Gases
RWF	Recycled Water Facility
RWQCB	Regional Water Quality Control Board
SMARA	Surface Mining and Reclamation Act
SWPPP	Stormwater Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TDS	Total Dissolved Solids
TMDLs	Total Maximum Daily Loads
USACE	US Army Corps of Engineers
USFWS	US Fish and Wildlife Service
WPCF	Water Pollution Control Facility
WSA	William Self and Associates

CHAPTER 1
1. PROJECT DESCRIPTION

This chapter provides a description of the proposed project, the installation of recycled water infrastructure in the City of Antioch as a means of recycled water conveyance.

1.1 INTRODUCTION

The Delta Diablo Sanitation District (DDSD) Recycled Water Facility (RWF) proposes to expand its water reuse system. Under the Recycled Water Project (Project), the City of Antioch (City) would extend the recycled water pipeline, using existing pipeline and installing new pipeline, to establish recycled water service for use as landscape irrigation at the Lone Tree Golf Course and at parks, playing fields, medians, and other green spaces along the pipeline alignment. **Figure 1-1** shows the regional project location.

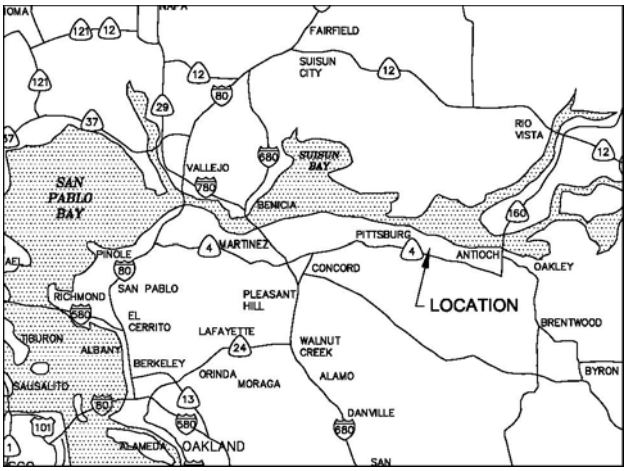

Figure 1-1: Project Location Map

1.2 BACKGROUND

DDSD began its water recycling program in 2001 in an effort to protect the state's valuable and limited water supply. The two largest users of recycled water supplied by DDSD are the two Calpine power generating plants, which use the recycled water in their cooling towers. Recycled water is also used for landscape irrigation on lands adjacent to the existing pipeline. The RWF is sized to deliver a peak flow of 12.8 million gallons per day (mgd) of recycled water to the power plants. The average demand has been approximately 7 mgd. Peak flows of up to 12 mgd have occurred for less than 10 percent of the year. Therefore, there is significant reserve capacity in the RWF to deliver recycled water.

The purpose of the proposed project is to supply irrigation customers currently using potable water with the surplus flows from the RWF. A pipeline is proposed for construction that will deliver the recycled water to various irrigators within the City, including the Lone Tree Golf Course, city parks, and playing fields.

1.3 CEQA COMPLIANCE

DDSD has prepared this Draft Initial Study/Mitigated Negative Declaration (IS/MND) to provide to the public, and Responsible and Trustee Agencies reviewing this project, with information about the potential effects, both beneficial and adverse, on the local and regional environment. This Draft IS/MND was prepared in compliance with Section 15070 to 15075 of the California Environmental Quality Act (CEQA) Guidelines of 1970 (as

amended), and California Administrative Code, Title 14, Division, Chapter 3. In accordance with Section 15070, an MND shall be prepared if the following criteria are met:

- There is no substantial evidence that the project may have a significant effect on the environment; or
- Where there may be a potentially significant effect, revisions to the project would avoid or mitigate the effects to a point where clearly no significant effects would occur.

In accordance with Section 15073 of the CEQA Guidelines, the document is being circulated to local, state, and federal agencies and to interested organizations and individuals who may wish to review and comment on the report. The public comment period is from April 24 to May 24, 2006. Written comments may be forwarded to:

Meg Herston
Delta Diablo Sanitation District
2500 Pittsburg-Antioch Highway
Antioch, CA 94509
(925) 756-1900
megh@ddsd.org

Supporting documentation listed in Section 4, References and Sources, is available for review during regular business hours at:

City of Antioch
Community Development Department
Third and "H" Streets
Antioch, CA 94531-5007
(925) 779-7035

1.4 PROJECT OBJECTIVES AND NEED

The purpose of the project is to 1) provide the infrastructure to convey surplus recycled water to irrigation users; 2) facilitate the use of recycled water as a replacement for potable water; and 3) reduce wastewater discharges.

DDSD currently provides recycled water supply for use by two local power plants and for some irrigation needs. DDSD is interested in maximizing the supply of recycled water produced by its existing facilities in order to:

- **Reduce Dependence on Delta Supplies.** Delta supplies represent the bulk of water used within DDSD's service area. Expanded use of recycled water within this area would lessen the amount of Delta water diverted by the Contra Costa Water District and the City of Antioch, making water not used available for other purposes.
- **Improve Water Supply Reliability.** Since recycled water is not affected by hydrologic conditions, it provides additional dry-year reliability for irrigation customers and other users.
- **Preserve Potable Water Supplies.** Using recycled water to serve non-potable demands such as irrigation will preserve high-quality drinking water supplies for potable needs.
- **Reduce Wastewater Discharges**. DDSD currently discharges its wastewater effluent into the New York Slough. With the advent of Total Maximum Daily Load (TMDL) requirements for mercury and other constituents of concern, wastewater dischargers are facing increasingly stringent regulations. Increasing the production of recycled water will help DDSD to comply with these future regulations by reducing the amount of effluent discharged.

- **Better Utilize Existing Recycled Water Facilities.** Currently, DDSD's existing recycled water facilities are underutilized. Expanded recycled water use would make use of available capacity.

Providing recycled water for irrigation will reduce the City's draw on the Delta, the current raw water source for the City. In addition to the environmental benefits associated with reducing intake of Delta waters, the City will also be able to increase its supply reliability for irrigation customers. Unlike current potable supplies, recycled water is unaffected by drought conditions.

1.5 EXISTING FACILITIES

1.5.1 DDSD RECYCLED WATER FACILITY

The existing RWF is located off of the Pittsburg-Antioch Highway on the north side of Highway 4. The DDSD RWF receives non-chlorinated secondary effluent from the Water Pollution Control Facility (WPCF). The DDSD wastewater treatment plant provides secondary treatment, disinfection, and dechlorination prior to discharging effluent to the New York Slough. The plant's treatment train consists of primary clarifiers followed by tower trickling filters and aeration basins for secondary treatment. From the aeration basins, the flow passes through secondary clarifiers followed by chlorine contact tanks, dechlorination, and discharge. A portion of the effluent is diverted to the RWF prior to chlorination at a varying rate depending on recycled water demands.

Influent to the RWF is fed to flocculating clarifiers, then to filters, and finally to the disinfection process. Coagulant and flocculant are fed to the flocculating clarifiers to reduce suspended sediments and turbidity. From the flocculating clarifiers, the flow passes upward through filters due to influent head, and empties into effluent weirs. Finally the filter effluent flows to chlorine contact basins for disinfection.

1.5.2 CURRENT REUSE AREAS

Following treatment at the plant, the recycled water is conveyed to the two Calpine power generating plants: Los Medanos Energy Center (LMEC) and Delta Energy Center (DEC), and to various landscape irrigation users. DEC is located immediately adjacent to the RWF, while LMEC receives recycled water via a pipeline extending 3 miles from the RWF. Three parks that are located adjacent to the existing recycled water pipeline currently receive recycled water for irrigation. These parks include a baseball field at Central Park, and two linear parks, one along 8th Street and the other along the Pittsburg-Antioch Highway. Landscaping surrounding the RWF is also irrigated with recycled water from the plant.

1.6 PROPOSED PROJECT

1.6.1 PIPELINE

A new recycled water pipeline is proposed for construction from the existing recycled water pipeline near the DDSD RWF, to several existing users including the Lone Tree Golf Course. The pipeline will be constructed using an existing 18-inch pipeline that extends along A Street (see **Figure 1-2**) as part of the design to make use of existing infrastructure and minimize the length of new piping installed. The proposed pipeline would provide recycled water to the Lone Tree Golf Course, Fairview Park, Babe Ruth Baseball Fields, Memorial Park, Mountaire Park, Chichibu Park, and the Antioch City Park and would be constructed in 2007. Eventually, other users such as Live Oak High School and Antioch High School could be served from the pipeline.

Figure 1-2 shows the proposed pipeline alignment. The majority of the pipeline would be installed in an open cut trench except for two key crossings including the Contra Costa Canal and East Bay Municipal Utilities District's

(EBMUD) Mokelumne Aqueducts, where the pipeline would be installed by trenchless construction; or would connect with existing pipe, making the crossing without surface disruption.

The proposed pipeline alignment begins at the tie-in to the existing recycled water pipeline at the RWF and travels east along West 10th Street for 11,500 feet to the tie in with the existing 18-inch pipeline along A Street to Lone Tree Way. There will be no ground disturbance for the length of this existing line along A Street. At Lone Tree way, the pipeline will then travel south for 5,640 feet and then southwest for 2,680 feet along Golf Course Road to serve Lone Tree Golf Course.

Lateral pipelines would be installed off the main pipeline to deliver water to specific user sites. These short lateral pipelines would be approximately 4 inches in diameter and would be constructed within public streets. Final locations for those laterals would be determined during Project design in consultation with specific users to identify the best point to tie into the user site irrigation system.

REUSE SITES

The potential reuse areas are discussed below and shown on **Figure 1-2**. The proposed facilities associated with the pipeline are a pumping facility and below ground storage tank located at the golf course.

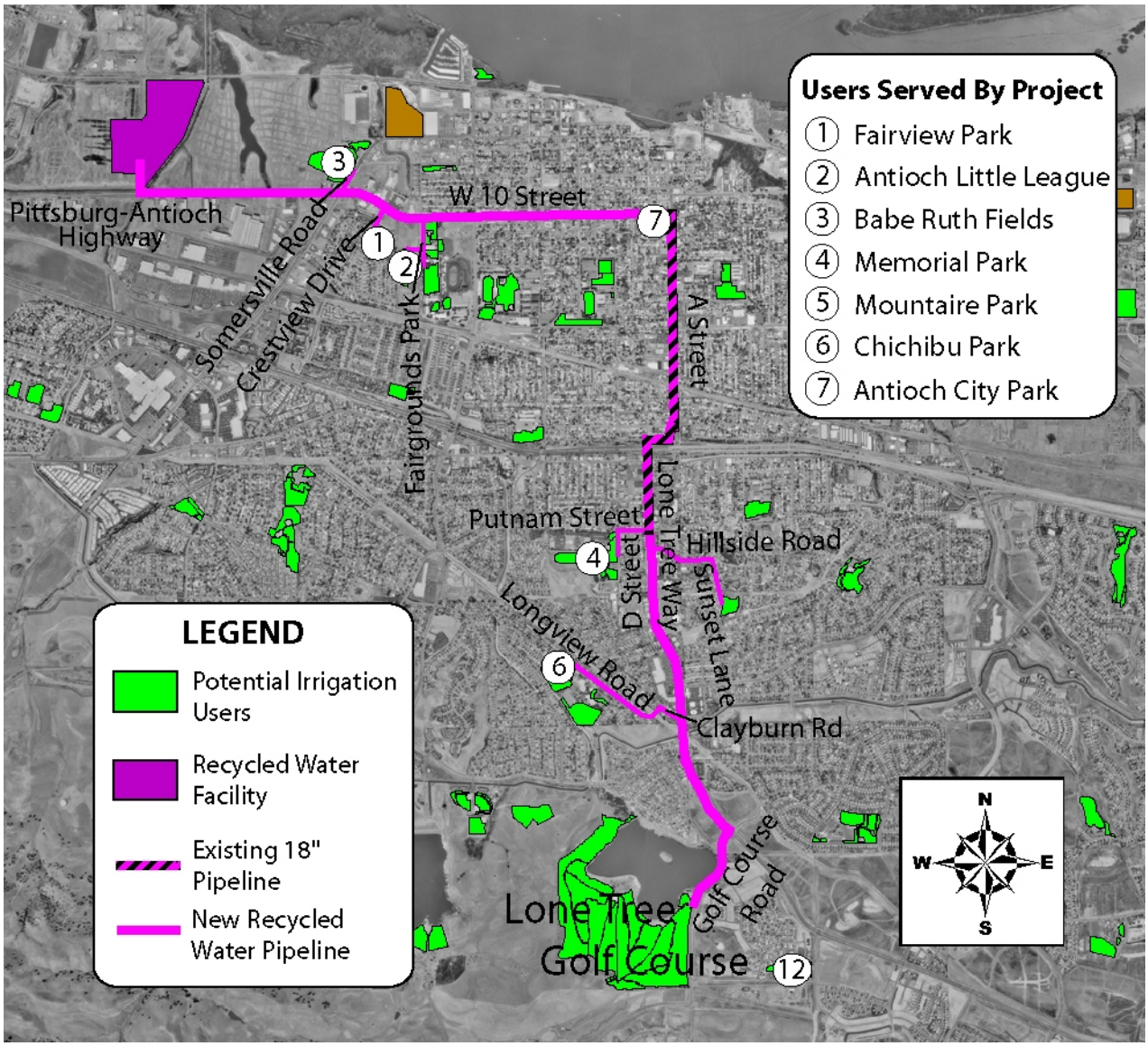

Figure 1-2: Proposed Pipeline Alignment and User Locations

Lone Tree Golf Course

The Lone Tree Golf Course is owned and maintained by the City. The golf course is south of Highway 4, approximately 4 miles from the DDSD RWF in southern Antioch.

The golf course currently uses raw water supplies from the adjacent Antioch Municipal Reservoir for irrigation. The proposed project would deliver recycled water to a storage reservoir and pump station. Two options are being considered for a proposed storage reservoir, these options are a below ground, coated, steel tank approximately 35 feet in height and 80 feet in diameter; or a lined surface pond measuring approximately 0.5 acres (assuming an average depth of 6-feet). A pump station consisting of a concrete masonry unit (CMU) building with a steel roof containing sky lights would be constructed adjacent to the tank. An exact location for the tank and pump station have not been designated on the golf course, however two locations are being evaluated which include the sump area adjacent to the fairway on the 18th hole, and the ruff area adjacent to Golf Course Road in the southeast section of the course (**Figure 1-3**). The required storage volume is approximately 1.1 million gallons (MG) based on demand calculations. Recycled water will be delivered to the storage reservoir at a rate of 530 gallons per minute (gpm).

Figure 1-3: Proposed Storage Reservoir Locations

City Parks

The City has several city-owned parks throughout the area, many of which offer significant irrigation demands and potential for recycled water use. These parks all currently irrigate green areas with potable water supplies. After constructing the recycled water pipeline will serve Fairview Park, Babe Ruth Baseball Fields, Memorial Park, Mountaire Park, Chichibu Park, and Antioch City Park after construction.

Schools

The City of Antioch is served by the Antioch Unified School District. The Antioch Unified School District has thirteen elementary schools, five junior high schools, and four high schools. Each of these schools have areas (e.g., sports fields, etc) that could potentially use recycled water for irrigation in lieu of potable supplies; however, irrigation at schools is not being evaluated in this phase of the project, and therefore is not evaluated in this

IS/MND. Expanding recycled water facilities to serve Antioch schools would require agreements with the respective school districts, and a coordinated public outreach campaign to educate parents, students and teachers about recycled water use and address any concerns about safety.

Median Strips
The City irrigates several median strips around the city. In particular, medians, embankments, and interchanges along Highway 4 through Antioch offer a significant potential for recycled water use in future phases, with a potential demand of 10-30 acre-feet per year (AFY).

1.7 SCHEDULE AND CONSTRUCTION METHODS

Construction would consist of approximately 19,820 feet of new pipeline and will take an estimated 11 months. Construction of the storage tank and pump station will happen concurrently with pipeline construction. Construction is planned to start in February 2007 and continue through December 2007. The recycled water pipeline and laterals will be sized between 10 and 14 inches, and will be constructed within city and county owned roadways. Pipeline installation for all sections would use standard open-cut trenching techniques except the crossing of the Contra Costa Canal and EBMUD Mokelumne Aqueducts where the pipeline will be installed by trenchless construction.

Standard installation of the pipeline would proceed at the rate of approximately 100 feet per day with an overall work zone length of 300 to 400 feet. For work within the roadways, trench width would be approximately eight feet, with active work areas of about ten feet on one side of the trench and 10 to 16 feet on the other side for access by trucks and loaders, resulting in a construction corridor width of approximately 25 to 30 feet wide. For the purpose of this analysis, a construction easement of 30 feet is assumed, and will be used as the Area of Potential Effect (APE). Excavated trench materials would be hauled to an approved location for disposal.

Damage to the road and non-paved areas would be repaired. Disturbed areas would be revegetated with native grasses indigenous to the disturbed area. Revegetation would occur after construction and prior to winter rains to stabilize disturbed areas against erosion.

1.7.1 EQUIPMENT / STAGING

Installation of the pipeline would require, but is not limited to, the following equipment: crane, excavator, backhoe, front-end loaders, dump trucks, diesel generator, water tank, flat-bed truck, compactors, double transfer trucks for soil hauling, concrete trucks, paving equipment and baker tanks (as needed). Equipment and vehicle staging would be accommodated either at each construction site (pipeline, storage tank and pump station), therefore increasing the total area of disturbance, or at a centralized staging area (such as the DDSD Plant). Staging will be avoided at sensitive areas such as riparian or other habitat.

1.8 RIGHT-OF-WAY ISSUES/PERMITS REQUIRED

The proposed facilities would be sited within the City and county lands (primarily streets and a golf course).

It is anticipated that permits will potentially be required from the following agencies:

- City of Antioch: Encroachment and Excavation Permit, Street Work Permit
- California Regional Water Quality Control Board (RWQCB): National Pollutant Discharge Elimination System (NPDES) permit for construction activities and preparation of Storm Water Pollution Prevention Plan (SWPPP)

- San Francisco Bay Area Air Quality Management District (BAAQMD): General Permit to Construct
- Contra Costa Water District: Encroachment Permit for Contra Costa Canal Crossing
- EBMUD: Encroachment Permit for EBMUD Mokelumne Aqueducts Crossing Permit

The Project has been sited to avoid direct impact on wetlands and sensitive habitats, including those that could support special status species. In addition, mitigation has been incorporated into the Project to avoid or minimize the potential indirect effects on habitat or sensitive species, such as erosion or noise. Therefore, no impact or significant impact is expected to these resources and no permits from the US Army Corps of Engineers (USACE), US Fish and Wildlife Service (USFWS), National Marine Fisheries Service (NMFS), or California Department of Fish and Game (CDFG) are expected to be required for wetlands or endangered species. These agencies will receive the Draft IS/MND for review and DDSD will continue to coordinate with these agencies to confirm that no permits are required.

CHAPTER 2

2. ENVIRONMENTAL CHECKLIST FORM

1.	**Project Title:**	Recycled Water Project
2.	**Lead Agency Name and Address:**	Delta Diablo Sanitation District (DDSD); Responsible Agency: City of Antioch
3.	**Contact Person and Phone Number:**	DDSD: Meg Herston Delta Diablo Sanitation District 2500 Pittsburg-Antioch Highway Antioch, CA, 94509 (925) 756-1900 City of Antioch: Phil Harrington Public Works Department PO Box 5007 Antioch, CA 94531-5007
4.	**Project Location:**	The Project encompasses portions of the City of Antioch and Contra Costa County. The pipeline will be located in city streets.
5.	**Project Sponsor's Name and Address:**	Delta Diablo Sanitation District
6.	**General Plan Designation:**	Medium Low, Medium, and High Density Residential; Convenience, Neighborhood/Community Commercial; Office; Business Park; Heavy Industrial; Public/Institutional; and Open Space
7.	**Zoning:**	Single Family and Multi-Family Residential, Commercial, Park, Public Institution, and Industrial

8. **Description of Project:** The proposed project involves the installation of recycled water infrastructure connecting to the existing recycled water treatment plant in the City of Antioch as a means of recycled water conveyance to the Lone Tree Golf Course. The facilities include a total of 19,820 feet of underground pipeline, a pumping station, and a storage reservoir (either a below ground storage tank or surface pond; see Figure 1-2 and Figure 1-3).

9. **Surrounding Land Uses and Setting.** The recycled water pipeline will be sized between 10 and 14 inches (with 4-inch laterals), and will be constructed within city and county owned public easements, and road right-of-ways. The surrounding land use in the vicinity of the project is mostly residential with some community commercial areas, a few parks, and a few schools.

10. **Other public agencies whose approval is required (e.g., permits, financing approval, or participation agreement.)**

- City of Antioch – Encroachment, Excavation, and Street Work Permits

- California Regional Water Quality Control Board (RWQCB) – National Pollutant Discharge Elimination System (NPDES) permit for construction and preparation of Storm Water Pollution Prevention Plan (SWPPP)
- San Francisco Bay Area Air Quality Management District (BAAQMD) – Permit to Construct and Permit to Operate if an emergency generator is installed as part of the pump station.
- Contra Costa Water District: Encroachment Permit for Contra Costa Canal Crossing
- EBMUD: Encroachment Permit for EBMUD Mokelumne Aqueducts Crossing Permit

Environmental Factors Potentially Affected

The key environmental factors checked below would be potentially affected by this Project. However, as described in the checklist below, the Project would not cause significant impacts in any of these areas and would have beneficial impacts.

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

DETERMINATION: (To be completed by Lead Agency)

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 by 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.

_____ _____

Signature Date

_____ _____

Printed Name For

2.1 AESTHETICS

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
Would the Project:				
a) Have a substantial adverse effect on a scenic vista?	☐	☐	☒	☐
b) Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?	☐	☐	☒	☐
c) Substantially degrade the existing visual character or quality of the site and its surroundings?	☐	☐	☒	☐
d) Create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?	☐	☐	☒	☐

Discussion

a, b) Proposed pipelines would be buried underground causing no permanent changes in the visual condition of the Project area. Project construction would have temporary adverse visual impacts on surrounding areas that would not represent a significant impact. Construction would not damage scenic resources such as trees, rocks or historic buildings. The City's General Plan designates ridgeline preservation policies to maintain view corridors from public spaces to natural ridgelines and landmarks, such as Mount Diablo and distant hills, local ridgelines, the San Joaquin River, and other water bodies. Important corridors to be protected include Somersville Road, Lone Tree Way, Hillcrest Avenue, Highway 4, State Route 160, James Donlon Boulevard, Deer Valley Road, and Empire Mine Road. Due to the location of the project facilities (at the golf course and along streets), the project would not impact these or other view areas. Highway 4 in the vicinity of the Project area is not designated as a Scenic Highway (Caltrans, 2006). Two options are being considered for a proposed storage reservoir. These options are a below ground, pre-stressed concrete tank approximately 35 feet in height and 80 feet in diameter; or a lined surface pond measuring approximately 0.5 acres (assuming an average depth of 6-feet). A pump station consisting of a CMU, prefabricated building with a steel roof containing sky lights would be constructed adjacent to the tank. An exact location for the tank and pump station have not been designated on the golf course, however two locations are being evaluated which include the sump area adjacent to the fairway on the 18th hole, and the ruff adjacent to Golf Course Road in the southeast section of the course.

c) Construction activities would have a temporary, adverse effect on the visual quality of the pipeline routes. However, due to the limited duration of construction activities, potential impacts are considered less than significant. No long-term significant visual impacts are anticipated aside from the addition of a small pump station prefabricated building. The storage reservoir would either be underground and covered with vegetation (grass), or a surface pond that would be located in an area that is currently tall, unmaintained grass. As discussed in the Project Description, the City would repair any damage to the road and revegetate any disturbed landscaping; this would reduce the potential for short-term construction impacts to become long-term visual impacts.

d) Nighttime construction activities are not anticipated. However, if nighttime construction was to occur, it would be within the commercial section of the pipeline where traffic constraints might limit daytime construction. In this location, there are no residential areas, and businesses would not be disrupted. The Project would not create a new source of light or glare that would adversely affect day or nighttime views in the area. The pump station will have a metal roof or similar with skylights, but it not expected to create a source of glare. No new lighting of Project facilities is proposed, with the exception of an exterior lighting over the doors at the pump station building. The pipelines would be buried, thus no new sources of glare would be created.

Mitigation Measures

None required or recommended.

2.2 AGRICULTURE RESOURCES

	Potentially Significant Impact	*Less Than Significant With Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
Would the Project:				
a) 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?	☐	☐	☐	☒
b) Conflict with existing zoning for agricultural use, or a Williamson Act contract?	☐	☐	☐	☒
c) Involve other changes in the existing environment which, due to their location or nature, could result in conversion of Farmland, to non-agricultural use?	☐	☐	☐	☒

Discussion

a,b,c) The proposed Project is located within an urban area. There are no agricultural resources including Prime Farmland, Unique Farmland, or Farmland of Statewide Importance located in the Project area; therefore, no effect on agricultural resources including Williamson Act contracts would occur (CDC DLRP, 2006).

Mitigation Measure

None required or recommended.

2.3 AIR QUALITY

Where available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations.

	Potentially Significant Impact	*Less Than Significant With Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
Would the Project:				
a) Conflict with or obstruct implementation of the applicable air quality plan?	☐	☐	☒	☐
b) Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	☐	☒	☐	☐
c) 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)?	☐	☐	☐	☒
d) Expose sensitive receptors to substantial pollutant concentrations?	☐	☐	☒	☐
e) Create objectionable odors affecting a substantial number of people?	☐	☐	☒	☐

Discussion

a,b,c) The proposed Project is located within the jurisdiction of the BAAQMD, the regional agency empowered to regulate air pollutant emissions from stationary sources in the Bay Area. BAAQMD regulates air quality through its permit authority over most types of stationary emission sources and through its planning and review process.

Project construction would generate fugitive dust[1] including Particulate Matter less than 10 microns in size (PM_{10}) and other criteria pollutants, primarily through excavation activities, construction equipment exhaust and haul truck trips, and related construction worker commute trips.

Given the total amount of excavation required, along with the duration of anticipated construction (11 months for construction of the pipeline and associated facilities), daily combustion emissions from construction vehicles and construction-worker commute trips would not be significant or cumulatively considerable. Criteria pollutant emissions of reactive organic gases (ROG) and nitrogen oxides (NO_3)

[1] "Fugitive" emissions generally refer to those emissions that are related to the atmosphere by some means other than through a stack or tailpipe.

from these emission sources would incrementally add to regional atmospheric loading of ozone precursors during the construction period.

BAAQMD CEQA *Guidelines* recognize that construction equipment emits ozone precursors, but indicate that such emissions are included in the emission inventory that is the basis for regional air quality plans, and that construction emissions are not expected to impede attainment or maintenance of ozone data in the Bay Area (BAAQMD, 1999). Consequently, the BAAQMD recommends determination of significance with respect to construction impacts be based not on quantification of emissions and comparison to thresholds, but upon inclusion of feasible control measures for PM_{10} as provided in **Measure AQ-1**.

With respect to project conformity with the federal Clean Air Act, the Project's potential emissions are below minimum thresholds and are well below 10 percent of the area's inventory specified for each criteria pollutant designated non-attainment or maintenance for the Bay Area. As such, further general conformity analysis is not required.

d) The nearest sensitive receptors that could be potentially affected by construction generated fugitive dust in the vicinity of the construction Project would be schools including: Sutter Elementary, Hilltop Christian, Holy Rosary, Antioch Unified, Park Junior High, Antioch Junior High, and John Muir. and residential neighborhoods along the pipeline alignment. Fugitive dust emissions would vary from day to day depending upon the level and type of construction activity, silt content of the excavated soil, and the prevailing weather. **Measure AQ-1** provides for the preparation of a dust abatement program to minimize PM_{10} generation.

e) Because of the extent to which the water is treated, odors are not expected to be a problem at or near water use sites, at or near the below ground storage tank (which would be enclosed), or in the event of a pipeline rupture. An area where odor may be an issue is if a surface pond is constructed in-lieu of an underground storage tank at the golf course. Recycled water provides an increased nutrient load as compared to the current irrigation supply. Therefore, there is an increased risk for eutrophication (a process of excess plant growth) and algae die-off, which may produce odors. Measures including the addition of a circulation system or chemical (i.e. copper sulfate) addition can be used to mitigate eutrophication and thus odors, please see **Measure WQ-2** in the Hydrology and Water Quality section.

Mitigation Measures

Measure AQ-1: The construction contractor shall implement a dust abatement program, which shall include the following elements:

- Water all active construction areas at least twice daily, depending on type of operation, and wind exposure;
- Designate a person or persons to oversee the implementation of a comprehensive dust control program and to increase watering, as necessary;
- Construction grading activity should be discontinued in high wind conditions (wind speeds greater than 20 miles per hour) that cause excessive neighborhood dust problems, based on the discretion of the construction inspector;
- Cover all trucks hauling soil, sand, and other loose materials, or require all trucks to maintain at least two feet of freeboard (i.e., the minimum required space between the top of the load and the top of the

trailer) in accordance with Section 23114 of the California Vehicle Code during transit to and from the site;
- Apply non-toxic soil stabilizers (e.g., latex acrylic copolymer) if visible soil material is carried onto adjacent public streets; and
- Incorporate Stormwater Best Management Practices (BMPs) throughout the course of the Project.

Implementation of these measures would reduce potential impacts to air quality to a less-than-significant level.

2.4 BIOLOGICAL RESOURCES

Would the Project:	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
a) 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?	☐	☒	☐	☐
b) Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	☐	☐	☒	☐
c) 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?	☐	☐	☒	☐
d) Interfere substantially with the movement of any native resident or migratory fish or wildlife corridors, or impede the use of native wildlife nursery sites?	☐	☐	☒	☐
e) Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	☐	☐	☐	☒
f) Conflict with the provisions of an adopted Habitat Conservation Plan (HCP), Natural Conservation Community Plan (NCCP), or other approved local, regional, or state HCP?	☐	☐	☐	☒

Discussion

DDSD is proposing to expand the recycled water pipeline network in the City. The project extends an existing recycled water pipeline system, including re-use of an existing (abandoned) pipeline, and construction of new pipeline. A majority of the proposed new pipelines are planned to follow existing paved roadways. The project site is located in a developed area of Antioch and is surrounded by residential, commercial, industrial, and recreational parkland/golf course.

Natural features adjacent to portions of the project corridor include undeveloped grassland hillsides; freshwater marsh; willow riparian woodland; manicured lawns at the Lone Tree Golf Course, City Parks (corner of W 10th Street and A Street and fields at W 10th Street and Somersville Road), and Fairgrounds; Contra Costa Canal; Antioch Municipal Reservoir; and street trees growing amidst the suburban and industrial streets throughout the proposed route of the project.

Because of its developed condition, the Project Site contains only sparse fragments of native habitat. Much of the project site and adjacent areas are devoid of natural vegetation communities and do not support high integrity wildlife habitat. Other areas within the project site largely support landscaping plants and other urbanized species of plants and animals, including many non-native flora and fauna species.

However, one segment of the proposed pipeline along the western portion of W 10th Street is adjacent to large areas of undeveloped rural grassland, a freshwater marsh, willow riparian woodland, and several seasonal drainages (including the Contra Costa Canal). In addition, although the Lone Tree Golf Course provides limited wildlife habitat, the adjacent Antioch Municipal Reservoir provides aquatic and freshwater marsh habitat.

Special status and protected wildlife species considered to have a moderate potential to be impacted by the proposed project are discussed in the following section. No special-status plant species are considered to have a moderate or high potential to be impacted by the project. This analysis is based on a single reconnaissance-level survey by biologist Shannon Lucas (May & Associates) conducted on February 24, 2006. Focused wildlife or botanical surveys were not conducted as part of this effort. A formal wetland delineation was not performed; it is assumed that all work would occur outside of wetlands and riparian habitat.

a) ***Special Status Species***

Based on a review of the CDFG Natural Diversity Database (CDFG, 2006) and the California Native Plant Society's On-line Electronic Inventory (CNPS, 2006) for the Antioch South and eight surrounding USGS 7.5-minute quadrangles, the USFWS's List for the Antioch North and South quadrangles (USFWS, 2006) as well as a biological reconnaissance site visit (May and Associates, Inc., February 24, 2006), the following is a discussion of potential impacts to candidate, sensitive or special status species. Table 1 provides the results of the above database searches for special status species with potential to occur in habitats similar to those found on or near the project site.

Nesting Birds

While not all breeding bird species are afforded "special status" by the CDFG or the USFWS, all migratory birds are protected by the federal Migratory Bird Treaty Act (MBTA), and all nesting resident birds are protected by Sections 3503, 3503.5 and 3513 of the California Fish and Game Code, and therefore meet CEQA criteria as "sensitive" species.

Potential nesting habitat for common bird species, such as killdeer and meadowlark, occurs in grasslands, along roads and other ruderal habitats within and near the proposed project site. In addition, cliff swallows may nest on some of the concrete bridge structures within the Project Site (now or in the future). The annual grasslands within and adjacent to the project site also provide potential nesting habitat for special status bird species (such as California horned lark [*Eremophila alpestris actia*; California species of concern], western burrowing owl [*Athene cunicularia* – a state species of special concern and a federal species of concern], long billed curlew [*Numenius americanus*; Federal species of concern], great blue heron [*Ardea herodias*] and white-tailed kite [*Elanus leucurus*; Federal species of concern]). Freshwater wetland and willow riparian habitat bordering the Dow wetland preserve north of W 10th Street and bordering the Antioch Municipal Reservoir provides nesting habitat for common and special status birds (such as tricolored blackbird [*Ageliaus tricolor*, Federal species of concern]). Small and large trees, mostly horticultural varieties, provide nesting habitat for common bird species along most of the pipeline route.

Project activities, such as earthmoving, grading, and trenching, during the bird nesting season (March 15 to August 15) have the potential to result in noise and vibration that may cause nest abandonment and death of young or loss of reproductive potential at active nests located near project activities. If project implementation occurs between March 15 to August 15, then the measures listed under **Measure BR-1** should be executed to reduce potential impacts to breeding birds to a less-than-significant level. If possible, ground-disturbance activities (such as trenching) should begin before March 15 in areas near undeveloped grassland and wetland habitats and should occur continuously throughout the construction period or at least through the nesting season (August 15) to prevent bird species from establishing nests within the work area.

Large trees that may provide nesting habitat for bird species such as raptors are either located far from the project site (at least 100-200 feet away from the proposed storage and pump station locations), or are located along busy urban and suburban streets and, therefore, current noise and disturbance by human activities are likely frequent enough that any birds nesting in such trees would be acclimated to such disturbances and are not likely to be affected by the proposed work activities.

Other special status birds, including ferruginous hawk (*Buteo regalis*, Federal species of concern), American peregrine falcon (*Falco peregrinus anatum*, Federal de-listed and State endangered) and loggerhead shrike (*Lanius ludovicianus*, Federal species of concern) may forage in or near the project site; however, project activities are not likely to substantially impact essential behaviors of these species, particularly since birds foraging in the area will already be acclimated to noise and disturbances from regular human activities in the area.

Other Special Status Wildlife

Potential habitat exists within the Contra Costa canal, another seasonal drainage, and freshwater wetlands (at the DDSD entrance and at the Dow wetland preserve north of W 10th Street) for other special status wildlife species, including Ricksecker's water scavenger beetle (*Hydrochara rickseckeri*, Federal species of concern), curved-foot hygrotus diving beetle (*Hygrotus curvipes*, Federal species of concern), giant garter snake (*Thamnophis gigas*, Federal- and State-threatened), California tiger salamander (*Ambystoma*

californiense, Federal threatened and CDFG species of special concern), California red-legged frog (*Rana aurora draytonii*, Federal threatened) and western pond turtle (*Clemmys marmorata*, Federal species of concern). However, project activities will not occur in or immediately adjacent to these habitats, and therefore direct adverse impacts to individuals or their habitat is not anticipated. In addition, noise and vibration from project activities is not likely to result in adverse impacts due to the distance of these habitats from the project site and/or the amount of additional habitat available for species to disperse away from the noise and vibration. In addition, implementation of appropriate Best Management Practices (BMPs) prior to, during, and following construction (including use of silt fencing or other methods to prevent erosion and siltation, stockpiling of excavated materials in upland areas) would also provide additional protection to any special status wildlife species that may be present in these wetland or aquatic features (see **Measure WQ-1**). Although project activities have the potential to result in mortality to individual species if they enter the work area, this potential for mortality is less than or equal to the potential for mortality without project activities, as most individuals crossing the existing roads and developed areas within the Project Site would likely be killed or harmed by traffic and other human activities.

Special Status Plants

The proposed project site is considered unlikely to support special status plant species, as the entire Project Site occurs within existing paved roads, gravel right-of-ways and easements along the roads, or within a highly manicured golf course.

b) ***Riparian or other Sensitive Natural Communities***

A majority of the proposed pipeline alignment corresponds to existing paved roads and developed lands. Although a small amount of willow riparian habitat exists adjacent to the Project Site north of W 10th Street at the Dow wetland preserve, project activities in this area will be limited to the paved roadbed and gravel right-of-way and will not disturb or remove the adjacent riparian habitat. In addition, implementation of appropriate BMPs prior to, during, and following construction (including use of silt fencing or other methods to prevent erosion and siltation, stockpiling of excavated materials in upland areas) would also reduce provide additional protection to the adjacent riparian habitat (see **Measure WQ-1**).

c) ***Federally Protected Wetlands***

A majority of the proposed pipeline alignment corresponds to existing paved roads and developed lands. Wetlands exist adjacent to the Project Site north of W 10th Street at the Dow wetland preserve and at the DDSD entrance, as well as within a seasonal drainage near the fairgrounds south of W 10th Street. However, project activities in this area will be limited to the paved roadbed and gravel right-of-way and will not disturb or remove the adjacent wetland habitat. In addition, implementation of appropriate BMPs prior to, during, and following construction (including use of silt fencing or other methods to prevent erosion and siltation, stockpiling of excavated materials in upland areas) would also reduce provide additional protection to the adjacent wetland habitat (see **Measure WQ-1**).

d) ***Wildlife Movements***

The study area does not correspond with any known movement corridors for native resident or wildlife species. Contra Costa canal may serve as a corridor for migratory fish; however, the project will not result in impacts that will block or impede any migration activities within the canal.

During construction, trenching for pipeline installation may temporarily result in a reduced migration corridor across paved roads; however, these roads already serve as a barrier to most migration and wildlife movement. Upon completion, the constructed pipeline would not have any adverse effects on wildlife movement. No mitigation measures are warranted.

e) ***Local Policies and Ordinances***

No such policies or ordinances are applicable to the proposed project; therefore, there is no impact.

f) ***Habitat Conservation Plan***

No such plans are applicable to the project area; therefore, there is no impact.

Mitigation Measures

Measure BR-1: Avoidance of bird nesting disturbance:
If possible, ground-disturbance activities (such as trenching) should begin before March 15 and should occur continuously throughout the construction period or at least through the nesting season (August 15) to prevent bird species from establishing nests within the work area. If construction occurs between March 15 and August 15, the DDSD should implement the following elements prior to bird nesting season and the start of ground-disturbing construction:

A qualified wildlife biologist will conduct pre-construction surveys of all potential nesting habitat within 100 feet of construction activities. If active nests are found during pre-construction surveys, a 100-foot buffer zone would be created around nests of sensitive birds protected by the MBTA or special status birds. If pre-construction surveys indicate that nests are inactive or potential habitat is unoccupied during the construction period, no further mitigation will be required.

Implementation of the above mitigation measure would reduce potential project impacts to breeding birds to a less-than-significant level.

2.5 CULTURAL RESOURCES

Would the Project:	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
a) Cause a substantial adverse change in the significance of a historical resource as defined in §15064.5?	☐	☐	☐	☒
b) Cause a substantial adverse change in the significance of a unique archaeological resource pursuant to §15064.5?	☐	☒	☐	☐
c) Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	☐	☐	☐	☒
d) Disturb any human remains, including those interred outside of formal cemeteries?	☐	☒	☐	☐

Discussion

On behalf of William Self Associates, Inc. (WSA), the staff at the California Historical Resources Information System, Northwest Information Center at Sonoma State University (NIC) conducted a records search of the project vicinity on February 24, 2006 (File No. 05-666). The record search included a review of all cultural resource and excavation reports and recorded archaeological sites within a ¼-mile radius of the Antioch Recycled Water Pipeline project area. The study included a review of archaeological, ethnographic, historical, and environmental literature as well as records and maps on file at the California Archaeological Inventory. Records included the Office of Historic Preservation Historic Properties Directory, the California Inventory of Historical Resources, the Historical Resources Inventory of Contra Costa County, and historic maps (the 1862 and 1870 GLO Plat Map, the 1869 Los Medanos Rancho Plat Map, and the 1918 Antioch and 1913 Lone Tree Valley USGS). In addition, a field reconnaissance of the proposed alignment was conducted by WSA archaeologist David Buckley.

There are two cultural resources recorded within the project area: the Central Pacific Railroad (now the Union Pacific Railroad) (P-07-002568), which crosses the project area and the Contra Costa Canal (P-07-002695), which crosses the southern portion of the project area. Three additional sites are located within ¼-mile of the project area. These include two prehistoric sites (CA-ALA-385 and CA-ALA-386) and one historic site, the Atchison Topeka-Santa Fe Railroad line (P-07-000806). A description of each site follows:

In 1877, the Central Pacific Railroad extended their lines to Contra Costa County, and by 1878 the Central Pacific Railroad through their subsidiary, the San Pablo & Tulare Railroad Company, served the cities of Richmond, San Pablo, Rodeo, Crockett, Port Costa, Martinez, Avon, Pittsburg, Antioch, Brentwood and Byron in Contra Costa County. The remaining railroad grade is formed by an earthen berm surmounted by a set of tracks. The track is elevated on a bed of crushed rock ballast. The surrounding terrain is a natural floodplain associated with the Sacramento River, but is now mostly urban, industrial and residential.

The Contra Costa Canal is of historic age, and was constructed from 1937-1948, although it was not until 1951 that it was finally completed and fully operational in terms of contractual deliveries. It is primarily a concrete lined canal that carries water from the Delta on the east to Martinez on the west. The Contra Costa Canal first enters the project area at the intersection of Arcy Lane and the Pittsburg-Antioch Highway, where the Delta Household Hazardous Waste Collection Facility is located. The Contra Costa Canal crosses the proposed project area again at the southern portion of Lone Tree Way, just before the Sutter Delta Medical Center.

CA-ALA-385 is located approximately 700 ft. southwest of the project area at an elevation of 140 feet. It is a diffuse scatter of fire-altered rock, sandstone and basalt ground implements, modified quartzite, chalcedony, and petrified wood flakes, and possible midden in a swale near an abandoned cattle-watering trough. The site is 40 meters in diameter, and is of Franciscan Formation, containing meta-sandstone and petrified wood. The soil typology within the site is that of dark brown powdery marsh soils. Low grasses, and oaks on a knoll with a rock outcrop above constitute the vegetation on the site.

CA-ALA-386 is located approximately 1200 feet southwest of the project area at an elevation of 130+ feet. It is a moderately dense scatter of fire-cracked rock, chert flakes, and sandstone-basalt ground implements within midden soil containing minute quantities of Mytilus and Margaritifera shell. It is near a marsh area on the western border of the 60-acre property area with the Antioch Municipal Reservoir. Its lithology is of the Franciscan Formation, and soil typology within the site is that of dark, ashy midden with shell. The vegetation on the site is grasslands, native oaks, and an exotic Fig tree near a suspected former homestead site. There are intermittent streams to the southwest that drain into the reservoir.

The Atchison Topeka-Santa Fe Railroad line is of historic age, and is located approximately one mile east of Pittsburg, CA. The tracks are currently in active use by the Burlington Northern Railroad. The tracks cross Kirker Creek, a seasonal drainage situated in a level delta area. Nearby vegetation includes cattails, thistles, and introduced grasses.

Twelve studies have been conducted within or adjacent to the project boundaries (Table 2-1). These include S-1320, 2025, 7386, 13256, 18352, 18440, 22464, 22812, 24322, 27445, 30387, and 30579. Two studies have been conducted within ¼-mile of the project area including S-7647, and 25238 (Table 2-2).

Table 2-1. Cultural Resources Studies within or Adjacent to the Project Boundaries

Study #	Author	Date	Title
S-1320	Flynn, K.	1978	Archaeological Reconnaissance of a 60-acre parcel located on Lone Tree Drive, City of Antioch, Contra Costa County (ARS 78-108). (letter report). City of Antioch, Contra Costa County (ARS 78-108). (letter report).
S-2025	Holman, M. P.	1980	An Archaeological field reconnaissance on an approximately 216 acre parcel (letter report).
S-7386	Chavez, D.	1985	Cultural Resource Evaluation for the Delta Landing EIR/EIS, Antioch, Contra Costa County, California.
S-13256	Bramlette, A. et al.	1991	Archaeological Resources Inventory for Los Vaqueros Water Conveyance Alignments

S-18352	Busby, C. I.	1976	East/Central Contra Costa County Wastewater Management Plan, California: Cultural Resource Survey
S-18440	West, J. G. & Welch, P.	1996	Class II Archaeological Survey of the Contra Costa Canal, Contra Costa County, California
S-22464	Jones & Stokes Associates, Inc.	1999	Cultural Resource Inventory Report for the Williams Communications, Inc. Fiber Optic Cable System Installation Project, Pittsburg to Sacramento, California
S-22812	Busby, C. I.	1997	Contra Costa County Water Multipurpose Pipeline Project, Environmental Documentation Study, Cultural Resources Review (letter report)
S-24322	Morgan S. & Bachand B.	1998	Pittsburg District Energy Facility, Cultural Resources Technical Report (Appendix K)
S-27445	Giliberti, J.	2002	A Cultural Resource Reconnaissance Survey of Proposed Removal of the Tracy-Contra Costa-Ygnacio 69kV Transmission Line, Contra Costa and Alameda Counties, California
S-30387	Tang, B. et al.	2005	Historical Resources Compliance Report, Burlington Northern Santa Fe Railway Double Track Project (Segment 2), Oakley (MP 1146.1) to Port Chicago (MP 1164.4), In and Near the Cities of Oakley, Antioch, & Pittsburg, & the Port Chicago Naval Weapons Station
S-30579	Busby, C. I.	2004	Cultural Resources Report, Delta Energy Center Site (DEC) and Associated Linears, Cities of Pittsburg and Antioch, Contra Costa County, California, California Energy Commission (CEC) Project 98-AFC-3C

Table 2-2. Cultural Resources Studies within ¼ Mile of the Project Boundaries

Study #	Author	Date	Title
S-7647	Woodward-Clyde Consultants	1985	Cultural Resource Investigation of the Proposed Pittsburg Marina Expansion Project.
S-25238	Holson, J.	2002	Archaeological Survey Report for the Highway 4/ Somerville Cell Site, Antioch, Contra Costa County (letter report)
Source: On File at the Northwest Information Center, Sonoma State University, Rohnert Park, CA.			

Survey Findings

WSA staff archaeologist David Buckley conducted a pedestrian and windshield survey of the proposed route for the Antioch Recycled Water Pipeline Expansion Project on February 17, 2006.

In the survey, the project area was evaluated for the presence of historic or prehistoric site indicators. Historic site indicators include, but are not limited to foundations, fence lines, ditches, standing buildings, objects or structures such as sheds, or concentrations of materials at least 50 years in age, such as domestic refuse (glass bottles, ceramics, toys, buttons or leather shoes), or refuse from other pursuits such as agriculture (e.g., metal

tanks, farm machinery parts, horse shoes) or structural materials (e.g., nails, glass window panes, corrugated metal, wood posts or planks, metal pipes and fittings, etc.). Prehistoric site indicators include, but are not limited to areas of darker soil with concentrations of ash, charcoal, bits of animal bone (burned or unburned), shell, flaked stone, groundstone, or even human bone. Prior to the survey, satellite imagery available on the Google Earth internet program were consulted, as were USGS 7.5 minute Topographic maps that depicted an overlay of the projected water pipeline expansion route.

The survey route began at the intersection of Arcy Lane and the Pittsburg-Antioch Highway, where the Delta Household Hazardous Waste Collection Facility is located. The survey route then continued east along the Pittsburg-Antioch Highway, which becomes West 10th Street at Somersville Road. Along the Pittsburg-Antioch Highway ground visibility was 0%, due to street paving, the sidewalk, landscaping and grasses on the south side of the street. There is no sidewalk on the north side of the street until a point approximately 100 yards west of the Auto Center Dr./ Somersville Rd. intersection. Along the north side of the highway, there are several gravel turnouts. For a distance of approximately one hundred yards, the landscape along the shoulder of the road is elevated several feet, exposing the dirt that runs parallel to the road shoulder. This allowed for some ground visibility, however it is likely to be previously disturbed ground. There were no historic or prehistoric site indicators.

At the intersection of Auto Center Drive and West 10th Street, the survey route turned northeast onto Auto Center Dr./Somersville Rd. and continued to the south edge of the Babe Ruth Baseball Field, where the proposed pipeline lateral will run off of the main line. Ground visibility was 0%, due to the sidewalk, landscaping and grasses on both sides of the street. The survey route then returned to the intersection of Auto Center Drive and West 10th Street and continued east along West 10th Street until turning southwest onto Crestview Drive, where it continued to Fairview Park. Being a residential district, ground visibility in the Crestview Drive survey area was 0% because of sidewalks, landscaping, surface streets, and the landscaping in Fairview Park.

The survey route then returned to West 10th St. and turned east until intersecting Fairground Park Dr., where it turned south into the Contra Costa Fairgrounds. The survey route along Fairgrounds Park Dr. included the entrance to the fairgrounds office, and ended short of the mid-point of the fairgrounds. Ground surface visibility was 0% due to sidewalks, landscaping and surface streets. The survey route then returned to West 10th St. and continued east. This section of the survey route ran through a residential area, crossing L, G, and C streets, and therefore did not provide any ground surface visibility.

The survey route then reached the A Street and 10th Street intersection. At A Street, the survey route turned south and followed the pathway of the existing abandoned pipeline to which the new pipeline will connect. The existing abandoned pipeline runs from the intersection of 10th and A streets, and continues south along A Street under Highway 4, where it turns into Lone Tree Way. It ends at the intersection of Lone Tree Way and Worrel St./Putnam Dr. From the southernmost section of the existing abandoned pipeline, the survey route continued from Lone Tree Way west onto Putnam Street. The route continued west along Putnam Street until reaching the intersection of Elizabeth Lane, where the route turned south. The lateral pipeline route terminates on the corner of Memorial Park at Robert Street and Elizabeth Lane.

The survey route then returned to Lone Tree Way and continued south until turning east onto Hillside Road. The route continued east until turning south on Sunset Lane, where it ended at the corner of Mountaire Park. The lateral survey areas off the main survey route along Lone Tree Way are residential areas. Consequently, there was 0% ground surface visibility due to surface streets, sidewalks and landscaping.

The survey route returned to Lone Tree Way and continued south. Several pieces of construction equipment (i.e. backhoe, graders) could be seen on the hillside along the east side of Lone Tree Way at Terranova Drive with recently laid foundation present.

The survey route continued past Davison St. and then turned northwest onto Clayburn Road. The route then turned left onto Longview Road and continued northwest, ending at the corner of Chichibu Park. Ground visibility in this area was 0% due to surface streets, sidewalks, landscaping, and the landscaping in Chichibu Park. The survey route returned to Lone Tree Way and continued south. The Contra Costa Canal crosses under Lone Tree Way just before the Sutter Delta Medical Center. The survey route continued south-southeast along Lone Tree Way, crossed James Donlon Blvd., to Golf Course Road, where it turned southwest and ended at the Lone Tree Golf Course.

No evidence of historic or prehistoric resources was observed along the projected Recycled Water Pipeline Expansion pathway during the survey. Because the majority of the survey route followed along residential areas, ground visibility throughout the entire area was poor.

Standards of Significance

Criteria of Significance

Both the CEQA and National Historic Preservation Act guidelines require that the proposed project take into consideration the potential effect of the undertaking on cultural resources. In accordance with CEQA and National Historic Preservation Act regulations and requirements, if the area has not been previously surveyed, or if surveyed and/or documented inadequately, a qualified archaeologist must then conduct a survey of all project components as a means of identifying and assessing the potential impact of the project on known or predicted cultural resources. Site significance criteria are those contained in CEQA Section 15064.5 and 36 CFR 60.4. Literature on the history, prehistory, and ethnography of the area was also consulted as an aid in developing the archaeological potential of the area.

CEQA contains provisions relative to preservation of historic (and prehistoric) cultural sites. Section 15126.4 of CEQA directs public agencies to "avoid damaging effects" on an archeological resource whenever feasible. If avoidance is not feasible, the importance of the site shall be evaluated to determine impact and develop mitigation measures.

CEQA Section 15064.5 states: Generally, a resource shall be considered by the lead agency to be "historically significant" if the resource meets the criteria for listing on the California Register of Historical Resources (Pub. Res. Code SS5024.1, Title 14 CCR, Section 4852) including the following:

> (A) Is associated with events that have made a significant contribution to the broad patterns of California's history and cultural heritage;
> (B) Is associated with the lives of persons important in our past;
> (C) Embodies the distinctive characteristics of a type, period, region, or method of construction, or represents the work of an important creative individual, or possesses high artistic values; or
> (D) Has yielded, or may be likely to yield, information important in prehistory or history.

Similarly, the National Register of Historic Places criteria (contained in 36 CFR 60.4) are used to evaluate resources when complying with NHPA Section 106. Those criteria state that eligible resources comprise:

> ...districts, sites, buildings, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and that (a) are associated with events that have made a significant contribution to the broad patterns of our history; or (b) that are associated with the lives of persons significant in our past; or (c) that embody the distinctive characteristics of a type, period, or method of construction, or that possess high artistic values, or that represent a significant distinguishable entity whose components may lack individual distinction; or (d) that have yielded or may be likely to yield, information important to history or prehistory.

The National Register of Historic Places was established to recognize resources associated with the country's history and heritage. Guidelines for nomination are based on significance in American history, architecture, archaeology, engineering, and culture is present in resources that possess integrity of location, design, setting, materials, workmanship, feeling, and association.

No historic resources are located within the proposed project area and no historic cultural resources were noted during the WSA survey. No historic resources are located within or within a ¼ mile of the project area.

The results of the record search and the visual inspection of the project location indicate that the likelihood of encountering cultural resources within the Antioch Recycled Water Project is low. As proposed, the construction of the new pipeline will have no impact to known/recorded archaeological resources. It is possible that heretofore unknown or unrecorded archaeological resources could be encountered during subsurface construction that penetrates native soils. Previously undiscovered cultural resources may be unearthed during construction on the project, but **Measure CR-1** would reduce such possible impacts to archaeological resources to a less-than-significant level.

Although unlikely, construction excavation could yield prehistoric human remains. **Measure CR-2** would reduce this impact to a less-than-significant level.

Mitigation Measures

Measure CR-1: Halt construction if archaeological resources uncovered.

Although no cultural resources were observed on the surface during the archaeological survey, culturally-related sites and objects may yet exist in the project area, but may be buried by fill or natural sediments. In accordance

with CEQA Section 15064.5, if cultural resources are encountered during project-related excavations, construction shall be halted or diverted to allow an archaeologist an opportunity to assess the resource. Prehistoric archaeological site indicators include chipped chert and obsidian tools and tool manufacturing waste flakes, grinding implements such as mortars and pestles, and darkened soil that contains dietary debris such as bone fragments and shellfish remains. Historic site indicators include, but are not limited to, ceramics, glass, wood, bone, and metal remains.

Measure CR-2: Halt construction if human remains uncovered.

Section 7050.5(b) of the California Health and Safety code will be implemented in the event that human remains, or possible human remains, are located project-related construction excavation. It states:

> In the event of discovery or recognition of any human remains in any location other than a dedicated cemetery, there shall be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent remains until the coroner of the county in which the human remains are discovered has determined, in accordance with Chapter 10 (commencing with Section 27460) of Part 3 of Division 2 of Title 3 of the Government Code, that the remains are not subject to the provisions of Section 27492 of the Government Code or any other related provisions of law concerning investigation of the circumstances, manner and cause of death, and the recommendations concerning treatment and disposition of the human remains have been made to the person responsible for the excavation, or to his or her authorized representative, in the manner provided in Section 5097.98 of the Public Resources Code.

The County Coroner, upon recognizing the remains as being of Native American origin, is responsible to contact the Native American Heritage Commission within 24 hours. The Commission has various powers and duties to provide for the ultimate disposition of any Native American remains, as does the assigned Most Likely Descendant. Sections 5097.98 and 5097.99 of the Public Resources Code also call for "…protection of inadvertent destruction." To achieve this goal, it is recommended that the construction personnel on the project be instructed as to the potential for discovery of cultural or human remains, and both the need for proper and timely reporting of such finds, and the consequences of failure thereof.

Implementation of the above mitigation measure would reduce potential project impacts to cultural resources to a less-than-significant level.

2.6 GEOLOGY AND SOILS

Would the Project:	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
a) Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:	☐	☐	☒	☐

i) 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.	☐	☐	☐	☒
ii) Strong seismic ground shaking?	☐	☐	☒	☐
iii) Seismic-related ground failure, including liquefaction?	☐	☐	☐	☒
iv) Landslides?	☐	☐	☐	☒
b) Result in substantial soil erosion or the loss of topsoil?	☐	☐	☒	☐
c) Be located on 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?	☐	☒	☐	☐
d) Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	☐	☐	☒	☐
e) Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems where sewers are not available for the disposal of wastewater?	☐	☐	☐	☒

Discussion

a) Eastern Contra Costa County is located in a very seismically active zone. There are no known active faults with the City's Planning Area, however there are several major faults located within a few miles (Antioch 2003). Historically active faults in Contra Costa County include the Hayward, Calaveras, Concord-Green Valley, and Marsh Creek-Greenville faults. The San Andreas Fault, a large active fault, is located approximately 45 miles west of the City.

The project area could experience very strong to violent shaking in the event of a major earthquake along these faults. The City is expected to experience ground shaking of an intensity associated with nonstructural damage.

The topography of Antioch slopes upward in a southwesterly direction from an approximate elevation of 5 feet above sea level along the San Joaquin River to an approximate elevation of 1500 feet in the Mt. Diablo foothills to the southwest[2]. The low-lying areas along the San Joaquin River are underlain mostly by clay loam soils. The southeastern portion of the City is underlain with mostly clay soil, as

[2] Contra Costa Watershed Forum. Contra Costa County Watershed Map. http://www.cocowaterweb.org/cocowtrshdmp.pdf.

well as some alkali clays and loams. The higher elevation areas in the southwestern portion of the City are underlain by Altamont-Fontana Complex soils[3].

The proposed Project would not expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death since the proposed Project does not include construction of habitable structures. Although the project area is within a region of high seismic activity, the project area is not designated as an Alquist-Priolo "Earthquake Fault Zone" (CGS, 2006).

The soils in the project area have a very low to moderate potential for liquefaction, except the area directly adjacent to the San Joaquin River which has a high to very high potential for liquefaction (Antioch, 2003). The pipeline and associated structures will not be located near the creek areas.

Landslide hazards exist primarily in the hilly portions of the southwestern part of Antioch's Planning Area. The golf course borders these upland areas. None of the landslide maps (Nilsen, 1971) indicate known landslides or geomorphic features typical of recent landsliding within the project area. Therefore, landslide potential is considered low due to the flat terrain of the Project area.

b) Construction activities involving soil disturbance, such as excavation, stockpiling, and grading could result in increased erosion and sedimentation to surface waters. However, substantial erosion is considered unlikely because of the relatively small scale of earthmoving activities necessary for Project implementation and because of implementation of **Measure WQ-1**.

c,d) The project proposes a pump station and a storage reservoir (below ground storage tank or surface pond). A geotechnical review should be completed for the siting of the storage reservoir to determine that no geologic or geotechnical "fatal flaws" exist. A pump station consisting of a CMU building with a steel roof containing sky lights would be constructed adjacent to the tank. These new structures, would not affect the stability of the geologic unit or soil or result in on-or off-site landslide, lateral spreading, subsidence, liquefaction, or collapse. There are no habitable structures proposed for the Project; therefore there is no risk to human life or property. With proper engineering, the construction and operation of the Project is not expected to result in any significant adverse short- or long-term impacts related to geology, soils or seismicity. The pipeline alignment and structures near the golf course are located within soils with a medium to high range for potential expansion (based on soils information in the Antioch General Plan) as defined by the UBC Table 18-I-B – Classification of Expansive Soil (UBC, 1997). A geotechnical review required as part of **Measure GS-1** would determine whether expansive soils would impact the proposed storage reservoir. However, no habitable structures will be built as a part of this project, and impacts to the storage reservoir resulting from expansive soils (which could potentially result in leaks or release of water) would only affect the golf course fairway areas immediately surrounding the reservoir. Therefore there is no substantial risk to life or property as a result of expansive soils.

e) No septic tanks are proposed for the Project; therefore, no impacts are anticipated.

Mitigation Measure

Measure GS-1: Conduct Geotechnical Review of the location chosen for the storage reservoir. The City shall conduct geotechnical review of the final proposed storage reservoir location before construction activities on the reservoir begin to determine geotechnical feasibility of the chosen site.

[3] East Contra Costa County Habitat Conservation Plan Association. *Draft East Contra Costa County Habitat Conservation Plan and Natural Community Conservation Plan.* June 2005. http://www.cocohcp.org/hcp_nccp_content/hcp_nccp/1-HCP%20Title%20and%20Verso%205-27-05.pdf.

Implementation of the above mitigation measure would reduce potential project impacts to a less-than-significant level.

2.7 HAZARDS AND HAZARDOUS MATERIALS

	Potentially Significant Impact	*Less Than Significant With Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
Would the Project:				
a) Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	☐	☐	☒	☐
b) 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?	☐	☒	☐	☐
c) Emit hazardous emissions or handle hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	☐	☐	☒	☐
d) 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?	☐	☐	☐	☒
e) 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?	☐	☐	☐	☒
f) 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?	☐	☐	☐	☒
g) Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	☐	☐	☐	☒
h) 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

a) No hazardous materials would be used routinely during Project operation aside from the potential need for copper sulfate application at the surface pond (one of two storage reservoir options), and there are no known hazardous material contaminated sites in the immediate Project area. No changes to treatment operations at the RWF would occur as part of the Project.

b) Construction activities would involve the use of certain potentially hazardous materials such as paints, fuels, oils, and solvents. These materials would generally be used for excavation equipment, generators, and other construction equipment, and would be contained within vessels engineered for safe storage. Spills during onsite fueling of equipment or an upset condition (e.g., puncture of a fuel tank through operator error) could result in a release of fuel or oils into the environment.

Storage of large quantities of these materials at the construction site is not anticipated; however, the uncontrolled release of these materials would be a potentially significant impact. **Measure HM-1** would reduce impacts from hazardous materials release to a less-than-significant level. **Measure HM-1** requires that a Hazardous Materials Management/Spill Prevention Plan (Plan) be developed and given to all contractors working on the Project. The purpose of the Plan is to provide on-site construction personnel, environmental compliance monitors, and regulatory agencies with a detailed description of hazardous materials management, spill prevention, and spill response/cleanup measures associated with the construction of Project elements.

c) Residential neighborhoods and the following schools are located within ¼ mile of the pipeline alignment: Sutter Elementary, Hilltop Christian, Holy Rosary, Antioch Unified, Park Junior High, Antioch Junior High, and John Muir. As discussed above, no hazardous materials would be used for the routine operation of the project. Any hazardous materials used during construction would be limited and mitigated to a less-than-significant amount.

d) The California Department of Toxic Substances Control (DTSC) has identified two sites within Antioch where surface and/or sub-surface contamination has occurred because of the release of hazardous materials on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5, which is DTSC's Hazardous Waste and Substances Site List (Cortese List; DTSC, 2003). These sites include the former Hickmott Cannery Site at the intersection of 6th and A Streets, which is approximately 0.2 miles from the proposed project alignment, and the GBF/Pittsburg Dump at the intersection of Somersville Road and James Donlon Boulevard, approximately 2 miles from the proposed project alignment. The City shall require contractors to prepare and submit a Health and Safety Plan, with specific provisions to protect both workers and the public during construction (see **Measure HM-1**). If contamination is encountered, the implementation of **Measure HM-1**,would reduce potential impacts to a less-than-significant level.

e,f) No airports or airstrips are located within the project vicinity. Therefore, the Project would not interfere with any airport operations.

g) The project would not be expected to interfere with an emergency response plan or emergency evacuation plan. Please also refer to the Traffic section for a discussion of emergency access during construction.

h) The proposed Project is located within an urban setting. The project would not increase wildfire potential, nor expose people to wildfire risks; therefore, no impacts are anticipated.

Mitigation Measures

Measure HM-1: Prepare a Health and Safety Plan, and Hazardous Materials Management/Spill Prevention Plan. The City shall require the contractor to prepare a Health and Safety Plan that includes a Project-specific contingency plan for hazardous materials and waste operations before construction activities could begin. The Health and Safety Plan shall be applicable to all construction activities, and shall establish policies and procedures to protect workers and public from potential hazards. The plan shall be prepared according to federal and California OSHA regulations for hazardous materials Health and Safety Plans.

Elements of the plan shall include, but not be limited to, the following:

- A discussion of hazardous materials management, including delineation of hazardous material storage areas, access and egress routes, waterways, emergency assembly areas, temporary hazardous waste storage areas
- Notification and documentation procedures
- Spill control and countermeasures, including employee spill prevention/response training
- Inclusion of a discussion of potential contaminants encountered from neighboring sites (see DTSC Cortese List)

Implementation of this measure would reduce potential impacts to a less-than-significant level.

2.8 HYDROLOGY AND WATER QUALITY

	Potentially Significant Impact	*Less Than Significant With Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
Would the Project:				
a) Violate any water quality standards or waste discharge requirements?	☐	☒	☐	☐
b) 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)?	☐	☐	☐	☒
c) 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 of siltation on- or off-site?	☐	☐	☐	☒
d) 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?	☐	☐	☐	☒

e) 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?	☐	☐	☐	☒
f) Otherwise substantially degrade water quality? (erosion potential)	☐	☒	☐	☐
g) 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?	☐	☐	☐	☒
h) Place within a 100-year flood hazard area structures which would impede or redirect flood flows?	☐	☐	☐	☒
i) 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?	☐	☐	☐	☒
j) Inundation of seiche, tsunami, or mudflow?	☐	☐	☐	☒

Discussion

During construction, standard erosion control techniques should be implemented to reduce any impacts to less than significant (**Measure WQ-1**). Operation of the Project would be conducted in accordance with all applicable federal and state requirements. Use of recycled water that this Project hopes to accomplish would reduce demand placed upon the Delta, so potential impacts to surface waters are considered beneficial. Project implementation would not affect any Wild and Scenic River designated waterways. Installation of the proposed pipeline would not substantially alter the drainage patterns in the Project vicinity because of the relatively small amount of impermeable surfaces that would be installed. No impacts on downstream flood conditions are anticipated.

a) Operation of the proposed water recycling Project would be conducted in accordance with all applicable federal and state requirements. The major federal legislation governing the water quality aspects of the proposed Project is the Clean Water Act, as amended by the Water Quality Act of 1987. The State of California's Porter-Cologne Water Quality Act (Division 7 of the California Water Code) provides the basis for water quality regulation within California. The State Water Resources Control Board (SWRCB) administers water rights, water pollution control, and water quality functions throughout the state, while the RWQCB conducts planning, permitting, and enforcement activities. The Porter-Cologne Water Quality Control Act designates the SWRCB responsible for formulating and adopting state policy for water reclamation, while the California Department of Health Services (DHS) is responsible for establishing uniform statewide reclamation criteria to ensure that the use of recycled water would not be detrimental to public health.

There are no federal standards governing wastewater reclamation and reuse in the United States, although the U.S. Environmental Protection Agency has sponsored the preparation of *Guidelines for Water Reuse* (CDM, 2004). Many states, including California, have developed wastewater reclamation regulations. In all cases, the regulations have been established with the objective of protecting public health and allowing for the safe use of recycled water. The DHS established water

quality criteria, treatment process requirements, and treatment reliability criteria for reclamation operations, which are set forth in Title 22, Division 4, Chapter 3, of the *California Code of Regulations (CCR) Water Recycling Criteria.* The RWQCB has responsibility for reviewing proposed recycled water projects, and for issuing water recycling requirements through the RWQCB's permitting process. DHS has the responsibility for reviewing proposed water recycling projects, and for providing comments and/or recommendations to the RWQCB.

The existing *Water Recycling Criteria* address treatment requirements for three main types of recycled water uses: Landscape Irrigation, Recreational Impoundments, and Industrial Uses. The treatment requirements are based on the expected degree of human contact with recycled water under each type of use. Treatment requirements are expressed as treatment process requirements (e.g., bio-oxidation, coagulation) as well as performance standards (e.g., disinfection standards and contaminant reduction).

The existing Title 22 standards are among the most stringent standards in the world for public health protection, and are about 100 times more stringent than comparable standards established by the World Health Organization. Since the adoption of Title 22 in 1978, the use of recycled water for non-potable (not fit to drink) uses has expanded throughout the state and is projected to continue to grow over the next several decades. Under Title 22, the DDSD's tertiary disinfected recycled water has previously qualified for the highest allowable uses, including landscape irrigation with high public contact. To be used as a source supply for this designation, the recycled water shall be at all times adequately oxidized, coagulated, clarified, filtered, and disinfected water; this process requirement constitutes the most stringent treatment practicable. To be considered adequately disinfected, the median number of coliform organisms in the recycled water may not exceed a Most Probable Number (MPN) of 2.2 per 100 milliliters over a seven-day period.

The DHS has also produced *Regulations and Guidance for Recycled Water*, which apply to recycled water use areas receiving water that meets Title 22 *Water Recycling Criteria*. The guidelines focus on application and management specifications for various recycled water uses, including general use requirements, landscape irrigation requirements, impoundment requirements, and agricultural reuse area guidelines. (DHS, 2004) General requirements include:

- Posting signs to inform the public in areas where recycled water is in use
- Confining recycled water to authorized use areas
- Use of purple recycled water distribution and transmission system piping to indicate that it contains recycled water
- Other requirements designed to ensure that recycled water use does not adversely affect public health

Specific requirements established by Title 22 that are applicable to the proposed Project are contained in Article 4, Section 60310 – *Use Area Requirements*. This section restricts irrigation of disinfected tertiary recycled water within 50 feet of any domestic water supply well, and prohibits the over-application or any direct runoff of applied recycled water. Project implementation would not be anticipated to affect water quality of surface waters, as golf course operators would be required to comply with Title 22 requirements regarding the prohibition of direct runoff to adjacent waterways. Because the project will adhere to **Measures WQ-1 and WQ-2**, the project will not violate water quality standards or waste discharge requirements. Lone Tree Golf Course is located adjacent to the Antioch Municipal Reservoir. Currently, runoff from the golf course is directed to three sumps located on the course. These sumps are connected to the reservoir by a conduit in each location that is open on the golf course end, and gated at the reservoir end. The gates are left open in winter and closed during the summer months beginning around April. With implementation of recycled water usage at the golf course, the conduits to the

reservoir should be permanently closed and blocked off or removed so runoff from the course does not enter the reservoir. The DDSD WWTP will provide additional operational guidelines and work with the end users to implement the guidelines to further reduce overspraying and ponding. DDSD currently has a program in place for recycled water use in compliance with their General Water Reuse Order, Board Order 96-011 (DDSD, 2000).

Additionally, recycled water used for irrigation would be of very high quality, with estimated total dissolved solids (TDS) of 800 mg/l. Additionally, nitrates in the recycled water are readily taken up by plants, although over-application of recycled water could result in the percolation of recycled water through the root zone and into the soil column.

Recycled water could potentially contain trace amounts of pharmaceutical compounds such as antibiotics, steroids, antidepressants, painkillers, estrogen and other hormones (endocrine disruptors). These compounds can pass through the body unmetabolized or partially metabolized, and can be present in domestic waste water in the range of a few parts per billion to a few parts per trillion. These and other compounds are collectively known within the water industry as “emerging contaminants”, and are not presently regulated at the federal, state or local level, although their environmental fate, transport, and health effects are the subject of on-going research.

Current treatment methods (including physical, chemical and biological processes) at the RWF remove a large percentage of pharmaceutical compounds and emerging contaminants from the wastewater. These compounds may be present in the recycled water but at minute concentrations, near or below current analytical detection limits. The presence of trace amounts of these compounds in the recycled water would not adversely affect landscape irrigation or any other proposed uses of the recycled water within the Project area. Natural processes, such as biological and photo-degradation at or below the ground surface would further break down residual contamination. Residual traces of chemicals, if any would not adversely affect groundwater quality. During irrigation, recycled water is applied to landscaped areas only to meet the evapotranspiration requirements, and would not produce surface runoff or percolate through the soil to groundwater. The use and application of recycled water would follow the *Regulations and Guidance for Recycled Water* (DHS, 2004); and the DDSD *Recycled Water Program Manual* (DDSD, 2000) through the Recycled Water Use Permit. It is unlikely that the minute quantities of these compounds, if present, could migrate through the soil and into groundwater during the wet weather season, and then subsequently migrate to the near-shore waters of the Delta. If this migration were to occur, the concentrations would be extremely low, if even detectable, and would likely be comparable to existing background levels in the bay water.

Recycled water typically contains plant nutrients, including nitrogen, phosphorus, and potassium, in higher concentrations than potable water. Nitrogen is an essential plant nutrient and a key component of fertilizer. Because the plants will use the nitrogen in the recycled water, less fertilizer will be needed. If landscape fertilization practices remain unchanged after the implementation of the proposed Recycled Water Project, landscaped areas may become stressed due to excess nutrients. Additionally, overwatering of landscaping can promote the migration of nitrates to groundwater; however, if the recycled water is applied at the agronomic rates of the plants, water will be taken up by the plants and would reduce this risk to a less than significant level. Implementation of **Measure WQ-2** addresses both over application of fertilizers and overwatering and would therefore reduce this impact to less than significant levels.

Adherence of the proposed project to all appropriate Title 22 requirements water quality mitigations (as stated in **Measure WQ-2**) would ensure that potential impacts to water quality or public health are reduced to a less-than-significant level.

b) The City receives raw water from the Sacramento-San Joaquin Delta through the San Joaquin River and the Contra Costa Canal. Both sources are conveyed to the Antioch Municipal Reservoir then to the City's water treatment plant for treatment, and then conveyed through the current distribution system to customers. The Lone Tree Golf Course currently irrigates with raw water pumped from the Antioch Municipal Reservoir which borders the course. Use of recycled water would alleviate a portion of the demand placed upon the Delta and the local aquifer thereby preserving the aquifer for other uses.

c,d,e) The proposed pipeline would be installed within existing roadways, and connected to an existing pipeline. Project implementation would not affect any Wild and Scenic River designated waterways. Ground cover or surface pavement above installed pipelines would be restored after construction is completed. Therefore, the installation of the proposed pipeline would not substantially alter the existing drainage patterns in the Project vicinity because of the relatively small amount of impermeable surfaces that would be installed (1/2 acre or less within the golf course) as a result of Project implementation and the restoration of disturbed landscape areas. Storm drainage conditions would not be expected to change. The proposed Project would thus have no impact on downstream flood conditions.

f) Without mitigation, earthmoving activities associated with pipeline construction could contribute to soil erosion and a subsequent degradation in water quality. Implementation of standard erosion control techniques during Project construction activities (see **Measure WQ-1**) would reduce the potential water quality impacts to a less-than-significant level. A formal SWPPP would be required for construction activities. The City would be required to apply for coverage under the SWRCB's General Construction NPDES Permit and develop a Project-specific SWPPP prior to commencement of any construction activities. Development of a SWPPP, implementation of BMPs, and compliance with SWRCB NPDES permit requirements would reduce potential impacts associated with sedimentation or pollutant concentrations in storm water runoff originating from construction activities. In addition, BMPs as required by **Measure WQ-1** for erosion control would avoid potential erosion and sedimentation to storm drains and/or receiving waters.

g,h,i) Only very small areas along the proposed pipeline are located within the 100-year floodplain of the San Joaquin-Sacramento River Delta as defined by the Federal Emergency Management Agency (FEMA) National Flood Insurance Program (NFIP). With project implementation, no adverse impacts relative to flooding are anticipated. This project does not propose homes or other structures to be constructed within the 100-year floodplain. Furthermore, the project does not include any new structures that would impede or redirect flood flows. Therefore, no impacts relative to flooding are anticipated.

j) The shoreline area of the City is subject to sieches, and tsunamis generated by earthquakes. However, projected wave height and tsunami run-up is expected to be small in the interior portion of San Francisco Bay and the Delta (Antioch, 2003). Being inland from the shoreline, the Project area is not subject to seiches, tsunamis, or mudflows, and no impacts are anticipated.

Mitigation Measures

Measure WQ-1: BMPs shall be implemented to minimize potential water quality impacts during and after construction, and a SWPPP shall be developed.
The City shall require contractors to implement BMPs for construction/post-construction activities as specified by the California Storm Water Best Management Practices Handbook (CSWQA, 2003) and/or the Manual of

Standards for Erosion and Sediment Control Measures (ABAG, 1995). The BMPs include measures guiding the management and operation of construction sites to control and minimize the potential contribution of pollutants to storm runoff from these areas. These measures address procedures for controlling erosion and sedimentation and managing all aspects of the construction process to ensure control of potential water pollution sources. Erosion and sedimentation control practices typically include:

- Limiting construction to the dry-weather months
- Installation of silt fencing and/or straw wattle
- Soil stabilization
- Revegetate graded and fill areas with a standard erosion control mix (approved by a native habitat Restorationist)
- Runoff control to limit increases in sediment in storm water runoff (e.g., straw bales, silt fences, check dams, geofabrics, drainage swales, and sand bag dikes)
- Equipment maintenance shall be performed at least 100 feet from all water bodies and wetlands, with measures in place to contain spills of diesel fuel, gasoline, or other petroleum products. Drainage from all work sites shall be directed away from any water bodies or wetlands where feasible.
- Prevent erosion of uplands and sedimentation of creeks, tributaries and ponds
- Minimize creek bank instability
- Prevent flooding
- Return grades to preconstructed contours

A SWPPP shall be developed incorporating standard BMPs such as those listed above for conserving water quality of receiving waters during construction. In addition, the Project shall comply with RWQCB regulations and standards to maintain and improve the quality of both surface water and groundwater reserves.

Measure WQ-2: The proposed project shall be designed and operated to minimize potential adverse impact on water quality.

As proposed, the Project shall provide high quality recycled water to users. All landscape irrigation systems shall be operated in accordance with the requirements of Title 22 of the California Code of Regulations and any reclamation permits issued by the California Regional Water Quality Control Board, San Francisco Bay Region. Reclamation permits typically require that irrigation rates match the evapotranspiration rates of the plants being irrigated, and that no irrigation occur within 50 feet of any domestic supply wells. There are no domestic supply wells located within 50 feet of the recommended irrigation sites served by the recycled water pipeline. Currently, runoff from the golf course is directed to three sumps located on the course. These sumps are connected to the reservoir by a conduit in each location that is open on the golf course end, and gated at the reservoir end. The gates are left open in winter and closed during the summer months beginning around April. With implementation of recycled water usage at the golf course, the conduits to the reservoir should be permanently closed and blocked off or removed so runoff from the course does not enter the reservoir.

As previously discussed in the Air Quality Section, given the extent to which the recycled water is treated, odors are not expected to be a problem at or near water use sites, at or near the storage tank (which would be enclosed), or in the event of a pipeline rupture. However, in the surface pond storage option at the golf course, the surface pond would be filled with water from the irrigation system have the potential for odor issues. Recycled water provides an increased nutrient load as compared to the current irrigation supply. Therefore, there is an increased risk for eutrophication and algae die-off in the ponds which may produce odors. Mitigation measures shall either include the addition of a circulation system, or chemical (i.e. copper sulfate) addition to mitigate eutrophication and thus odors.

Implementation of these measures would reduce potential impacts to water quality to a less-than significant level.

2.9 LAND USE AND PLANNING

Would the Project:	*Potentially Significant Impact*	*Less Than Significant With Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
a) Physically divide an established community?	☐	☐	☐	☒
b) 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?	☐	☐	☐	☒
c) Conflict with any applicable HCP or NCCP?	☐	☐	☐	☒

Discussion

a) The proposed Project would construct a recycled water pipeline in roadways, and at Lone Tree Golf Course; and would connect with existing recycled water pipelines and an abandoned pipeline. Construction in certain areas may require short-term delays since construction progresses at an approximate rate of 100 feet per day. Given the location of the pipeline installation, and the temporary affects of construction, the Project would not physically divide an established community.

b) The proposed Project would not conflict with any local land use policies or ordinances because the pipeline will be installed within existing roadways, and at Lone Tree Golf Course. The pipeline project area is designated as residential, with areas of commercial/industrial, and open space.

c) No conflicts with recovery plans or HCPs would be associated with Project implementation. The proposed Project is limited to installation of a water recycling pipeline within existing roadways and golf course areas. No conflicts with recovery plans or habitat conservation plans would be associated with Project implementation.

Mitigation Measure

None required or recommended.

2.10 MINERAL RESOURCES

	Potentially Significant	*Less Than Significant With Mitigation*	*Less Than Significant*	*No*

	Impact	Incorporation	Impact	Impact
Would the Project:				
a) 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?	☐	☐	☐	☒
b) 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

a) The California Geological Survey (CGS), formerly known as the California Division of Mines and Geology, has classified lands within the San Francisco-Monterey Bay region into Mineral Resource Zones (MRZs) based on guidelines adopted by the California State Mining and Geology Board, as mandated by the Surface Mining and Reclamation Act (SMARA) of 1975. The CGS classified urbanized lands within the South San Francisco Bay Production-Consumption Region (which includes Contra Costa County) according to the presence or absence of significant sand, gravel, or stone deposits that are suitable as sources of aggregate. Areas classified as MRZ-1 are areas where adequate information indicates that no significant mineral deposits are present, or where it is judged that little or no likelihood exists for their presence. MRZ-2 areas are those where adequate information indicates that significant deposits are present. Areas classified as MRZ-3 contain mineral deposits, but their significance cannot be evaluated from available data. Areas are classified as MRZ-4 where available information is inadequate for assignment to any other MRZ category.

The entire project area is within an MRZ-1 zone with the exception of a small segment of pipeline within the roadway along Lone Tree Way, which is within an MRZ-3 zone (Stinson et al. 1983). The pipeline will be in existing roadways and a golf course area; and would not result in the loss of a known mineral resource. Therefore, no adverse impacts are expected and no mitigation measures recommended.

Mitigation Measure

None required or recommended.

2.11 NOISE

	Potentially Significant Impact	Less Than Significant With Mitigation Incorporation	Less Than Significant Impact	No Impact
Would the Project result in:				
a) 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?	☐	☒	☐	☐

b) Exposure of persons to or generation of excessive groundborne vibration or groundborne noise levels?	☐	☒	☐	☐
c) A substantial permanent increase in ambient noise levels in the Project vicinity above levels existing without the Project?	☐	☐	☐	☒
d) A substantial temporary or periodic increase in ambient noise levels in the Project vicinity above levels existing without the Project?	☐	☒	☐	☐
e) For a project located within an airport land use plan 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?	☐	☐	☐	☒
f) For a project within the vicinity of a private airstrip, would the Project expose people residing or working in the Project area to excessive noise levels?	☐	☐	☐	☒

Discussion

a, b, d) Construction noise would result from operation of equipment and vehicles, including heavy trucks, a crane and concrete trucks. Peak noise levels generated by construction would be typically less than 60 dBA within 50 feet, although occasional noise levels may reach 80 dBA within 50 feet, for short periods of time. Construction is estimated to take approximately 11 months and would move along the alignment as the pipe is installed at approximately 100 feet per day. Therefore, construction noise in any one area of the pipeline would be less than one month.

The increase in ambient noise levels would have a temporary impact on nearby land uses. There are several residences, and one school (Sutter Elementary) in the immediate Project area that would be particularly sensitive to construction noise disturbance. Without mitigation, the temporary and intermittent noise levels from construction activities could constitute a significant impact. Implementation of **Measure N-1** would reduce potential noise impacts associated with construction activities to a less-than-significant level. These measures include limitation of construction hours and the use of special construction equipment.

c) The Project would not result in a permanent increase in ambient noise levels in the Project vicinity above existing levels. There is currently a pump station operating to draw raw water from the reservoir for use. This pump station is fenced only and therefore produces more noise than the proposed pump station that would be housed within a building.

e,f) The Project would not be located near an airport, airstrip, or an airport land use plan; and would not expose people to excessive noise levels.

Mitigation Measures

Measure N-1: Construction noise measures:

To reduce daytime noise impacts due to construction, the City shall require that construction contractors muffle or control noise from construction equipment through implementation of the following measures:

- Daytime construction activities in the City shall be limited to between 7:00 a.m. and 6:00 p.m. Monday through Friday, or between 8:00 a.m. and 5:00 p.m. Monday through Friday within 300 feet of occupied dwellings, as per Section 5-17.05 of the Antioch Code of Ordinances. Daytime construction activities in the City shall be limited to between 9:00 a.m. and 5:00 p.m. on weekends and holidays (Antioch, 1996).
- Equipment and trucks used for construction should utilize the best available noise control techniques (e.g., improved mufflers, equipment redesign, use of intake silencers, ducts, engine enclosures and acoustically-attenuating shields and shrouds, and installation of blankets around the Project site, wherever feasible and necessary). Construction vehicles should be properly maintained and equipped with exhaust mufflers that meet state standards.
- Impact tools (e.g., jackhammers and pavement breakers) used for construction shall be hydraulically or electrically powered wherever possible to avoid noise associated with compressed air exhaust from pneumatically powered tools. However, where use of pneumatic tools is unavoidable, an exhaust muffler on the compressed air exhaust shall be used; this muffler can lower noise levels from the exhaust by up to about 10dBA. External jackets on the tools themselves should be used where feasible, and this could achieve a reduction of 5dBA. Quieter procedures shall be used such as drilling rather than impact equipment whenever feasible; and
- Stationary noise sources shall be located as far from sensitive receptors as possible. If they must be located near sensitive receptors, they shall be muffled to the extent feasible and enclosed within temporary sheds.

Implementation of these measures would reduce potential noise impacts to a less-than-significant level.

2.12 POPULATION AND HOUSING

	Potentially Significant Impact	*Less Than Significant With Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
Would the Project:				
a) 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)?	☐	☐	☐	☒
b) Displace substantial numbers of existing housing, necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒
c) Displace substantial numbers of people necessitating the construction of replacement housing elsewhere?	☐	☐	☐	☒

Discussion

a) Project implementation would result in improved water resources management, by reducing existing irrigation demands on potable water. Because the irrigation demands that would be met with recycled water reduce the City's intake from the Delta (the source of raw water), the implementation of an extended recycled water distribution system does not represent a new potable water supply that can be dedicated to other uses. As such, Project implementation would not provide additional water supplies that would support growth beyond that envisioned under the City's General Plan. Therefore, no impacts related to growth inducement or population and housing would be associated with the proposed Project.

b, c) The proposed Project would not displace existing housing or people as existing residences would not be affected; therefore, this Project would not necessitate the construction of replacement housing elsewhere.

Mitigation Measure

None required or recommended.

2.13 PUBLIC SERVICES

	Potentially Significant Impact	*Less Than Significant With Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
a) 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:				
Fire protection?	☐	☐	☐	☒
Police protection?	☐	☐	☐	☒
Schools?	☐	☐	☐	☒
Parks?	☐	☐	☐	☒
Other public facilities?	☐	☐	☐	☒

Discussion

a) The proposed project would not involve alteration of government facilities, nor would it require new public services. In addition, the Project would not induce growth that would require the creation of increased public services. The Project would not expand capacity at the water treatment plant, or potable supply. Therefore, no physical or environmental impacts associated with the provision of new or altered governmental facilities would result.

Mitigation Measure

None required or recommended.

2.14 RECREATION

		Potentially Significant Impact	*Less Than Significant With Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
a)	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?	☐	☐	☐	☒
b)	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

a, b) The proposed project would not conflict with any existing or proposed recreational uses within or adjacent to the project area. Portions of the Project area are located within Lone Tree Golf Course, and other city parks including Fairview Park, Antioch Little League, Babe Ruth Baseball Fields, Memorial Park, Mountaire Park, Chichibu Park, and Antioch City Park (see **Figure 1-2**). The pipeline will be installed adjacent to the parks in the road right-of-way, therefore the Project will only temporarily affect access to the parks. There will be short term impacts to golf course users during the construction of the storage facility and pump station at the golf course. Impacts include construction noise and construction vehicle traffic which will use the existing golf cart path to access the tank area. The golf course will not be closed due to construction activities. Long-term impacts depend on the type of facility constructed (underground tank or surface reservoir) and could potentially include impacts to fairway and tee layouts. Implementation of **Measure R-1** would reduce potential impacts associated with construction activities to a less-than-significant level. No new recreational facilities will be built due to construction of the proposed Project, and implementation of the proposed Project would not be expected to increase use of recreational facilities.

Mitigation Measures

Measure R-1: Coordination with recreation facilities is required to minimize disruption.
The City shall be required to coordinate with the City's Traffic Division, the Recreation Department, and Lone Tree Golf Course in order to minimize disturbance from construction. Appropriate signage, pedestrian/user management, and detours shall be provided by the contractor, and a haul route shall be delineated. The City shall also coordinate with Lone Tree Golf Course on the appropriate siting of facilities, such as the storage reservoir and pump station.

Implementation of these measures would reduce potential recreation impacts to a less-than-significant level.

2.15 TRANSPORTATION/TRAFFIC

	Potentially Significant	*Less Than Significant With Mitigation*	*Less Than Significant*	*No*

	Impact	Incorporation	Impact	Impact
Would the Project:				
a) Cause an increase in traffic, which is substantial in relation to the existing traffic load and capacity of the street system (i.e., result in a substantial increase in either the number of vehicle trips, the volume-to-capacity ratio on roads, or congestion at intersections)?	☐	☒	☐	☐
b) Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways?	☐	☐	☒	☐
c) 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?	☐	☐	☐	☒
d) Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	☐	☒	☐	☐
e) Result in inadequate emergency access?	☐	☒	☐	☐
f) Result in inadequate parking capacity?	☐	☒	☐	☐
g) Conflict with adopted policies, plans, or programs supporting alternative transportation (e.g., bus turnouts, bicycle racks)?	☐	☒	☐	☐

Discussion

Pipeline installation activities would temporarily disrupt transportation and circulation patterns in the vicinity of the Project. Traffic analysis found that the Project would significantly affect roadway segments and intersections on all pipeline segments if the construction zone were to reduce the travel width during peak traffic periods. Potential conflicts along the major pipeline route as well as along the laterals could occur between construction traffic and bicyclists and pedestrians. Temporary effects on the potential for accidents, emergency access, displacement of on-street parking, and disruptions to transit service could also occur. All traffic impacts would be mitigated to less-than-significant by **Measure T-1**.

a,b) As discussed in Chapter 1, the City proposes the installation of a new underground pipeline that would distribute recycled water to the Lone Tree Golf Course, and various parks, and eventually schools within the city limits. The pipeline would be installed within roadway rights-of-way and the golf course.

Traffic-generating construction activities related to pipeline installation would consist of the daily arrival and departure of construction workers to the work site; trucks hauling equipment and materials to the work site; and the hauling of excavated spoils from, and import of new fill to, each work site. Construction equipment used for pipeline construction would include backhoes, front-end loaders, dump trucks, flatbed delivery trucks, cranes, compactors, concrete trucks, and paving equipment.

As discussed in the Project Description (Chapter 1), the trench size for open-cut installation within paved roadways would be approximately four feet wide, with active work areas of about eight feet on one side of the trench and 10 to 16 feet on the other side for access by trucks and loaders. This would

result in a construction corridor width of approximately 30 feet. It is expected that open trench construction within paved roadways would proceed at the rate of approximately 100 feet per day, with an overall work zone of 300 to 400 feet. Consequently, impacts would be relatively brief at any one location along the pipeline alignment, at most a few days.

The proposed pipeline alignment would follow within and/or across several roadways. The exact placement of the pipeline in the roadways is not known at this time, but regardless of where it would be installed, pipeline installation activities would temporarily disrupt existing transportation and circulation patterns in the vicinity. Impacts would include direct disruption of traffic flows and street operations. Lane blockages during pipe installation would result in a reduction in travel lanes and on-street parking. Pipe installation work within and/or across high traffic volume arterials could significantly affect traffic flow and operations at these locations.

Traffic analysis of the proposed pipeline alignment found that the Project would significantly affect roadway segments and intersections on all pipeline segments if the construction zone were to reduce the travel width during peak traffic periods. The impacts during peak traffic periods would be significant because they would result in either roadway or intersection levels of service that would be unacceptable (*i.e.*, worse than LOS D). The decrease in traffic volumes outside the peak periods typically, but not universally, is sufficient to allow the reduced number of travel lanes to accommodate the traffic flow without significant delays. Delays also would be experienced by drivers during off-peak hours, but because of the lower volume, fewer people would be affected by the delays during those periods.

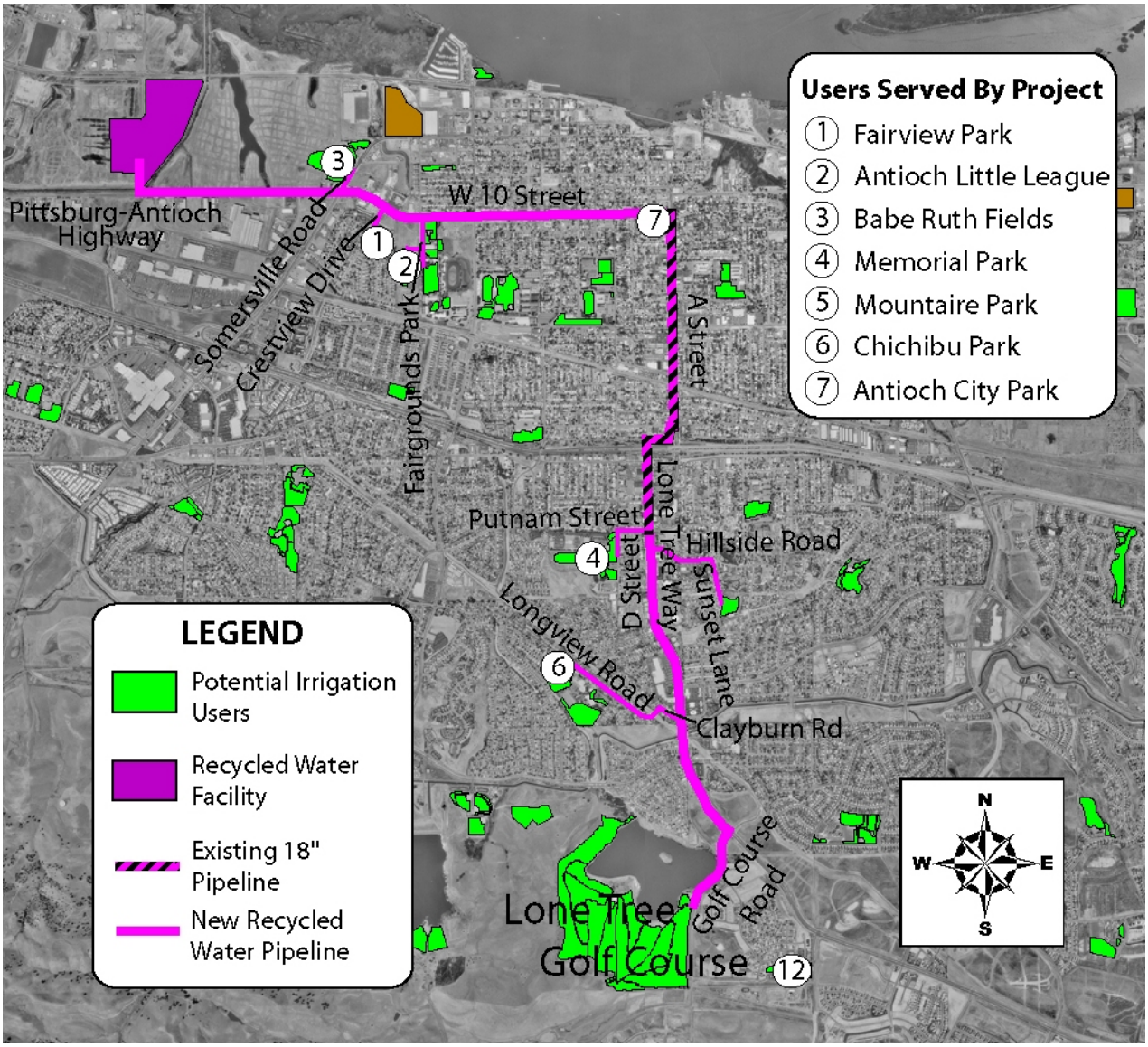

Figure 2-1. Proposed Pipeline Alignment and Users

Pittsburg-Antioch Highway (between the DDSD facility and Somersville Road) is a two-lane roadway with a center left-turn lane, a bike lane, and right-turn lanes. The proposed construction zone width of about 30 feet could be accommodated in the approximately 60 foot paved cross-section. The configuration of the road during construction would eliminate the center left-turn lane in order to maintain two-way traffic flow; and could temporarily eliminate the right-turn lane and bike lane depending on the location of pipeline installation. A city bus line that travels Pittsburg-Antioch Highway (Line 388) would be temporarily disrupted during construction. There is no on-street parking along the proposed pipeline alignment.

Somersville Road has four travel lanes, divided by a raised median approximately five feet in width, with five-foot sidewalks on both the east and west sides of the road. On this road, the pavement on each side of the median is approximately 30 to 40 feet wide. The proposed construction zone width of about 30 feet would generally occupy the pavement on one side of the median, with two-way traffic flow

accommodated on the opposite side of the median. The existing four through-traffic lanes (plus turn lanes) divided by the median would need to be transitioned to two through-traffic lanes on one side of the median. A city bus line that travels Somersville Road (Line 388) would be temporarily disrupted during construction. There is no on-street parking along the proposed pipeline alignment.

Crestview Drive is a two-lane roadway with parking on both sides, approximately five to 10 foot sidewalks on both the east and west sides of the street, and a raised center median for the first block adjacent to West 10th Street. The pipeline construction zone of 30 feet would leave approximately 10 to 30 feet of pavement for traffic flow. Details on traffic flow will be provided in the required Traffic Control Plan (**Measure T-1**). On-street parking in the construction zone would be eliminated during the installation period.

West 10th Street (between the Fairgrounds and A Street) is a two-lane road approximately 40 to 60 feet in width, with five foot sidewalks on both the north and south sides of the road. The proposed construction zone width of about 30 feet would generally occupy one lane, leaving one lane for traffic in both directions requiring traffic flagging coordination. Stops along a city bus line that travels West 10th Street (Line 388) will be temporarily disrupted during construction. On-street parking is available on both sides of the street which would be eliminated in the construction zone during the installation period. There are numerous commercial areas with entrances and exits that would be temporarily disrupted during the construction period, however access to these businesses would be maintained at all times and would be determined in the traffic control plan (**Measure T-1**).

Hillside Road is a one-way road (eastern direction) with parking on both sides, five foot sidewalks on both the north and south sides of the street, and a bike lane on the south side of the street. The pipeline construction zone of 30 feet would leave minimal pavement to provide one-way traffic flow, and on-street parking and the bike lane in the construction zone would be eliminated during the installation period. Details on traffic flow will be provided in the required Traffic Control Plan (**Measure T-1**).

Sunset Lane is a two-lane roadway with parking on both sides, and five foot sidewalks on both the north and south sides of the street. The pipeline construction zone of 30 feet would leave approximately 15 to 20 feet of pavement to provide two-way traffic flow. Details on traffic flow will be provided in the required Traffic Control Plan (**Measure T-1**). On-street parking in the construction zone would be eliminated during the installation period.

Putnam Street is a two-lane roadway with parking on both sides, and five foot sidewalks on both the north and south sides of the street. The pipeline construction zone of 30 feet would leave approximately 15 to 20 feet of pavement to provide two-way traffic flow. Details on traffic flow will be provided in the required Traffic Control Plan (**Measure T-1**). On-street parking in the construction zone would be eliminated during the installation period.

D Street is a two-lane roadway with a three foot sidewalk on the east side of the street. The pipeline construction zone of 30 feet would leave minimal pavement for traffic flow and may close off the one block of street which acts as an entrance to the parking lot for Memorial Park. There is no on-street parking along the proposed pipeline alignment; however construction along this street should be coordinated with the Park so as not to block access to the park.

Lone Tree Way (from Putnam Street to Clayburn Road) is a busy four-lane roadway with a raised median, several center left-turn lanes, ten foot width sidewalks on both the east and west sides of the road, and a bike lane in the project area. The proposed construction zone width of about 30 feet could be

accommodated in the approximately 60 to 100 foot paved cross-section. There is minimal on-street parking on both sides of the street which would be eliminated in the construction zone during the installation period. There are numerous commercial areas with entrances and exits that would be temporarily disrupted during the construction period, however access to these businesses would be maintained at all times and would be determined in the traffic control plan (**Measure T-1**). Stops along four city bus lines that travel Lone Tree Way (Lines 380, 388, 390, and 392) will be temporarily disrupted during construction.

Clayburn Road is a two-lane roadway with parking on both sides, and three foot sidewalks on both the north and south sides of the street. The pipeline construction zone of 30 feet would leave approximately 10 to 20 feet of pavement for traffic flow. Details on traffic flow will be provided in the required Traffic Control Plan (**Measure T-1**). On-street parking in the construction zone would be eliminated during the installation period.

Longview Road is a two-lane roadway with parking on both sides, and three foot sidewalks on both the north and south sides of the street. The pipeline construction zone of 30 feet would leave approximately 10 to 20 feet of pavement for traffic flow. Details on traffic flow will be provided in the required Traffic Control Plan (**Measure T-1**). On-street parking in the construction zone would be eliminated during the installation period.

Lone Tree Way (from Clayburn Road to Golf Course Road) is a busy four-lane roadway with a raised vegetated median, several center left-turn lanes, three to five foot width sidewalks on both the east and west sides of the road, and a bike lane in the project area. The proposed construction zone width of about 30 feet could be accommodated in the approximately 60 to 100 foot paved cross-section. There are numerous commercial areas with entrances and exits that would be temporarily disrupted during the construction period, however access to these businesses would be maintained at all times and would be determined in the traffic control plan (**Measure T-1**). Stops along four city bus lines that travel Lone Tree Way (Lines 380, 388, 390, and 392) will be temporarily disrupted during construction.

Golf Course Road is a busy two-lane roadway with heavily traveled three to ten foot width sidewalks on both the east and west sides of the road, a bike lane, several center left-turn lanes, and a raised median near the intersection with Lone Tree Way. The proposed construction zone width of about 30 feet could be accommodated in the approximately 60 to 70 foot paved cross-section.

Construction-generated traffic would be temporary and therefore would not result in any long-term degradation in operating conditions or level of service on any Project roadways. The primary impacts from the movement of construction trucks would include short-term and intermittent lessening of roadway capacities due to slower movements and larger turning radii of the trucks compared to passenger vehicles.

Pipeline installation could generate several off-site construction worker vehicle round trips and many off-site truck round trips (to remove excavated fill and import new fill) per day. These Project-generated trips would not be substantial relative to background traffic conditions on all roadways in the affected areas, and would fall within the daily fluctuations of traffic volumes for these roadways. Therefore, this short-term increase in vehicle trips would not significantly affect level of service and traffic flow on roadways.

Level of service standards for roadways that are part of county Congestion Management Program (CMP) networks are intended to regulate long-term traffic increases from operation of new

development, and do not apply to temporary construction projects. As such, the proposed Project would not exceed level-of-service standards established by the applicable Congestion Management Agency for designated CMP roadways.

Proposed hours of construction are Monday through Friday, 7:00 a.m. to 6:00 p.m. for most pipeline segments. Most Project-related hauling and deliveries would be dispersed throughout the day, thus lessening the effect on peak-hour traffic. Project truck traffic occurring weekdays during the hours of 7:00 to 9:00 a.m. and 4:00 to 6:00 p.m. would coincide with peak-period traffic, and therefore, would have the greatest potential to impede traffic flow.

As specified under **Measure T-1**, the City shall obtain all necessary local road encroachment permits prior to construction and would comply with all the applicable conditions of approval. As deemed necessary by the governing jurisdiction, the road encroachment permits will require the contractor to prepare a traffic control plan in accordance with professional engineering standards prior to construction. Specific requirements that may be included in the traffic control plan are identified under **Measure T-1**. Implementation of **Measure T-1** would ensure potential impacts associated with temporary increases in construction traffic would be mitigated to a less-than-significant level.

c) As discussed in Chapter 1, Project Description, the proposed Project would involve the construction of a buried pipeline not within proximity to an airport. Therefore, there would be no impact to air traffic patterns or increase in safety risks as a result of the proposed Project.

d) The Project would not change the configuration (alignment) of area roadways, and would not introduce types of vehicles that are not already traveling on area roads. However, heavy equipment operating adjacent to or within a road right-of-way would increase the risk of accidents. Construction-generated trucks on Project area roadways would interact with other vehicles. Potential conflicts also could occur between construction traffic and bicyclists and pedestrians.

Implementation of **Measure T-1** would require the contractor to prepare a traffic control plan in accordance with professional engineering standards prior to construction, including compliance with roadside safety protocols, so as to reduce the risk of accident. Specific requirements that may be included in the traffic control plan are identified under **Measure T-1**. Thus, implementation of **Measure T-1** would ensure temporary increases in the potential for accidents would be mitigated to a less-than-significant level.

e) The proposed Project would have temporary effects on traffic flow, particularly with routes within road rights of way. Pipeline installation within or across streets and temporary reduction in travel lanes could result in delays for emergency vehicle access in the vicinity of the work site.

Implementation of **Measure T-1** would require the construction contractor to establish methods for maintaining traffic flow in the Project vicinity and minimizing disruption to emergency vehicle access to land uses along the alignment. Specific requirements that may be included in the traffic control plan are identified under **Measure T-1**. Implementation of **Measure T-1** would ensure potential impacts associated with temporary effects on emergency access would be mitigated to a less-than-significant level.

f) The proposed Project would create limited new, temporary parking demand for construction workers and construction vehicles as the crew moves along the installation alignment. As discussed, the Project would not generate a substantial number of construction workers along the alignment; therefore, the

number of parking spaces required would not be substantial. Construction along the alignment would also temporarily displace existing on-street parking on Clayburn Road, Longview Road, Lone Tree Way, Putnam Street, Hillside Road, Sunset Lane, W 10th Street, and Crestview Drive. However, given the proposed rate of new pipe installation, impacts to on-street parking would be relatively brief at any one location along the alignment.

Implementation of **Measure T-1** would require the construction contractor to establish methods for minimizing construction effects on parking. Specific requirements that may be included in the traffic control plan are identified under **Measure T-1**. Implementation of **Measure T-1** would ensure potential impacts associated with potential temporary displacement of on-street parking would be mitigated to a less than significant level.

g) The proposed Project would have no lasting impact on demand for alternative transportation or on alternative transportation facilities. However, pipeline construction could disrupt access to bus stops and slow bus movements for Routes 380, 388, 390, and 392 operated by Tri Delta Transit; and stops may need to be temporarily relocated along theses routes (TDT, 2006). Route 380, which provides service between Pittsburg BART and the Antioch Hillcrest Park and Ride, operates on Lone Tree Way. Other routes disrupted along Lone Tree Way include 388 (local service loop to BART), 390 (local service loop to BART), 392 (travel route from BART to Brentwood Park and Ride). Routes disrupted along West 10th Street include Line 388 (BART to Hillcrest Park and Ride).

Implementation of **Measure T-1** would require the construction contractor to establish methods for minimizing construction effects on transit service. Specific requirements that may be included in the traffic control plan are identified under **Measure T-1**. Implementation of **Measure T-1** would ensure potential impacts associated with temporary disruptions to transit service would be mitigated to a less than significant level.

Mitigation Measure

Measure T-1: Obtain and comply with local road encroachment permits and prepare a Traffic Control Plan.

The City would obtain all necessary local road encroachment permits, prior to construction and would comply with all the applicable conditions of approval. As deemed necessary by the governing jurisdiction, the road encroachment permits will require the contractor to prepare a Traffic Control Plan in accordance with professional engineering standards prior to construction. The Traffic Control Plan could include the following requirements:

- Identify all roadway locations where special construction techniques (e.g., directional drilling or night construction) would be used to minimize impacts to traffic flow.
- Develop circulation and detour plans to minimize impacts to local street circulation. This may include the use of signing and flagging to guide vehicles through and/or around the construction zone.
- Schedule truck trips outside of peak morning and evening commute hours.
- Limit lane closures during peak hours to the extent possible.
- Use haul routes minimizing truck traffic on local roadways to the extent possible.
- Include detours for bicycles and pedestrians in all areas potentially affected by Project construction.
- Install traffic control devices as specified in the California Department of Transportation Manual of Traffic Controls for Construction and Maintenance Work Zones.
- Develop and implement access plans for highly sensitive land uses such as police and fire stations, transit stations, hospitals, schools, parks, and other recreational areas. The access plans would be

developed with the facility owner or administrator. To minimize disruption of emergency vehicle access, ask affected jurisdictions to identify detours, which will then be posted by the contractor. Notify in advance the facility owner or operator of the timing, location, and duration of construction activities and the locations of detours and lane closures. As stated in **R-1**, the City shall be required to coordinate with the City's Traffic Division, the Recreation Department, and Lone Tree Golf Course about pipeline routing in order to minimize disturbance from construction. Appropriate signage, pedestrian/user management, and detours shall be provided by the contractor.

- Store construction materials only in designated areas.
- Coordinate signage for temporarily eliminated on-street parking, with instructions including timing and duration, and nearby areas where parking is currently available.
- Coordinate with local transit agencies for temporary relocation of routes or bus stops in works zones, as necessary.

Implementation of these measures would reduce potential transporationn/traffic impacts to a less-than-significant level.

2.16 UTILITIES AND SERVICE SYSTEMS

	Potentially Significant Impact	*Less Than Significant With Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
Would the Project:				
a) Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	☐	☐	☐	☒
b) 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?	☐	☐	☐	☒
c) 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?	☐	☐	☐	☒
d) Have sufficient water supplies available to serve the Project from existing entitlements and resources, or are new or expanded entitlements needed?	☐	☐	☐	☒
e) Result in a 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?	☐	☐	☐	☒
f) Be served by a landfill with sufficient permitted capacity to accommodate the Project's solid waste disposal needs?	☐	☐	☐	☒

g) Comply with federal, state, and local statutes and regulations related to solid waste?	☐	☐	☐	☒

Discussion

a) The Project is limited to construction and operation of a recycled water pipeline. Pipeline operation and use of recycled water would be in accordance with Title 22 and the RWQCB-issued NPDES permit and Waste Discharge Requirements for use of recycled water which would detail any wastewater treatment and monitoring requirements held by DDSD. Therefore, Project implementation would not result in any exceedance of wastewater treatment requirements.

b) The proposed Project consists of distribution pipelines and would not create the need for additional facilities other than those proposed. The Project is proposed in order to provide for the beneficial use of recycled water within the City, and provides benefits to both wastewater and water resource management, through provision of a disposal mechanism and providing a reliable irrigation supply source.

c) Ground cover above distribution pipelines would be replaced to prior existing conditions. In addition, the use and amount of irrigation water would not increase due to change in source of water. Although there would be a slight increase in impervious surface area (1/2 acre or less), the proposed Project would not increase the need for additional off-site storm water drainage facilities.

d) The proposed Project does not require water entitlements; therefore, no impacts would occur.

e) The proposed Project is limited to distribution facilities, and would not generate wastewater for treatment. Therefore, no adverse effects on the DDSD wastewater treatment facility are anticipated.

f) Solid waste generation would be limited to construction activities, and would not affect available solid waste disposal capacity in the region. No long-term solid waste generation would be associated with the proposed Project.

g) The contractor would be required to comply with all pertinent regulations regarding the disposal of solid waste generated by construction activities; therefore, no impacts would occur.

Mitigation Measure

None required or recommended.

2.17 MANDATORY FINDINGS OF SIGNIFICANCE

	Potentially Significant Impact	*Less Than Significant With Mitigation Incorporation*	*Less Than Significant Impact*	*No Impact*
a) 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 or eliminate important examples of the major periods of California history or prehistory?	☐	☐	☐	☒
b) Does the Project have impacts that are individually limited, but cumulative considerable? ("Cumulative 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)?	☐	☐	☐	☒
c) Does the Project have environmental effects which will cause substantial adverse effects on human beings, either directly or indirectly?	☐	☐	☐	☒

a) During construction activities, the proposed project has the potential to adversely affect the environmental resources in the vicinity of the project. However, all potentially significant impacts would be reduced to a less-than-significant level with the mitigation measures included as part of this Initial Study.

b) The proposed Project will impact traffic along the pipeline alignment. Other projects within the City in the project area could have a cumulative affect on traffic. Regional Planned Transportation Improvements contained in the Contra Costa Transportation Authority's 2001 Update to the Contra Costa Countywide CMP includes the following improvements within the project area:

- Lone Tree Way and Hillcrest Avenue: widen to 6 lanes, plus turn lanes
- Lone Tree Way: widen at James Donlon to six lanes
- Pittsburg-Antioch Highway: widen to four lanes from Somersville Road to the Antioch city limits

Other projects identified in the City's Capital Improvement Program (CIP) within the project area include the State Highway 4 Master Control (update and modifications of the traffic signal operations along the major arterials and State Highway 4 ramps in Antioch), the Bocce Ball Court renovation at Chichibu Park, Prewett Park Library and Community Center, Water Treatment Plant Expansion on D Street, citywide water main replacement, Rehabilitate 39-inch Raw Waterline, Sewer Main Capacity Improvements, Manhole Reconditioning, and Intersection Improvements along Lone Tree Way. The cumulative traffic impacts for these projects are considered not significant because these projects are part of the City's CIP and not expected to be constructed at the same time. If they were to be constructed at the same time traffic impacts are still considered not significant because pipeline construction is expected to proceed at a rate of 100 ft/day and therefore the construction corridor in the vicinity of other projects is only temporary.

The Pittsburg Recycled Water Project is a nearby recycled water project in the City of Pittsburg. Cumulative impacts to water quality are not expected from the implementation of both recycled water projects given required mitigation measures (for example, see **Measure WQ-2**).

No additional cumulative impacts were identified for the project.

c) In general, construction sites present many hazards which have the potential to adversely affect human beings. These hazards are temporary, lasting only for the duration of the project, and mitigation measures included as part of this Initial Study would reduce impacts from these hazards to a less-than-significant level.

Mitigation Measure

None required or recommended.

CHAPTER 3
3. MITIGATION MONITORING AND REPORTING PROGRAM

The following is a summary of mitigation measures integrated into the Project that are adequate to reduce all potentially significant impacts to a less-than-significant level. These are the same exact mitigations presented in Chapter 2. **Table 3-1** presents a summary of all mitigation measures.

Table 3-1: Mitigation Measures Summary

Mitigation Measure(s)	Responsible Party and Action	Timing
2.3. Air Quality		
Measure AQ-1: The construction contractor shall implement a dust abatement program, which shall include the following elements: • Water all active construction areas at least twice daily, depending on type of operation, and wind exposure; • Designate a person or persons to oversee the implementation of a comprehensive dust control program and to increase watering, as necessary; • Construction grading activity should be discontinued in high wind conditions that cause excessive neighborhood dust problems, based on the discretion of the construction inspector; • Cover all trucks hauling soil, sand, and other loose materials, or require all trucks to maintain at least two feet of freeboard (i.e., the minimum required space between the top of the load and the top of the trailer) in accordance with Section 23114 of the California Vehicle Code during transit to and from the site; • Apply non-toxic soil stabilizers (e.g., latex acrylic copolymer) if visible soil material is carried onto adjacent public streets; and • Incorporate Storm Water Best Management Practices throughout the course of the Project.	Design Engineering will include requirements in specifications. Construction Manager will provide review.	During Construction

Mitigation Measure(s)	Responsible Party and Action	Timing
2.4. Biological Resources		
Measure BR-1: Avoidance of bird nesting disturbance. If possible, ground-disturbance activities (such as trenching) should begin before March 15 and should occur continuously throughout the construction period or at least through the nesting season (August 15) to prevent bird species from establishing nests within the work area. If construction occurs between March 15 and August 15, the DDSD should implement the following elements prior to bird nesting season and the start of ground-disturbing construction: A qualified wildlife biologist will conduct pre-construction surveys of all potential nesting habitat within 100 feet of construction activities. If active nests are found during pre-construction surveys, a 100-foot buffer zone would be created around nests of sensitive birds protected by the MBTA or special status birds. If pre-construction surveys indicate that nests are inactive or potential habitat is unoccupied during the construction period, no further mitigation will be required.	Design Engineering will include requirements in specifications. A qualified biologist and construction manager will provide review.	Pre-construction surveys shall occur prior to construction activities in that area. Notification and compliance shall be ongoing.
2.5. Cultural Resources		
Measure CR-1: Halt construction if archaeological resources uncovered. Although no cultural resources were observed on the surface during the archaeological survey, culturally-related sites and objects may yet exist in the project area, but may be buried by fill or natural sediments. In accordance with CEQA Section 15064.5, if cultural resources are encountered during project-related excavations, construction shall be halted or diverted to allow an archaeologist an opportunity to assess the resource. Prehistoric archaeological site indicators include chipped chert and obsidian tools and tool manufacturing waste flakes, grinding implements such as mortars and pestles, and darkened soil that contains dietary debris such as bone fragments and shellfish remains. Historic site indicators include, but are not limited to, ceramics, glass, wood, bone, and metal remains. **Measure CR-2: Halt construction if human remains uncovered.** Section 7050.5(b) of the California Health and Safety code will be implemented in the event that human remains, or possible human remains, are located project-related construction excavation. It states: In the event of discovery or recognition of any human remains in any location other than a dedicated cemetery, there shall be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent remains until the coroner of the county in which the human remains are discovered has determined, in accordance with Chapter 10 (commencing with Section 27460) of Part 3 of Division 2 of Title 3 of the Government Code, that the remains are not subject to the provisions of Section 27492 of the Government Code or any other related provisions of law concerning investigation of the circumstances, manner and cause of death, and the recommendations concerning treatment and disposition of the human remains have been made to the	Design Engineering will include requirements in specifications. A qualified archaeologist and construction manager will provide review. Design Engineering will include requirements in specifications. A qualified archaeologist and construction manager will provide review.	During construction During construction

Mitigation Measure(s)	Responsible Party and Action	Timing
person responsible for the excavation, or to his or her authorized representative, in the manner provided in Section 5097.98 of the Public Resources Code. The County Coroner, upon recognizing the remains as being of Native American origin, is responsible to contact the Native American Heritage Commission within 24 hours. The Commission has various powers and duties to provide for the ultimate disposition of any Native American remains, as does the assigned Most Likely Descendant. Sections 5097.98 and 5097.99 of the Public Resources Code also call for "…protection of inadvertent destruction." To achieve this goal, it is recommended that the construction personnel on the project be instructed as to the potential for discovery of cultural or human remains, and both the need for proper and timely reporting of such finds, and the consequences of failure thereof.		
2.6. Geology and Soils		
Measure GS-1: Conduct Geotechnical Review of the location chosen for the storage reservoir. The City shall conduct geotechnical review of the final proposed storage reservoir location before construction activities on the reservoir begin to determine geotechnical feasibility of the chosen site.	Design Engineering will include requirements in specifications. Construction Manager will provide review.	Design Phase, prior to construction.
2.7. Hazards & Hazardous Materials		
Measure HM-1: Prepare a Health and Safety Plan, and Hazardous Materials Management/Spill Prevention Plan. The City shall require the contractor to prepare a Health and Safety Plan that includes a Project-specific contingency plan for hazardous materials and waste operations before construction activities could begin. The Health and Safety Plan shall be applicable to all construction activities, and shall establish policies and procedures to protect workers and public from potential hazards. The plan shall be prepared according to federal and California OSHA regulations for hazardous materials Health and Safety Plans. Elements of the plan shall include, but not be limited to, the following: • A discussion of hazardous materials management, including delineation of hazardous material storage areas, access and egress routes, waterways, emergency assembly areas, temporary hazardous waste storage areas • Notification and documentation procedures • Spill control and countermeasures, including employee spill prevention/response training • Inclusion of a discussion of potential contaminants encountered from neighboring sites (see DTSC Cortese List)	Design Engineering will include requirements in specifications. Construction Manager will provide review.	Design Phase, prior to construction.
2.8. Hydrology & Water Quality		
Measure WQ-1: Best Management Practices shall be implemented to minimize potential water quality impacts during and after construction, and a SWPPP shall be developed. The City shall require contractors to implement BMPs for construction/post-construction activities as specified by the California Storm Water Best Management Practices Handbook (California Storm Water Quality Association, 2003) and/or the Manual of Standards for Erosion and Sediment Control Measures (ABAG, 1995). The BMPs include measures guiding the management and operation of construction sites to control and	Design Engineering will include requirements in specifications. Construction Manager will provide review.	Design phase and construction.

Mitigation Measure(s)	Responsible Party and Action	Timing
minimize the potential contribution of pollutants to storm runoff from these areas. These measures address procedures for controlling erosion and sedimentation and managing all aspects of the construction process to ensure control of potential water pollution sources. Erosion and sedimentation control practices typically include: • Limiting construction to the dry-weather months • Installation of silt fencing and/or straw wattle • Soil stabilization • Revegetate graded and fill areas with a standard erosion control mix (approved by a native habitat Restorationist) • Runoff control to limit increases in sediment in storm water runoff (e.g., straw bales, silt fences, check dams, geofabrics, drainage swales, and sand bag dikes) • Equipment maintenance shall be performed at least 100 feet from all water bodies and wetlands, with measures in place to contain spills of diesel fuel, gasoline, or other petroleum products. Drainage from all work sites shall be directed away from any water bodies or wetlands where feasible. • Prevent erosion of uplands and sedimentation of creeks, tributaries and ponds • Minimize creek bank instability • Prevent flooding • Return grades to preconstructed contours SWPPP shall be developed incorporating standard BMPs such as those listed above for conserving water quality of receiving waters during construction. In addition, the Project shall comply with RWQCB regulations and standards to maintain and improve the quality of both surface water and groundwater reserves.		
Measure WQ-2: The proposed project shall be designed and operated to minimize potential adverse impact on water quality. As proposed, the Project shall provide high quality recycled water to users. All landscape irrigation systems shall be operated in accordance with the requirements of Title 22 of the California Code of Regulations and any reclamation permits issued by the California Regional Water Quality Control Board, San Francisco Bay Region. Reclamation permits typically require that irrigation rates match the evapotranspiration rates of the plants being irrigated, and that no irrigation occur within 50 feet of any domestic supply wells. There are no domestic supply wells located within 50 feet of the recommended irrigation sites served by the recycled water pipeline. Currently, runoff from the golf course is directed to three sumps located on the course. These sumps are connected to the reservoir by a conduit in each location that is open on the golf course end, and gated at the reservoir end. The gates are left open in winter and closed during the summer months beginning around April. With implementation of recycled water usage at the golf course, the conduits to the reservoir should be permanently closed and blocked off or removed so runoff from the course does not enter the reservoir. As previously discussed in the Air Quality Section, given the extent to which the recycled water is treated, odors are not expected to be a problem at or near water use sites, at or near the storage tank (which would be enclosed), or in the event of a pipeline rupture. However, in the surface pond storage option at the golf course, the surface pond would be filled with water from the irrigation system have the potential for odor issues. Recycled water provides an increased nutrient load as compared to the current irrigation supply. Therefore, there is an increased risk for eutrophication and algae die-off in the ponds which may produce odors. Mitigation measures shall	Design Engineering will include requirements in specifications. Construction Manager will provide review.	Design phase and construction.

Mitigation Measure(s)	Responsible Party and Action	Timing
either include the addition of a circulation system, or chemical (i.e. copper sulfate) addition to mitigate eutrophication and thus odors.		
2.11. Noise		
Measure N-1: Construction noise measures: To reduce daytime noise impacts due to construction, the City shall require that construction contractors muffle or control noise from construction equipment through implementation of the following measures: • Daytime construction activities in the City shall be limited to between 7:00 a.m. and 6:00 p.m. Monday through Friday, or between 8:00 a.m. and 5:00 p.m. Monday through Friday within 300 feet of occupied dwellings, as per Section 5-17.05 of the Antioch Code of Ordinances. Daytime construction activities in the City shall be limited to between 9:00 a.m. and 5:00 p.m. on weekends and holidays, as per Section 5-17.05 of the Antioch Code of Ordinances. • Equipment and trucks used for construction should utilize the best available noise control techniques (e.g., improved mufflers, equipment redesign, use of intake silencers, ducts, engine enclosures and acoustically-attenuating shields and shrouds, and installation of blankets around the Project site, wherever feasible and necessary). Construction vehicles should be properly maintained and equipped with exhaust mufflers that meet state standards. • Impact tools (e.g., jackhammers and pavement breakers) used for construction shall be hydraulically or electrically powered wherever possible to avoid noise associated with compressed air exhaust from pneumatically powered tools. However, where use of pneumatic tools is unavoidable, an exhaust muffler on the compressed air exhaust shall be used; this muffler can lower noise levels from the exhaust by up to about 10dBA. External jackets on the tools themselves should be used where feasible, and this could achieve a reduction of 5dBA. Quieter procedures shall be used such as drilling rather than impact equipment whenever feasible; and • Stationary noise sources shall be located as far from sensitive receptors as possible. If they must be located near sensitive receptors, they shall be muffled to the extent feasible and enclosed within temporary sheds.	Design Engineering will include requirements in specifications. Construction Manager will provide review.	During construction
2.14. Recreation		
Measure R-1: Coordination with recreation facilities is required to minimize disruption. The City shall be required to coordinate with the City's Traffic Division, the Recreation Department, and Lone Tree Golf Course in order to minimize disturbance from construction. Appropriate signage, pedestrian/user management, and detours shall be provided by the contractor, and a haul route shall be delineated. The City shall also coordinate with Lone Tree Golf Course on the appropriate siting of facilities, such as the storage reservoir and pump station. .	Design Engineering will include requirements in specifications. Construction Manager will provide review.	Prior to, and during construction.

Mitigation Measure(s)	Responsible Party and Action	Timing
2.15. Transportation/Traffic		
Measure T-1: Obtain and comply with local road encroachment permits and prepare a Traffic Control Plan. The City would obtain all necessary local road encroachment permits, prior to construction and would comply with all the applicable conditions of approval. As deemed necessary by the governing jurisdiction, the road encroachment permits will require the contractor to prepare a Traffic Control Plan in accordance with professional engineering standards prior to construction. The Traffic Control Plan could include the following requirements: • Identify all roadway locations where special construction techniques (e.g., directional drilling or night construction) would be used to minimize impacts to traffic flow. • Develop circulation and detour plans to minimize impacts to local street circulation. This may include the use of signing and flagging to guide vehicles through and/or around the construction zone. • Schedule truck trips outside of peak morning and evening commute hours. • Limit lane closures during peak hours to the extent possible. • Use haul routes minimizing truck traffic on local roadways to the extent possible. • Include detours for bicycles and pedestrians in all areas potentially affected by Project construction. • Install traffic control devices as specified in the California Department of Transportation Manual of Traffic Controls for Construction and Maintenance Work Zones. • Develop and implement access plans for highly sensitive land uses such as police and fire stations, transit stations, hospitals, schools, parks, and other recreational areas. The access plans would be developed with the facility owner or administrator. To minimize disruption of emergency vehicle access, ask affected jurisdictions to identify detours, which will then be posted by the contractor. Notify in advance the facility owner or operator of the timing, location, and duration of construction activities and the locations of detours and lane closures. As stated in R-1, the City shall be required to coordinate with the City's Traffic Division, the Recreation Department, and Lone Tree Golf Course about pipeline routing in order to minimize disturbance from construction. Appropriate signage, pedestrian/user management, and detours shall be provided by the contractor. • Store construction materials only in designated areas. • Coordinate signage for temporarily eliminated on-street parking, with instructions including timing and duration, and nearby areas where parking is currently available. • Coordinate with local transit agencies for temporary relocation of routes or bus stops in works zones, as necessary.	Design Engineering will include requirements in specifications. Construction Manager will provide review and work with the City's traffic division.	Prior to, and during construction.

CHAPTER 4
4. REPORT PREPARATION

4.1 REPORT AUTHORS

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U.S. Fish and Wildlife Service (USFWS, 2006). On-line List of Federal Endangered and Threatened Species that Occur in or May be Affected by Projects in the Antioch North and South 7.5 minute USGS quadrangles. Search conducted on March 1, 2006. Document Number 060220012249.

Appendix A:
Biological Resources

Table 1. Special status species reported to occur in the project area vicinity with potential to occur in habitats that are or may be similar to those observed on the Antioch DDSD Recycled Water Project site. List compiled from database occurrence records from the California Department of Fish and Game's Natural Diversity Database (CDFG 2006) and the California Native Plant Society's On-line Electronic Inventory (CNPS 2006) for the Antioch South 7.5-minute USGS quadrangle and the eight surrounding quadrangles, and the USFWS List for the Antioch North and South quadrangles (USFWS 2006).

Scientific Name	Common Name	Legal Status				Habitat requirement and/or association	Micro habitat	Potential to be impacted by Project Activities
		Federal	State	CDFG	CNPS			
Invertebrates								
Desmocerus californicus dimorphus	valley elderberry longhorn beetle	FT				Occurs only in the central valley of California, in association with blue elderberry (Sambucus mexicana).	Prefers to lay eggs in elderberries 2-8 inches in diameter; some preference shown for "stressed" elderberries.	**Low.** A few elderberry shrubs noted approx. 20-30 feet north of W 10th St. at Dow wetland preserve. No species occurrences documented in or near Contra Costa county.
Hydrochara rickseckeri	Ricksecker's water scavenger beetle	FSC				Various water bodies.	Aquatic; known from the San Francisco bay area.	**Low.** Potential habitat exists within the Contra Costa canal and Dow wetland preserve, but project activities are not anticipated to affect these areas. No species occurrences documented in Contra Costa county.
Hygrotus curvipes	curved-foot hygrotus diving beetle	FSC				Aquatic; known only from Alameda and Contra Costa counties.		**Low.** Potential habitat exists within the Contra Costa canal and Dow wetland preserve, but project activities are not anticipated to affect these areas.
Fishes								
Spirinchus thaleichthys	longfin smelt	FSC				Euryhaline, nektonic & anadromous. Found in open waters of estuaries, mostly in middle or bottom of water column.	Prefer salinities of 15-30 ppt, but can be found in completely freshwater to almost pure seawater.	**Low.** Unlikely to be impacted; suitable habitat not present.
Reptiles and Amphibians								
Ambystoma californiense	California tiger salamander	FT		SC		Need underground refuges, especially ground squirrel burrows and vernal pools or other seasonal water sources for breeding		**Low.** Suitable habitat present in grasslands near portions of project site; however, project activities are unlikely to impact individuals or associated habitats.
Clemmys marmorata	western pond turtle	FSC		SC		Slow moving waterways, lakes and ponds.	Aquatic turtle: requires ponds, slow-moving waterways such as creeks and irrigation ditches where water ponds. Prefers habitats with basking sites, aquatic vegetation, and suitable upland habitats for egg-laying.	**Low-Moderate.** Species occurrence documented at Dow wetland preserve, and suitable habitat exists at Antioch Municipal Reservoir; project activities may result in noise disturbance.
Rana aurora draytonii	California red-legged frog	FT				Ponds and other permanent slow-moving waterbodies: lakes, reservoirs, slow streams, marshes, and bogs.	Adult require a dense, shrubby or emergent riparian vegetation closely associated with deep (>0.7 meters) still or slow-moving water.	**Low.** Limited suitable habitat present at several locations along pipeline route; however, project activities are unlikely to impact individuals, aquatic habitat or surrounding upland habitat.
Thamnophis gigas	giant garter snake	FT	ST			Prefers freshwater marsh and low gradient streams. Has adapted to drainage canals and irrigation ditches.		**Low.** Potential habitat exists within the Contra Costa canal and Dow wetland preserve, but project activities are not anticipated to affect these areas.

Table 1. Special status species reported to occur in the project area vicinity with potential to occur in habitats that are or may be similar to those observed on the Antioch DDSD Recycled Water Project site. List compiled from database occurrence records from the California Department of Fish and Game's Natural Diversity Database (CDFG 2006) and the California Native Plant Society's On-line Electronic Inventory (CNPS 2006) for the Antioch South 7.5-minute USGS quadrangle and the eight surrounding quadrangles, and the USFWS List for the Antioch North and South quadrangles (USFWS 2006).

Scientific Name	Common Name	Legal Status				Habitat requirement and/or association	Micro habitat	Potential to be impacted by Project Activities
		Federal	State	CDFG	CNPS			
Birds								
Ageliaus tricolor	Tricolored blackbird	FSC				(Nesting colony) highly colonial species, most numerous in central valley & vicinity. Largely endemic to california.	Requires open water, protected nesting substrate, & foraging area with insect prey within a few km of the colony.	**Moderate.** Suitable habitat present at Antioch Municipal Reservoir and Dow wetland preserve. Project activities may result in noise disturbance.
Ardea herodias	Great blue heron					Rookery sites in close proximity to foraging areas: marshes, lake margins, tide-flats, rivers and streams, wet meadows.	(Rookery) colonial nester in tall trees, cliffsides, and sequestered spots on marshes.	**Moderate.** Suitable habitat present at Antioch Municipal Reservoir and Dow wetland preserve. Project activities may result in noise disturbance.
Athene cunicularia hypugaea	Western burrowing owl	FSC				(Burrow sites) open, dry annual or perenial grasslands, deserts & scrublands characterized by low-growing vegetation.	Subterranean nester, dependent upon burrowing mammals, most notably, the california ground squirrel.	**Low-Moderate.** Suitable habitat present in grassland habitats near along roads. Project activities may result in noise disturbance.
Asio flammeus	short-eared owl			SC		(Nesting) Found in swamp lands, both fresh and salt; lowland meadows; irrigated alfalfa fields.	Tule patches/tall grass needed for nesting/daytime seclusion. Nests on dry ground in depression concealed in vegetation.	**Moderate.** Suitable habitat present at Dow wetland preserve. Project activities may result in noise disturbance.
Buteo regalis	Ferruginous hawk	FSC				(Wintering) open grasslands, sagebrush flats, desert scrub, low foothills & fringes of pinyon-juniper habitats.	Mostly eats lagomorphs, ground squirrels, and mice. Population trends may follow lagomorph population cycles.	**Low.** Unlikely to be impacted; species may forage in area, but suitable breeding habitat not present.
Charadrius montanus	mountain plover	FSC				(Wintering) short grasslands, freshy plowed fields, newly sprouting grain fields and sometimes sod farms.	Short vegetation, bare ground and flat topography. Prefer grazed areas and areas with burrowing rodents.	**Low.** Unlikely to be impacted; species may forage in area, but suitable breeding habitat not present.
Circus cyaneus	northern harrier			SC		(Nesting) coastal salt and freshwater marsh. Nest and forage in grasslands, from salt grass in desert sink to mtn cienagas.	Nests on ground in shrubby vegetation, usually at marsh edge. Nest built of a large mound of sticks in wet areas.	**Moderate.** Suitable habitat present at Dow wetland preserve. Project activities may result in noise disturbance.
Elanus leucurus	White-tailed kite	FSC				(Nesting) rolling foothills/valley margins w/scattered oaks & river bottomlands or marshes next to deciduous woodland	Open grasslands, meadows, or marshes for foraging close to isolated, dense-topped trees for nesting and perching.	**Moderate.** Suitable habitat present at Dow wetland preserve. Project activities may result in noise disturbance.
Empidonax trailii brewsteri	Little willow flycatcher		SE			Breeds in shrubby vegetation in meadow and riparian woodlands, typically where there are mature, dense stands of willows, cottonwoods, or alders.		**Low.** Suitable habitat is limited near Dow wetland preserve. However, no species occurrences are documented in or near Contra Costa county.
Eremophila alpestris actia	California horned lark			SC		Coastal regions, chiefly from Sonoma Co. to San Diego Co. Also main part of San Joaquin Valley and east to foothills.	Short-grass prairie, "bald" hills, mountain meadows, open coastal plains, fallow grain fields, alkali flats.	**Low-Moderate.** Suitable habitat present in grassland habitats near along roads. Project activities may result in noise disturbance.

Table 1. Special status species reported to occur in the project area vicinity with potential to occur in habitats that are or may be similar to those observed on the Antioch DDSD Recycled Water Project site. List compiled from database occurrence records from the California Department of Fish and Game's Natural Diversity Database (CDFG 2006) and the California Native Plant Society's On-line Electronic Inventory (CNPS 2006) for the Antioch South 7.5-minute USGS quadrangle and the eight surrounding quadrangles, and the USFWS List for the Antioch North and South quadrangles (USFWS 2006).

Scientific Name	Common Name	Legal Status				Habitat requirement and/or association	Micro habitat	Potential to be impacted by Project Activities
		Federal	State	CDFG	CNPS			
Falco mexicanus	prairie falcon			SC		(Nesting) inhabits dry, open terrain, either level or hilly.	Breeding sites located on cliffs. Forages far afield, even to marshlands and ocean shores.	**Low.** Unlikely to be impacted; species may forage in area, but suitable breeding habitat not present.
Falco peregrinus anatum	American peregrine falcon	DM	SE			(Nesting) near wetlands, lakes, rivers, or other water; on cliffs, banks, dunes, mounds; also, human-made structures.	Nest consists of a scrape on a depression or ledge in an open site.	**Low.** Unlikely to be impacted; species may forage in area, but suitable breeding habitat not present.
Geothlypis trichas sinuosa	Saltmarsh common yellowthroat	FSC		SC		Resident of the San Francisco Bay region, in fresh and salt water marshes.	Requires thick, continuous cover down to water surface for foraging; tall grasses, tule patches, willows for nesting.	**Low-Moderate.** Limited suitable habitat present at Dow wetland preserve. Project activities may result in noise disturbance.
Grus canadensis tabida	greater sandhill crane		ST			(Nesting and wintering) nests in wetland habitats in northeastern California; winters in the central valley.	Prefer grain fields within 4 miles of a shallow body of water used as a communal roost site; irrigated pasture used as loaf sites.	**Low.** Limited suitable habitat present at Dow wetland preserve; however, no species occurrences documented in or near Contra Costa county.
Lanius ludovicianus	Loggerhead shrike	FSC				(Nesting) broken woodlands, savannah, pinyon-juniper, joshua tree, & riparian woodlands, desert oases, scrub & washes.	Prefers open country for hunting, with perches for scanning, and fairly dense shrubs and brush for nesting.	**Low.** Unlikely to be impacted; species may forage in area, but suitable breeding habitat not present.
Melospiza melodia maxillaris	Suisun song sparrow			SC		Resident of brackish-water marshes surrounding Suisun Bay.	Inhabits cattails, tules and other sedges, and salicornia; also known to frequent tangles bordering sloughs.	**Low-Moderate.** Limited suitable habitat present at and near Dow wetland preserve. Project activities may result in noise disturbance.
Numenius americanus	Long-billed curlew	FSC				(Nesting) breeds in upland shortgrass prairies & wet meadows in northeastern California.	Habitats on gravelly soils and gently rolling terrain are favored over others.	**Low-Moderate.** Potential nesting habitat exists in uplands within Project Site. Project activities may result in noise disturbance.
Plegadis chihi	white-faced ibis	FSC				(Rookery site) shallow fresh-water marsh.	Dense tule thickets for nesting interspersed with areas of shallow water for foraging.	**Low.** Limited suitable habitat present at Dow wetland preserve; however, no species occurrences documented in or near Contra Costa county.

KEY:

CH (federally-designated critical habitat), DM (federal de-listed and monitored species), FC (federal candidate for listing),FE (federally endangered), FSC (federal species of concern), FSLC (federal species of local concern), FT (federally threatened), PCH (proposed federally-designated critical habitat), SE (state endangered), SR (state rare), ST (state threatened),1B (CNPS List 1B: rare, threatened, or endangered in CA and elsewhere), 2 (CNPS List 2: Rare, threatened, or endangered in California, but more common elsewhere)

Appendix B:

Cultural Resources Letter Report

March 6, 2006

Ms. Karen Frye, AICP
RMC Water and Environment
2001 North Main Street, Suite 400
Walnut Creek, CA 94596

RE: Archaeological Survey and Cultural Resources Assessment for the City of Antioch's proposed Antioch Recycled Water Pipeline project.

Dear Ms. Frye:

In accordance with our agreement, William Self Associates, Inc. (WSA) has implemented a record search, archaeological field survey and assessment of the proposed Antioch Recycled Water Pipeline project in the City of Antioch, Contra Costa County (Figure 1). As the project will involve expanding the Delta Diablo Sanitation District Recycled Water facility's recycled water pipeline, a cultural resource study was conducted in compliance with Sections 15064.5 and 15126.4 of the California Environmental Quality Act (CEQA). Given that no significant cultural resources were found during the inspection, our response will be in a letter format rather than a stand-alone assessment report. Therefore, general background information on the cultural setting of the area is included by reference only.

Project Description and Location

The Delta Diablo Sanitation District (DDSD) Recycled Water facility proposes to expand its water reuse system. The City of Antioch, under the Recycled Water Project, would extend the recycled water pipeline, utilizing an existing abandoned pipeline and installing new pipeline. This would establish recycled water services for use as landscape irrigation at the Lone Tree Golf Course, selected parks, playing fields, medians, and other green spaces along the pipeline alignment.

The project area, which currently includes residential areas, surface streets, and a section of the Contra Costa Fairgrounds, is located in the City of Antioch, beginning at the entrance of the Delta Household Hazardous Waste Collection Facility on the Pittsburg-Antioch Highway heading east. The project area continues east along West 10th Street until heading south on A Street. The project area continues south along A Street, runs under State Highway 4, and south along Lone Tree Way. The project area then heads southwest on Golf Course Road, and terminates at the Lone Tree Golf Course entrance. The proposed project site is situated in Township 2 North, Range 1 East, and Township 2 North, Range 2 East in Section 19 & 31, as depicted on the 1978 Antioch, California 7.5' USGS topographic quadrangle (Figure 2). The elevation of the project area ranges from approximately 20-150 ft. The pipeline alignment was chosen in part to utilize a 1.3 mile section of abandoned 18-inch pipeline that is located along A Street and Lone Tree Way. In addition to lowering the overall materials and installation costs of the pipeline, the existing pipeline section crosses both railroad rights of way and Highway 4, eliminating the need for potentially costly implementation measures such as easements and bore and jack tunneling of pipeline. In addition, several potential irrigation users are located adjacent to it.

Cultural Setting

Environmental Setting

The Antioch Recycled Water Project area is situated on the western margin of California's Central Valley, one of two principal grassland communities which exist in California (the second being the coastal grassland, covering the middle-elevation hillsides from San Francisco to southern Oregon). Together these are known as the Pacific Prairie (Brown 1985:84).

Annual precipitation in the region varies from 6 to 29 inches with precipitation concentrated in the fall, winter, and spring months. This climate is much like that found in the Mediterranean: mild, rainy winters, and hot, dry summers. After the first rain at the end of October or early November, the vegetation becomes green and remains green, but not growing, until late February, when the grasses begin to grow rapidly. By early May, the area has usually changed to dry golden-colored grasses, and stays that way until fall.

Temperatures in the summer are high, often reaching over 38° C (100° F) (Brown 1985: 87). The combination of this climate and arable soils has proven bountiful to farmers; the extensive agricultural use of the area has resulted in the disappearance of much of the original grassland community. Grasslands persist, but the dominant species are much different from those found in the early 1800s by Anglo-European settlers (Brown 1985: 84).

Prehistory

At the time of historic contact with the Spanish missionaries and explorers, the Antioch Recycled Water Project area was occupied by the Bay Miwok group of Native Americans. The Bay Miwok spoke a language now considered one of the major subdivisions of the Miwok-Costanoan, which belonged to the Utian family within the Penutian language stock (Shipley 1978: 82-84).

Levy (1978:399) places the Bay Miwok territory from the Suisun Bay to just south of Mount Diablo and from there eastward to the Sacramento-San Joaquin Delta. The tribelet associated with the Antioch area was known as the Chupcan. Levy (1978:401) states that on April 3, 1776, members of an exploring expedition visited a village near Antioch. Anza (1930:144) estimated the population of the settlement at 400 persons. The settlement visited probably belonged to the tribelet referred to in the mission books as Chupcan.

The time at which the Bay Miwok migrated into the area is disputed. Beeler (1959), who has studied the Saclan language, claims it was originally spoken to the east along the lower courses of the Tuolumne, Stanislaus, and the Mokelumne rivers. He surmises that these people were displaced west by a northerly push of the Yokuts, which may have been completed as recently as 300 years ago. This implies the Chupcan were in their historical territory only a century or less before the Spaniards arrived in the region (Beeler 1959:68)

The Miwok comprised a group of people united by language but broken into tribelets (independent political entities), each occupying defined territories over which they controlled access to natural resources, although each tribelet had one or more permanent villages. Bay Miwok triblets territory contained numerous smaller camp sites used as needed during a seasonal round of resource exploitation. Extended families lived in domed, conical structures built of thatched grass. Semi-subterranean men's houses were built at the larger village sites, also using grass and earth cover (Kroeber 1970). Tule or balsa canoes were used to navigate to and from islands and for hunting and gathering forays into the Delta.

Given an abundant and continuous subsistence base, ceremony in Miwok life was fairly extensive, and scholars have written much about it based on early ethnographic accounts (Bennyhoff 1977:11; Kroeber 1970; Levy 1978). Rituals associated with death were of great importance. Two forms of interment were practiced and mortuary goods were often placed into the grave at the time of burial. Cremation was also occasionally practiced.

The Antioch Recycled Water Project vicinity would have provided an excellent location for seasonal resource procurement camps. The nearby, wide, flat expanse of Lone Tree Valley and the resources associated with Sand Creek, along with scattered oaks, were favorable to this type of

occupation, as has been well documented within the region. Scholars have suggested the early California environment offered a large assortment of resources for use by native people, although acorns, fish, and game mammals formed the staples of their diet (Baumhoff 1963). Researchers have stressed that acorns, with various seeds, grasses, nuts, berries, and roots were of utmost importance, as plant food collection and preparation formed the center of Miwok technology (Bennyhoff 1977:10; Kroeber 1970:814-815; Gifford 1916:139-194).

The arrival of the Spanish in the San Francisco Bay Area in 1775 led to the rapid demise of native populations, including the Bay Miwok. Diseases introduced by early expeditions and missionaries killed a large number of local peoples (Heizer 1954).

The native lifestyle in much of Northern California ceased to exist by the mid-19th century, and much of the native population vanished with it. For further ethnographic information on the Bay Miwok, refer to Levy (1978), Bennyhoff (1977), and Milliken (1983).

History

The history of Northern California, Contra Costa County, and the project area in particular, can be divided into several periods of influence. For the purposes of establishing a historic context from which to assess the potential significance of historic sites in the Antioch Recycled Water Project area, various periods and local sub-periods, some of which overlap, are defined below.

Due to its location to the east of Mount Diablo, about 25 miles from San Francisco Bay, the project area was largely isolated from the Spanish and Mexican periods of California. Therefore, cultural remains associated with the Spanish period (1775-1822) and Mexican period (1822-1848), are not expected to be reflected in the Antioch Recycled Water Project area.

The Spanish Period in *Alta California* began in 1775 when Captain Juan Manuel Ayala's expedition studied the San Francisco Bay and ventured up the Sacramento and San Joaquin Rivers in search of a suitable mission site. The first mission in the region was established the following year with the completion of Mission San Francisco de Asis (Mission Dolores) in San Francisco.

Additionally, other Spanish expeditions went near the project area in the years following, including the 1811 expedition of Ramon Abella, the 1813 expedition of Jose Arguello and the 1817 expedition of Narciso Duran and Luis Arguello (Beck and Haase 1974:21).

The Mexican Period led to rapid secularization of the Spanish mission system until, by 1845, the last of the mission land holdings were relinquished, opening the way for the large Ranchos common to California in the mid-1800s. Predominant land-use on the ranchos was the raising of livestock and ranching. Although there were no Mexican Ranchos on the lands encompassed by the Antioch

Recycled Water Project area, two large Ranchos, Los Meganos and Los Medanos were situated within several miles of the southeast and northwest corners of the project area. American explorers, mostly traders and beaver trappers, were also flocking to the west during this time, and their "trails" helped lead to the settlement of the territory.

The discovery of gold in Coloma in 1849 produced a major population increase in the northern half of California as emigrants sought gold or various jobs producing goods or services for gold miners. Land use changes resulted as livestock grazed some native grasses to extinction, woodlands were cut for lumber, railroad ties and mine timbers, and agricultural development occurred on nearly all arable land.

While coal in California is found over a wide expanse of the coastal range, it is generally of poor quality, found in small quantities or is situated in locations where transportation costs exceed the value of the coal (Goodyear 1877:6). As a result, the accessible, good quality coal fields of California were quickly played-out in the mid-to-late-19th century.

The most important of California's coal fields were found near Mount Diablo in Contra Costa County. Much of the early coal mining was not done by coal miners but by disillusioned gold seekers.

On December 22, 1859, Francis Somers and James T. Cruikshank discovered the Black Diamond vein about four miles southwest of the project area, in the foothills south of Pittsburg and east of Kirker Pass Road (Silva 1969:12).

Two railroads were built in the early 1860s to accommodate the transportation needs of the Black Diamond area mines and their associated communities: the Pittsburg Coal Railroad provided service from the Somersville mines to Pittsburg Landing, and the Black Diamond Coal Company Railroad connected the Nortonville mines to New York Landing near Port Chicago (Ballard 1931:21).

Although the Black Diamond Mines in Nortonville slowed production as early as 1885, they apparently did not completely close until 1907, when the last of the local pits was sealed, and the company's equipment was dismantled and removed. This was the last mine in the area to close (Praetzellis 1991). Over a 42-year period (1860 to 1902), mining at Black Diamond produced coal valued at more than $20 million (Radin 1988). Nearly 3,600,000 metric tons of coal had been mined and over 200 miles of underground workings were associated with the mining district when production ceased in 1907 (unpublished manuscript of John Waters quoted in Higgins 1989:229, Waters 1978:147).

When the mines closed at the turn of the century, the towns of Nortonville, Somersville, Stewartville, West Hartley and Judsonville became ghost towns almost overnight. Although attempts at mining took place in 1923, 1926, 1932 and 1940, they were all unsuccessful and short lived (Jerabek, 1957:29). The mining towns were salvaged for scrap lumber and equipment, largely disappearing from all but the memories of local residents.

Overtime, the landscape transformed from a mostly agricultural area to a more industrial setting, such as the coal mining operations from 1855 - 1907, and later industrial ventures lasting into the modern era.

Results of the Record Search

The staff at the California Historical Resources Information System, Northwest Information Center at Sonoma State University conducted a record search of the project vicinity on February 24, 2006 (File No. 05-666). The record search included a review of all cultural resource and excavation reports and recorded archaeological sites within a ¼-mile radius of the Antioch Recycled Water Pipeline project area. The study included a review of archaeological, ethnographic, historical, and environmental literature as well as records and maps on file at the California Archaeological Inventory. Records included the Office of Historic Preservation Historic Properties Directory, the California Inventory of Historical Resources, the Historical Resources Inventory of Contra Costa County, and historic maps (the 1862 and 1870 GLO Plat Map, the 1869 Los Medanos Rancho Plat Map, and the 1918 Antioch and 1913 Lone Tree Valley) USGS).

There are two cultural resources recorded within the project area: the Central Pacific Railroad (now the Union Pacific Railroad) (P-07-002568), which crosses the project area and the Contra Costa Canal (P-07-002695), which crosses the southern portion of the project area. Three additional sites are located within ¼-mile of the project area. These include two prehistoric sites (CA-ALA-385 and CA-ALA-386) and one historic site, the Atchison Topeka-Santa Fe Railroad line (P-07-000806). A description of each site follows:

In 1877, the Central Pacific Railroad extended their lines to Contra Costa County, and by 1878 the Central Pacific Railroad through their subsidiary, the San Pablo & Tulare Railroad Company, served the cities of Richmond, San Pablo, Rodeo, Crockett, Port Costa, Martinez, Avon, Pittsburg, Antioch, Brentwood and Byron in Contra Costa County. The remaining railroad grade is formed by an earthen berm surmounted by a set of tracks. The track is elevated on a bed of crushed rock ballast. The surrounding terrain is a natural floodplain associated with the Sacramento River, but is now mostly urban, industrial and residential.

The Contra Costa Canal is of historic age, and was constructed from 1937-1948, although it was not until 1951 that it was finally completed and fully operational in terms of contractual deliveries. It is primarily a concrete lined canal that carries water from the Delta on the east to Martinez on the west. The Contra Costa Canal first enters the project area at the intersection of Arcy Lane and the Pittsburg-Antioch Highway, where the Delta Household Hazardous Waste Collection Facility is located. The Contra Costa Canal crosses the proposed project area again at the southern portion of Lone Tree Way, just before the Sutter Delta Medical Center.

CA-ALA-385 is located approximately 700 ft. southwest of the project area at an elevation of 140 feet. It is a diffuse scatter of fire-altered rock, sandstone and basalt ground implements, modified quartzite, chalcedony, and petrified wood flakes, and possible midden in a swale near an abandoned cattle-watering trough. The site is 40 meters in diameter, and is of Franciscan Formation, containing meta-sandstone and petrified wood. The soil typology within the site is that of dark brown powdery marsh soils. Low grasses, and oaks on a knoll with a rock outcrop above constitute the vegetation on the site.

CA-ALA-386 is located approximately 1200 feet southwest of the project area at an elevation of 130+ feet. It is a moderately dense scatter of fire-cracked rock, chert flakes, and sandstone-basalt ground implements within midden soil containing minute quantities of Mytilus and Margaritifera shell. It is near a marsh area on the western border of the 60-acre property area with the Antioch Municipal Reservoir. Its lithology is of the Franciscan Formation, and soil typology within the site is that of dark, ashy midden with shell. The vegetation on the site is grasslands, native oaks, and an exotic Fig tree near a suspected former homestead site. There are intermittent streams to the southwest that drain into the reservoir.

The Atchison Topeka-Santa Fe Railroad line is of historic age, and is located approximately one mile east of Pittsburg, CA. The tracks are currently in active use by the Burlington Northern Railroad. The tracks cross Kirker Creek, a seasonal drainage situated in a level delta area. Nearby vegetation includes cattails, thistles, and introduced grasses.

Twelve studies have been conducted within or adjacent to the project boundaries (Table 1). These include S-1320, 2025, 7386, 13256, 18352, 18440, 22464, 22812, 24322, 27445, 30387, and 30579. Two studies have been conducted within ¼-mile of the project area including S-7647, and 25238 (Table 2).

Table 1. Cultural resources studies within or adjacent to the project boundaries.

Study #	Author	Date	Title
S-1320	Flynn, K.	1978	Archaeological Reconnaissance of a 60-acre parcel located on Lone Tree Drive, City of Antioch, Contra Costa County (ARS 78-108). (letter report). City of Antioch, Contra Costa County (ARS 78-108). (letter report).
S-2025	Holman, M. P.	1980	An Archaeological field reconnaissance on an approximately 216 acre parcel (letter report).
S-7386	Chavez, D.	1985	Cultural Resource Evaluation for the Delta Landing EIR/EIS, Antioch, Contra Costa County, California.
S-13256	Bramlette, A. et al.	1991	Archaeological Resources Inventory for Los Vaqueros Water Conveyance Alignments
S-18352	Busby, C. I.	1976	East/Central Contra Costa County Wastewater Management Plan, California: Cultural Resource Survey
S-18440	West, J. G. & Welch, P.	1996	Class II Archaeological Survey of the Contra Costa Canal, Contra Costa County, California
S-22464	Jones & Stokes Associates, Inc.	1999	Cultural Resource Inventory Report for the Williams Communications, Inc. Fiber Optic Cable System Installation Project, Pittsburg to Sacramento, California
S-22812	Busby, C. I.	1997	Contra Costa County Water Multipurpose Pipeline Project, Environmental Documentation Study, Cultural Resources Review (letter report)
S-24322	Morgan S. & Bachand B.	1998	Pittsburg District Energy Facility, Cultural Resources Technical Report (Appendix K)
S-27445	Giliberti, J.	2002	A Cultural Resource Reconnaissance Survey of Proposed Removal of the Tracy-Contra Costa-Ygnacio 69kV Transmission Line, Contra Costa and Alameda Counties, California
S-30387	Tang, B. et al.	2005	Historical Resources Compliance Report, Burlington Northern Santa Fe Railway Double Track Project (Segment 2), Oakley (MP 1146.1) to Port Chicago (MP 1164.4), In and Near the Cities of Oakley, Antioch, & Pittsburg, & the Port Chicago Naval Weapons Station
S-30579	Busby, C. I.	2004	Cultural Resources Report, Delta Energy Center Site (DEC) and Associated Linears, Cities of Pittsburg and Antioch, Contra Costa County, California, California Energy Commission (CEC) Project 98-AFC-3C

Table 2. Cultural resources studies within ¼ mile of the project boundaries.

Study #	Author	Date	Title
S-7647	Woodward-Clyde Consultants	1985	Cultural Resource Investigation of the Proposed Pittsburg Marina Expansion Project.
S-25238	Holson, J.	2002	Archaeological Survey Report for the Highway 4/ Somerville Cell Site, Antioch, Contra Costa County (letter report)

Native American Consultation

On February 3, 2006, Dr. James Allan of WSA contacted the Native American Heritage Commission (NAHC) by letter to request information on known Native American traditional or cultural properties within the project area, and to request a listing of individuals or groups with cultural affiliation to the project area. To date, the NAHC has not responded to that letter. Should the NAHC eventually respond to the February 3rd inquiry, WSA will forward their response to RMC as an addendum to this letter report.

Results of the Field Survey

WSA staff archaeologist David Buckley conducted a pedestrian and windshield survey of the proposed route for the Antioch Recycled Water Pipeline Expansion Project on February 17, 2006.

In the survey, the project area was evaluated for the presence of historic or prehistoric site indicators. Historic site indicators include, but are not limited to foundations, fence lines, ditches, standing buildings, objects or structures such as sheds, or concentrations of materials at least 50 years in age, such as domestic refuse (glass bottles, ceramics, toys, buttons or leather shoes), or refuse from other pursuits such as agriculture (e.g., metal tanks, farm machinery parts, horse shoes) or structural materials (e.g., nails, glass window panes, corrugated metal, wood posts or planks, metal pipes and fittings, etc.). Prehistoric site indicators include, but are not limited to areas of darker soil with concentrations of ash, charcoal, bits of animal bone (burned or unburned), shell, flaked stone, groundstone, or even human bone. Prior to the survey, satellite imagery available on the Google Earth internet program were consulted, as were USGS 7.5 minute Topographic maps that depicted an overlay of the projected water pipeline expansion route.

The survey route began at the intersection of Arcy Lane and the Pittsburg-Antioch Highway, where the Delta Household Hazardous Waste Collection Facility is located (Photo 1). The survey route then continued east along the Pittsburg-Antioch Highway, which becomes West 10th Street at Somersville Road. Along the Pittsburg-Antioch Highway ground visibility was 0%, due to street paving, the sidewalk, landscaping and grasses on the south side of the street. There is no sidewalk on the north side of the street until a point approximately 100 yards west of the Auto Center Dr./ Somersville Rd. intersection (Photo 2). Along the north side of the highway, there are several gravel turnouts. For a distance of approximately one hundred yards, the landscape along the shoulder of the road is elevated several feet, exposing the dirt that runs parallel to the road shoulder (Photo 3). This allowed for some ground visibility, however it is likely to be previously disturbed ground. There were no historic or prehistoric site indicators.

At the intersection of Auto Center Drive and West 10th Street, the survey route turned northeast onto Auto Center Dr./Somersville Rd. and continued to the south edge of the Babe Ruth Baseball Field, where the proposed pipeline lateral will run off of the main line (Photo 4). Ground visibility was 0%, due to the sidewalk, landscaping and grasses on both sides of the street. The survey route then returned to the intersection of Auto Center Drive and West 10th Street and continued east along West 10th Street until turning southwest onto Crestview Drive, where it continued to Fairview Park. Being a residential district, ground visibility in the Crestview Drive survey area was 0% because of sidewalks, landscaping, surface streets, and the landscaping in Fairview Park (Photos 5-6).

The survey route then returned to West 10th St. and turned east until intersecting Fairground Park Dr., where it turned south into the Contra Costa Fairgrounds (Photo 7). The survey route along Fairgrounds Park Dr. included the entrance to the fairgrounds office, and ended short of the mid-point of the fairgrounds (Photo 8). Ground surface visibility was 0% due to sidewalks, landscaping and surface streets. The survey route then returned to West 10th St. and continued east. This section of the survey route ran through a residential area, crossing L, G, and C streets, and therefore did not provide any ground surface visibility (Photo 9).

The survey route then reached the A Street and 10th Street intersection (Photo 10). At A Street, the survey route turned south and followed the pathway of the existing abandoned pipeline to which the new pipeline will connect. The existing abandoned pipeline runs from the intersection of 10th and A streets, and continues south along A Street under Highway 4, where it turns into Lone Tree Way. It ends at the intersection of Lone Tree Way and Worrel St./Putnam Dr. From the southernmost section of the existing abandoned pipeline, the survey route continued from Lone Tree Way west onto Putnam Street (Photos 11 and 12). The route continued west along Putnam Street until reaching the intersection of Elizabeth Lane, where the route turned south.

The lateral pipeline route terminates on the corner of Memorial Park at Robert Street and Elizabeth Lane (Photo 13).

The survey route then returned to Lone Tree Way and continued south until turning east onto Hillside Road (Photo 14). The route continued east until turning south on Sunset Lane, where it ended at the corner of Mountaire Park (Photos 15-16). The lateral survey areas off the main survey route along Lone Tree Way are residential areas. Consequently, there was 0% ground surface visibility due to surface streets, sidewalks and landscaping.

The survey route returned to Lone Tree Way and continued south. Several pieces of construction equipment (i.e. backhoe, graders) could be seen on the hillside along the east side of Lone Tree Way at Terranova Drive with recently laid foundation present (Photo 17).

The survey route continued past Davison St. and then turned northwest onto Clayburn Road (Photos 18-19). The route then turned left onto Longview Road and continued northwest, ending at the corner of Chichibu Park (Photo 20). Ground visibility in this area was 0% due to surface streets, sidewalks, landscaping, and the landscaping in Chichibu Park. The survey route returned to Lone Tree Way and continued south. The Contra Costa Canal crosses under Lone Tree Way just before the Sutter Delta Medical Center (Photo 21). The survey route continued south-southeast along Lone Tree Way, crossed James Donlon Blvd., to Golf Course Road, where it turned southwest and ended at the Lone Tree Golf Course (Photo 22).

No evidence of historic or prehistoric resources was observed along the projected Recycled Water Pipeline Expansion pathway during the survey. Because the majority of the survey route followed along residential areas, ground visibility throughout the entire area was poor.

Recommendations

The results of the record search and the visual inspection of the project area indicate that the likelihood of encountering significant cultural resources within the project area is low. Although no cultural resources were observed on the ground surface during the survey of the project area, there is always a possibility that cultural resources may become visible during construction excavation. As mentioned above, indicators of prehistoric site activity include charcoal, obsidian or chert flakes, grinding bowls, shell fragments, bone, and pockets of dark, friable soils. Historic resources include glass, metal, ceramics, wood and similar debris. Should any previously undiscovered historic or prehistoric resources be found during construction, work should stop, in accordance with CEQA regulations, until such time that the resource can be evaluated by a qualified archaeologist and appropriate mitigative action taken as determined necessary by the City or County Lead Agency.

In the event that Native American human remains or funerary objects are discovered, the provisions of the California Health and Safety Code should be followed. Section 7050.5(b) of the California Health and Safety Code states:

> *In the event of discovery or recognition of any human remains in any location other than a dedicated cemetery, there shall be no further excavation or disturbance of the site or any nearby area reasonably suspected to overlie adjacent remains until the coroner of the county in which the human remains are discovered has determined, in accordance with Chapter 10 (commencing with Section 27460) of Part 3 of Division 2 of Title 3 of the Government Code, that the remains are not subject to the provisions of Section 27492 of the Government Code or any other related provisions of law concerning investigation of the circumstances, manner and cause of death, and the recommendations concerning treatment and disposition of the human remains have been made to the person responsible for the excavation, or to his or her authorized representative, in the manner provided in Section 5097.98 of the Public Resources Code.*

The County Coroner, upon recognizing the remains as being of Native American origin, is responsible to contact the Native American Heritage Commission within 24 hours. The Commission has various powers and duties to provide for the ultimate disposition of any Native American remains, as does the assigned Most Likely Descendant. Sections 5097.98 and 5097.99 of the Public Resources Code also call for "protection to Native American human burials and skeletal remains from vandalism and inadvertent destruction."

Sincerely yours,

WILLIAM SELF ASSOCIATES, INC.

James M. Allan, Ph.D., RPA
Vice-President, Principal Project Director

Attachments

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Appendix A

Figures

N

Figure 1: Project Vicinity Map

Scale: 1:1,000,000 (1 inch = 16 miles)

Antioch Recycled Water
Antioch, California

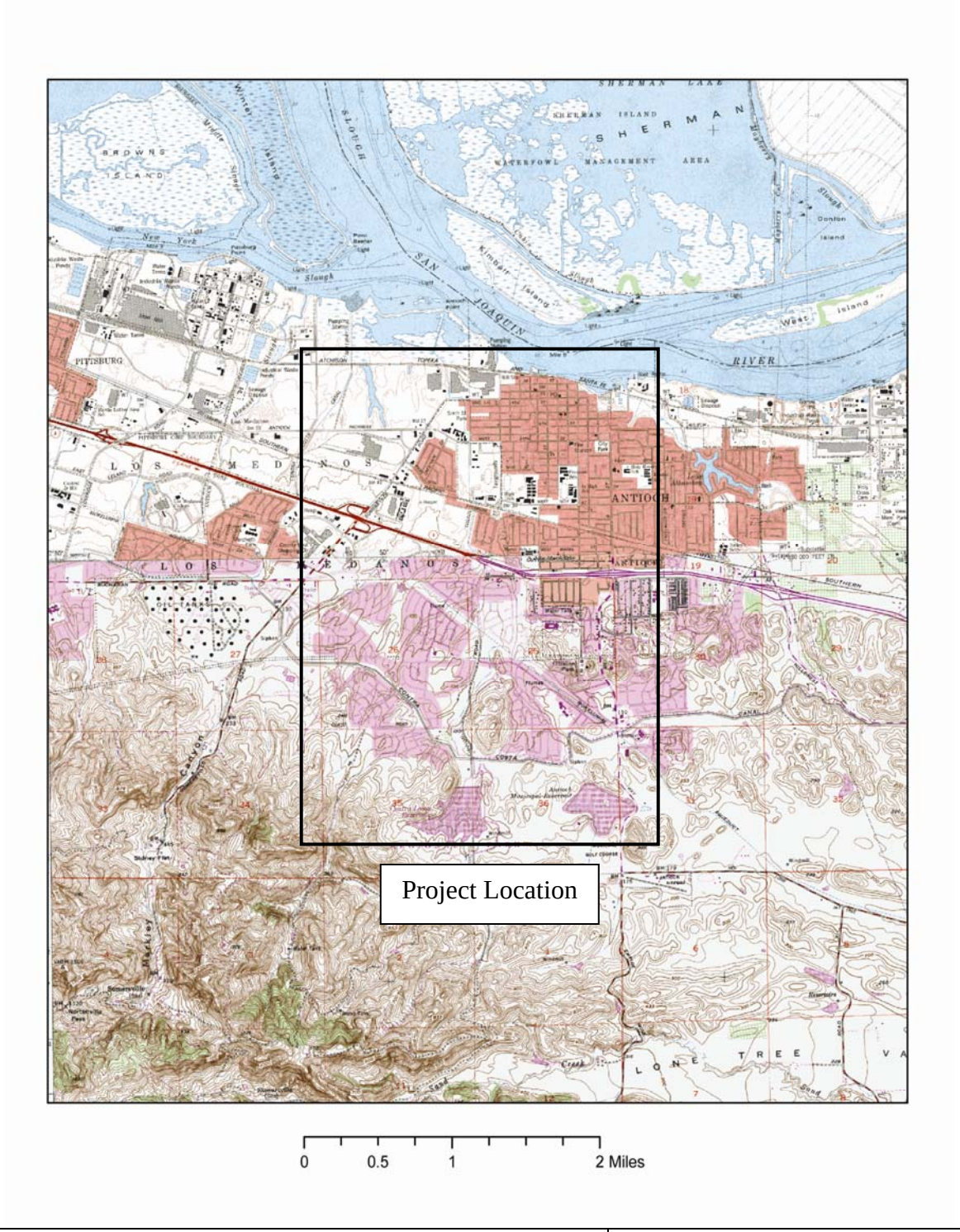

Figure 2: Project Area Map

Scale: 1:48,000 (1 inch = 8000 feet)

N

Antioch Recycled Water
Antioch, California

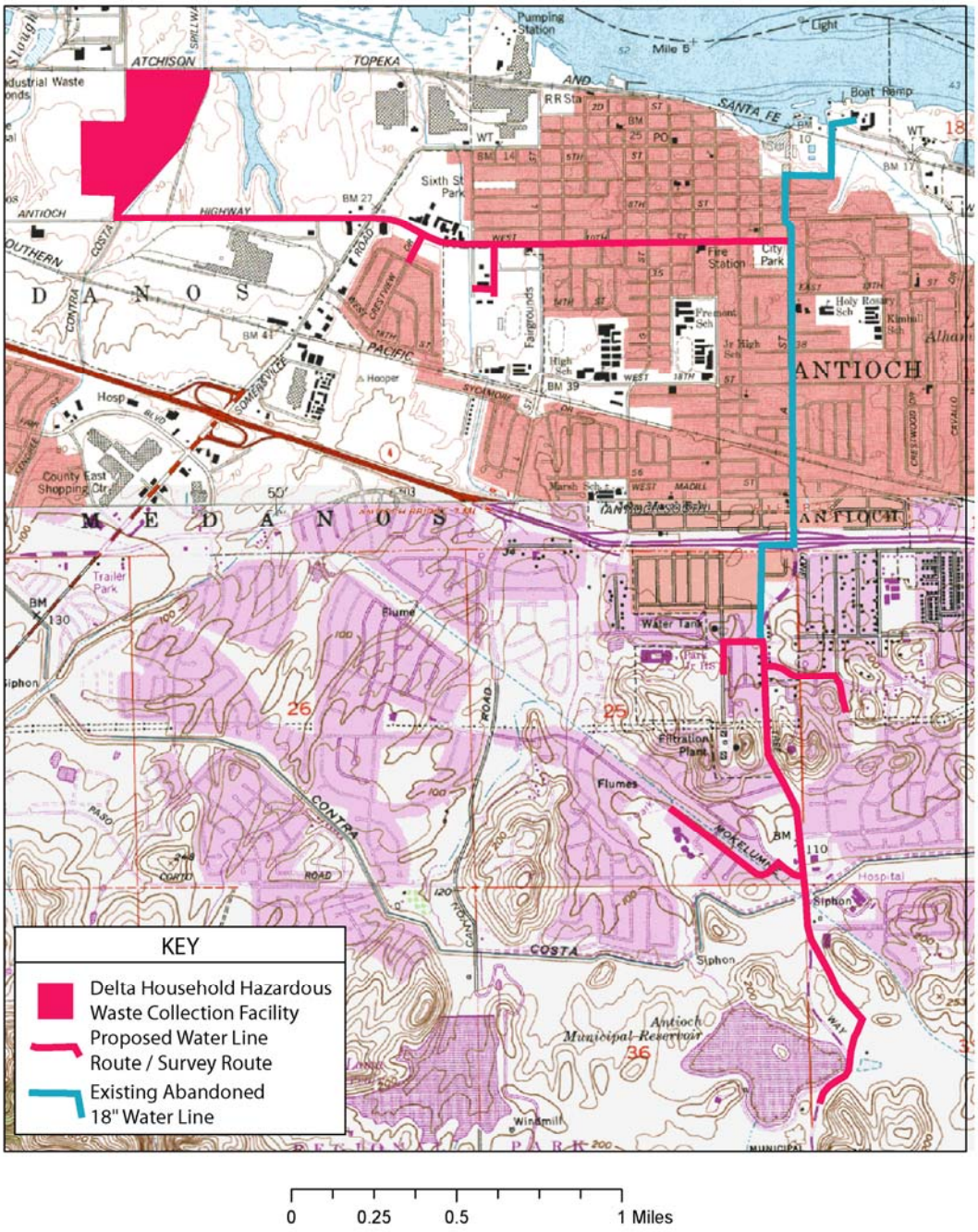

Figure 3: Project Location and Archaeological Survey Area Map

1978 Antioch USGS Quad Map

Scale: 1:24,000 (1 inch = 2000 feet)

Antioch Recycled Water
Antioch, California

WILLIAM SELF ASSOCIATES, INC

APPENDIX B

Photographs

Photo 1: View east of Pittsburg-Antioch Highway at Arcy Ln. showing Delta Diablo Sanitation District.

Photo 2: View northeast along Pittsburg-Antioch Hwy. headed towards Auto Center Dr./Somersville Rd.

Photos 1 and 2	**Antioch Recycled Water Antioch, California**

Photo 3: View east of elevated landscaping along the north side of Pittsburg-Antioch Highway.

Photo 4: View southwest of Somersville Rd./Auto Center Dr. headed towards intersection with W. 10th St.

Photos 3 and 4	**Antioch Recycled Water Antioch, California**

Photo 5: View N-NE of Crestview Dr. heading towards W. 10th St. intersection.

Photo 6: View south of Fairview Park at intersection of Crestview Dr. and Aster St.

Photos 5 and 6	**Antioch Recycled Water Antioch, California**

Photo 7: View south of Fairgrounds Park Dr.

Photo 8: View south further down Fairgrounds Park Dr.

Photos 7 and 8	**Antioch Recycled Water** **Antioch, California**

Photo 9: View west of W. 10th St. and G St. intersection on N. side of street.

Photo 10: View west of W. 10th St. several hundred yards down from A St. on N. side of street.

Photos 9 and 10	**Antioch Recycled Water** **Antioch, California**

Photo 11: View south from intersection at Putnam St. and Lone Tree Way

Photo 12: View east of Putnam St. heading towards Lone Tree Way

Photos 11 and 12	**Antioch Recycled Water** **Antioch, California**

Photo 13: View northwest of intersection of Robert St. and Elizabeth Ln.

Photo 14: View east from Lone Tree Way of Hillside Rd. intersection.

Photos 13 and 14	**Antioch Recycled Water** **Antioch, California**

Photo 15: View E-SE of Hillside Rd. at Sunset Ln. intersection.

Photo 16: View south of Sunset Ln. up to intersection with Hyde Pl. Mountaire Park in background.

Photos 15 and 16	**Antioch Recycled Water** **Antioch, California**

Photo 17: View east at Terranova Dr. and Lone Tree Way intersection showing backhoes on hill and recent foundation.

Photo 18: View west of Clayburn Rd. and Lone Tree Way intersection.

Photos 17 and 18	**Antioch Recycled Water** **Antioch, California**

Photo 19: View east of Clayburn Rd. and Lone Tree Way intersection.

Photo 20: View east on Longview Rd. at Chichibu Park.

Photos 19 and 20	**Antioch Recycled Water** **Antioch, California**

Photo 21: View north of Contra Costa Canal sign on Lone Tree Way across street from the Hospital.

Photo 22: View northeast from end of lateral at the Lone Tree Golf Course entrance on James Donlon Blvd.

Photos 21 and 22	**Antioch Recycled Water** **Antioch, California**

Appendix C

Native American Heritage Commission Correspondence

WSA
Consultants in Archaeology and Historic Preservation
www.williamself.com

Native American Heritage Commission
915 Capitol Mall, Room 364
Sacramento, CA 95814

February 3, 2006

RE: Antioch Recycled Water Project, Antioch, Contra Costa County

Dear Native American Heritage Commission:

William Self Associates, Inc. (WSA) has recently been contracted by RMC to conduct an archaeological records search and cultural resources survey of a recycled water pipeline proposed by Delta Diablo Sanitation District in the City of Antioch. The project area is located in Township 2N, Range 1E, Sections 25 and 36 and unsectioned land, and in Township 2N, Range 2E, Sections 19, 30 and 31 in Contra Costa County as depicted on the attached map.

We bring this project to the attention of the Native American Heritage Commission with the desire to obtain from your office, pertinent information regarding prehistoric, historic and/or ethnographic land use and sites of Native American traditional or cultural value that might be known to exist within the project vicinity, as depicted in the Sacred Lands database or other files. We would also appreciate obtaining a list of interested Native American tribal entities or individuals for the project area. WSA has contacted the Northwest Information Center at Sonoma State University to review their files as part of the background research on the project.

We would appreciate a response at your earliest convenience. Should you have any questions, I can be reached at (925) 253-9070. If it is more convenient, you may wish to fax your response to (925) 254-3553.

Sincerely,

WILLIAM SELF ASSOCIATES, INC.

James M. Allan, Ph.D., RPA
Vice-President, Principal Project Director

Appendix C:

Representative Project Photographs

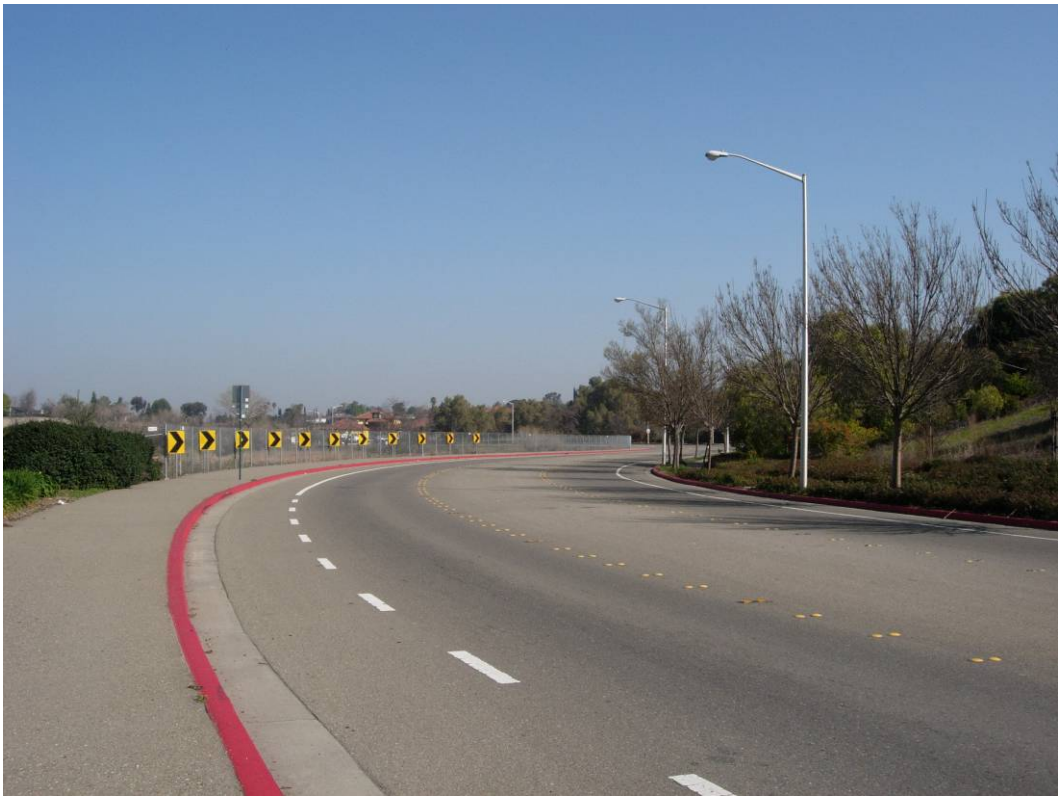

Photo 1: Golf Course Road near the entrance to Lone Tree Golf Course (looking north).

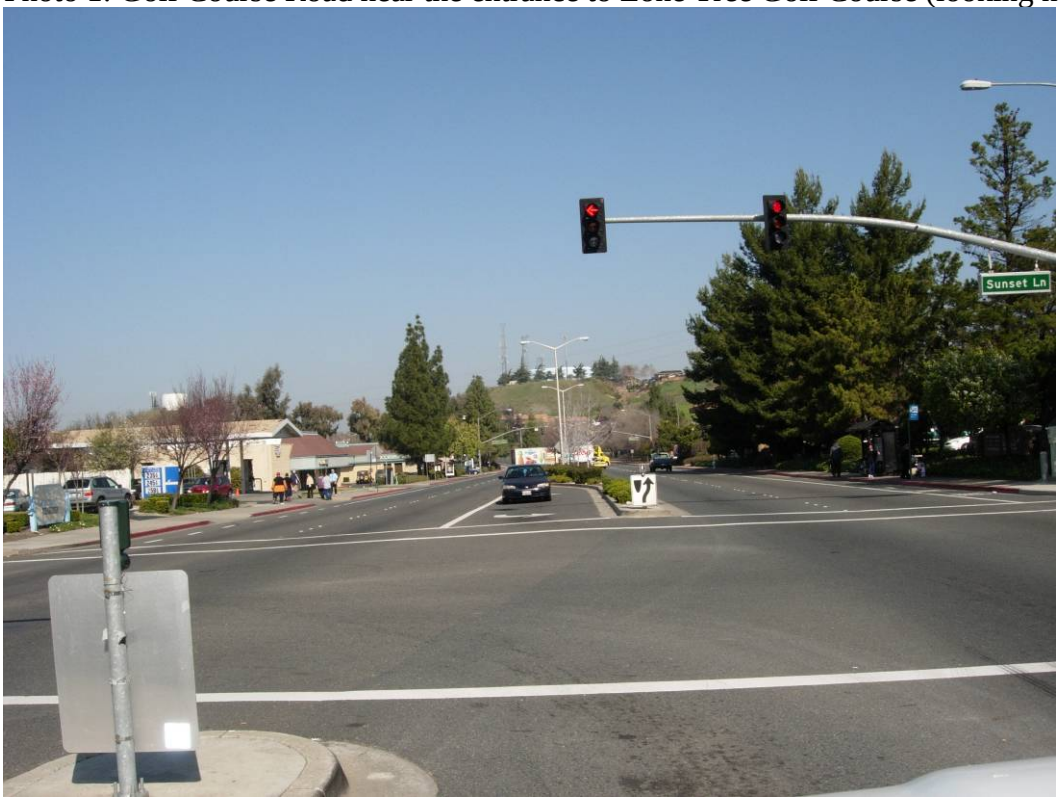

Photo 2: Lone Tree Way at Sunset Lane (looking north).

Photo 3: Clayburn Road (looking northwest)

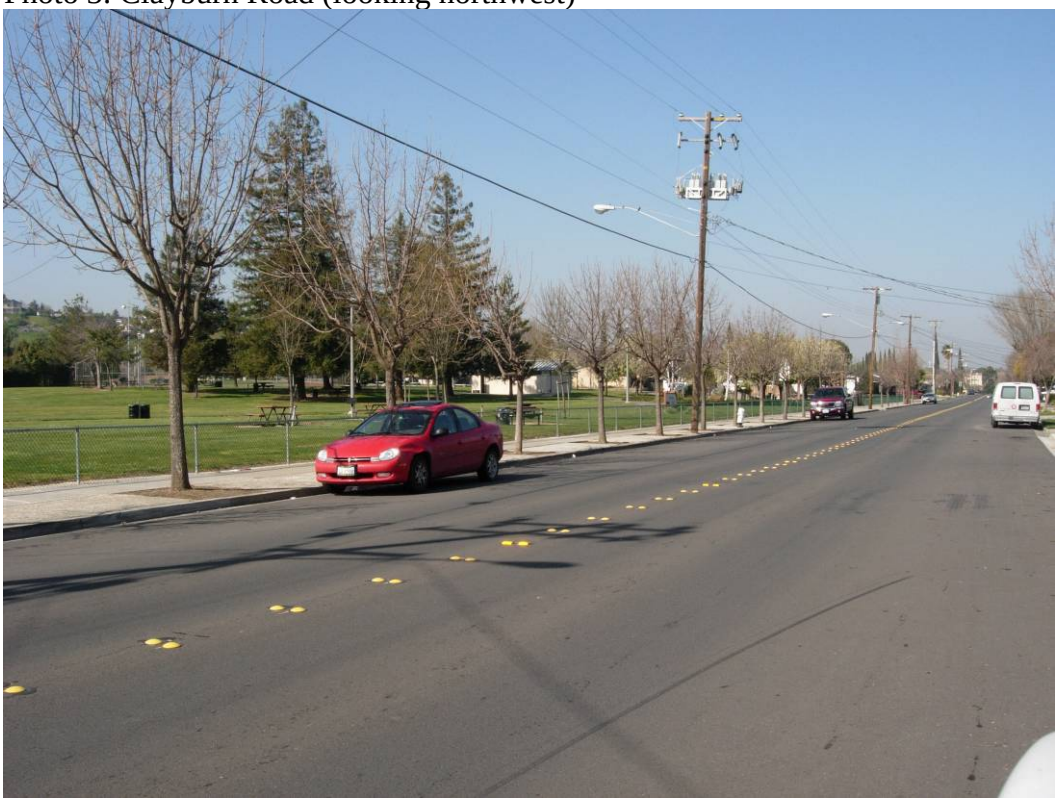

Photo 4: Longview Road adjacent to Chichibu Park.

Photo 5: Putnam Street near D Street intersection (looking east).

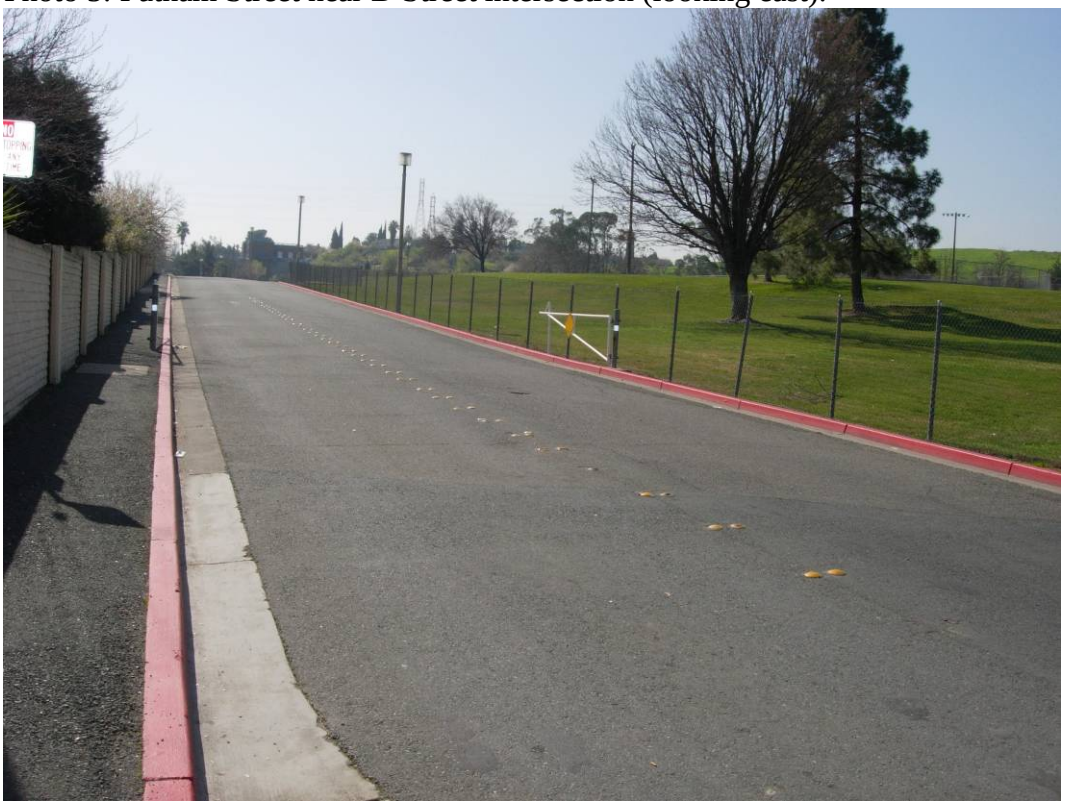
Photo 6: D Street adjacent to Memorial Park

Photo 7: Hillside Road at the intersection with Sunset Lane (looking west).

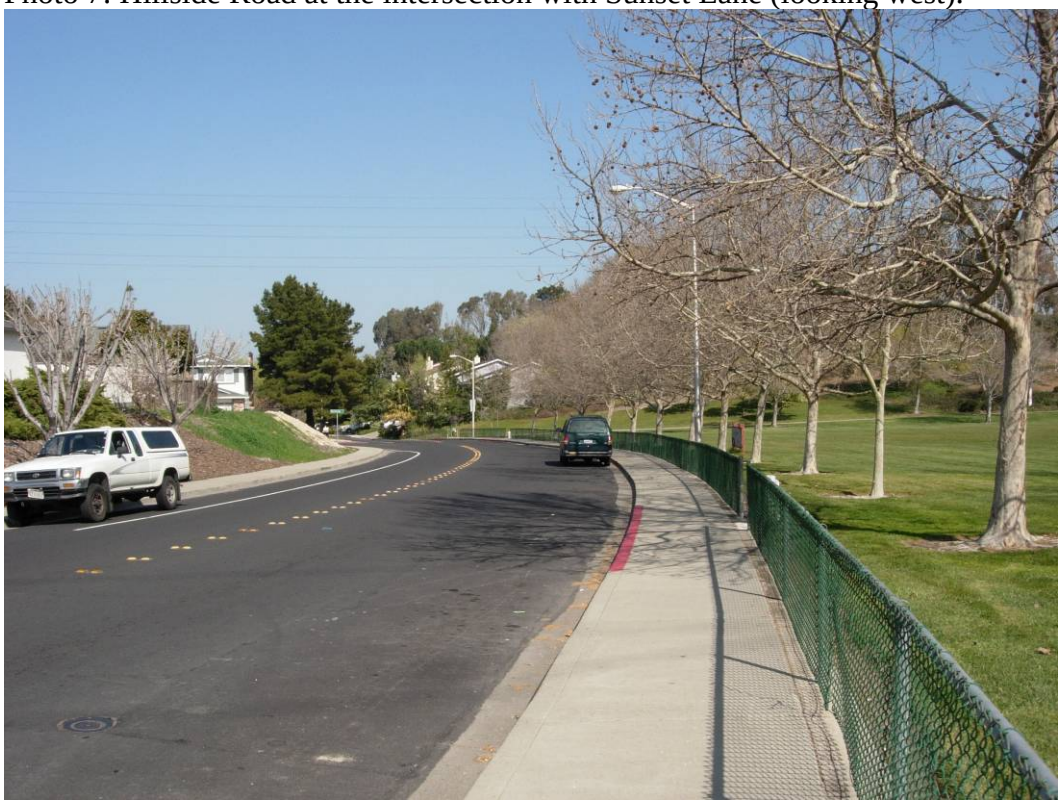

Photo 8: Sunset Lane adjacent to Mountaire Park.

Photo 9: West 10th Street near the intersection with A Street (looking west).

Photo 10: West 10th Street near the Fairgrounds (looking west)

Photo 11: Roadway entrance to Fairgrounds Park

Photo 12: Crestview Drive (looking north).

Photo 13: Somersville Road adjacent to Babe Ruth Fields (looking south)

Photo 14: Pittsburg-Antioch Highway (looking east).