GREENWOOD LAKE WATER TREATMENT PLANT AND TREATED WATER PIPELINE PROJECT IN EL DORADO COUNTY, CALIFORNIA

ENVIRONMENTAL ASSESSMENT

Prepared by:
U.S. Environmental Protection Agency, Region IX
75 Hawthorne Street
San Francisco, California 94105

&

Georgetown Divide Public Utility District
Post Office Box 4240
Georgetown, California 95634

Based on Information and Data Provided by:
Planning Partners, Inc.
7620 Lakehill Court
Elk Grove, California 95624
&
KASL Consulting Engineering
7777 Greenback Lane
Citrus Heights, California 95610

JUNE 12, 2007

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1 BACKGROUND

1.1 INTRODUCTION

The United States (U.S.) Environmental Protection Agency (EPA) has issued a special appropriation grant to the Georgetown Divide Public Utility District (GDPUD) for the Greenwood Lake Water Treatment Facility. The grant assists in funding project engineering design, National Environmental Policy Act (NEPA) compliance, preparation for acquisition of the easement for the water transmission main line, and construction of the water transmission main line. The California Department of Water Resources (DWR) and the California Department of Health Services (DHS) are also administering federal funds to support the Proposed Action through the Drinking Water State Revolving Fund program. The Proposed Action is the construction and operation of a new water treatment plant (WTP) and approximately 3 miles of treated water pipeline for the GDPUD in El Dorado County, California. The total estimated project cost is $2.6 million; the U.S. EPA is funding $1,433,600.

1.2 ENVIRONMENTAL ASSESSMENT PROCESS

This Environmental Assessment (EA) was prepared pursuant to the National Environmental Policy Act (NEPA) using Council of Environmental Quality (CEQ) regulations (40 CFR Parts 1500-1508) and EPA regulations (40 CFR Part 6) as guidance. This EA documents the evaluation of potential direct, indirect, and cumulative environmental consequences of the proposed federal action in the individual resource sections. Following the public review period for this EA, EPA will use this document and information received in comments to determine that either a Finding of No Significant Impact (FONSI) or an Environmental Impact Statement (EIS) is appropriate.

This EA has been prepared concurrent to the project's Environmental Impact Report (EIR) prepared by the GDPUD in compliance with the California Environmental Quality Act (CEQA). The DWR and DHS will use EPA's EA and GDPUD's EIR to comply with NEPA and CEQA in administering the Safe Drinking Water Program. This EA and the project EIR will circulate concurrently for 45 days from June 12, 2007 through July 27, 2007.

1.3 PURPOSE AND NEED FOR PROPOSED ACTION

Western El Dorado County has been experiencing substantial development and population growth. The GDPUD's water supply system was originally created over 100 years ago with a series of water ditches, pipelines, and reservoirs. The system needs to be upgraded to comply with more recent water quality standards, has inefficiencies, and has constraints in capacity. Additionally, the surface water sources used by the District are exposed to contamination from natural sources and human activities.

The purpose of the Proposed Action is to:

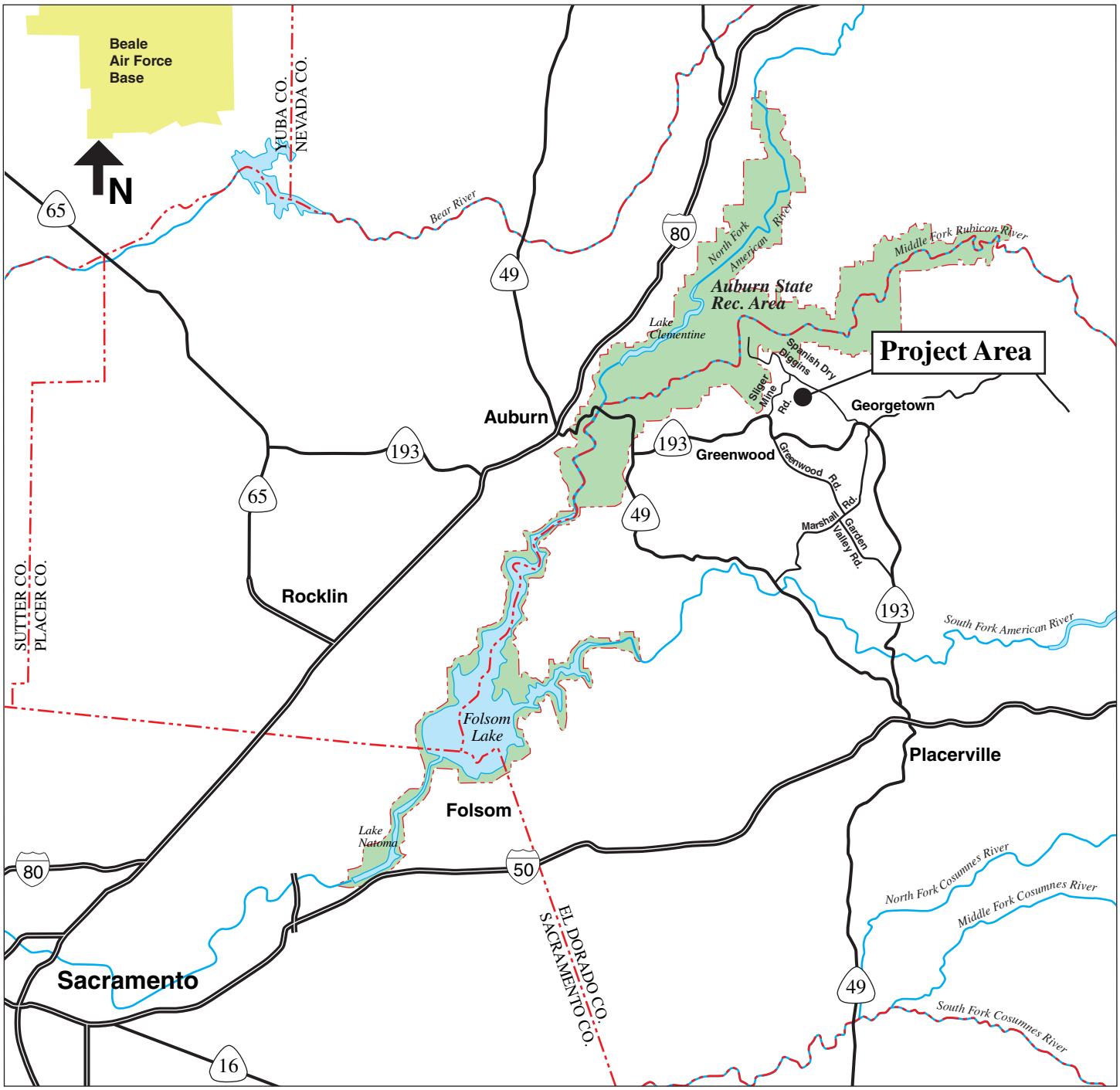
- Improve drinking water quality by complying with safe drinking water standards consistent with U.S. Safe Drinking Water Act as amended, increased regulations from the U.S. Environmental Protection Agency's (EPA) Interim Enhanced Surface Water Treatment Rules and regulations, the California Safe Drinking Water Act (California Government Code, Health & Safety Code, Part 12 Drinking Water, Chapter 4), Safe Drinking Water State Revolving Fund Law of 1997, the Long Term 1 Enhanced Surface Water Treatment Rule (LT1) which now requires small systems to control microbial contaminants (with a maximum contaminant level goal of zero for cryptosporidium) and state drinking water regulations;
- Reduce energy consumption by replacing booster pumps at the Auburn Lake Trails WTP with a gravity flow system at the proposed Greenwood Lake WTP; and
- Improve emergency and domestic water supply, which is currently operating at the area maximum day demand of 2.3 million gallons per day (mgd), by expanding treated water storage from 500,000 gallons to 1,000,000 gallons and expanding daily treatment levels to 2.7 mgd.

1.4 PROJECT LOCATION

The project is located in northwestern El Dorado County, California approximately 35 miles east of Sacramento (Figure 1). The Greenwood Lake WTP site is adjacent to the western edge of the existing Greenwood Lake, approximately 3 miles northwest of the unincorporated community of Georgetown. The proposed treated water pipeline connects the proposed Greenwood Lake WTP to the existing treated water pipeline system at Sweetwater Trail, approximately 3 miles to the west (Figure 2).

1.5 PROPOSED ACTION

There are two sources of federal funds being applied to the Proposed Action. The EPA directly proposes to authorize the use of funds available through special Congressional appropriation for assistance in constructing the proposed project, and thus they are the lead NEPA agency. The DWR and DHS intend to authorize use of federal Safe Drinking Water Program funds to implement the Proposed Action. The proposed action analyzed in this NEPA document is the construction and operation of a water treatment facility, and the construction of a water transmission line from the facility, for drinking water within the service area of the GDPUD. The transmission line would involve construction of approximately 3 miles of treated water pipeline, consisting of new 16 to 20-inch diameter water pipe. In addition to providing intermediate connections, the project would connect the proposed Greenwood Lake WTP to the existing GDPUD treated water distribution system near the existing Auburn Lake Trails WTP. The Auburn Lake Trails WTP would be removed from service after the Greenwood Lake WTP begins operation.

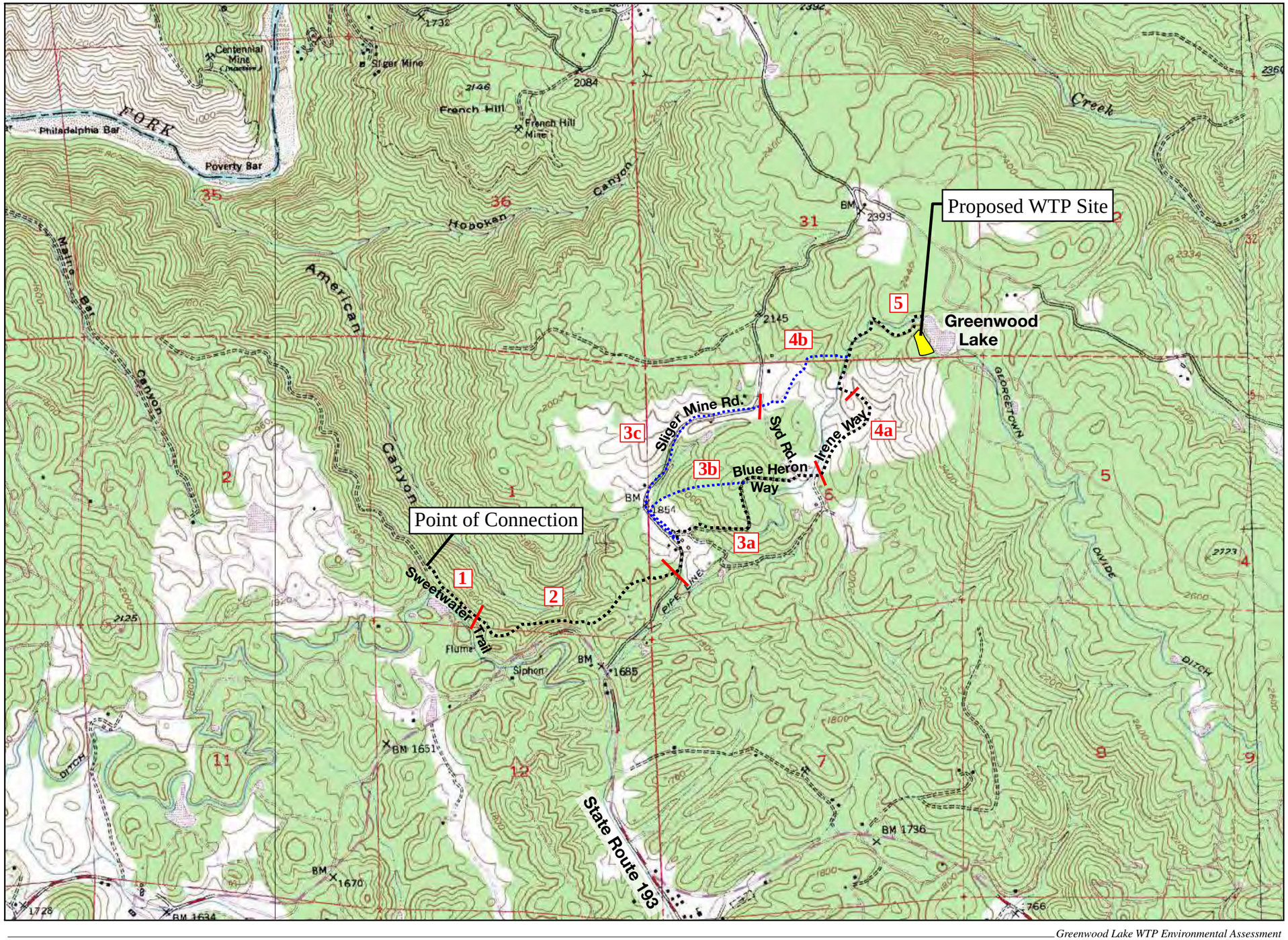


Greenwood Lake WTP Environmental Assessment

SOURCE: Planning Partners, April 2007

Figure 1

Regional Location



SOURCE: Planning Partners, April 2007
Base Map: USGS 7.5" Greenwood Topographical Quad

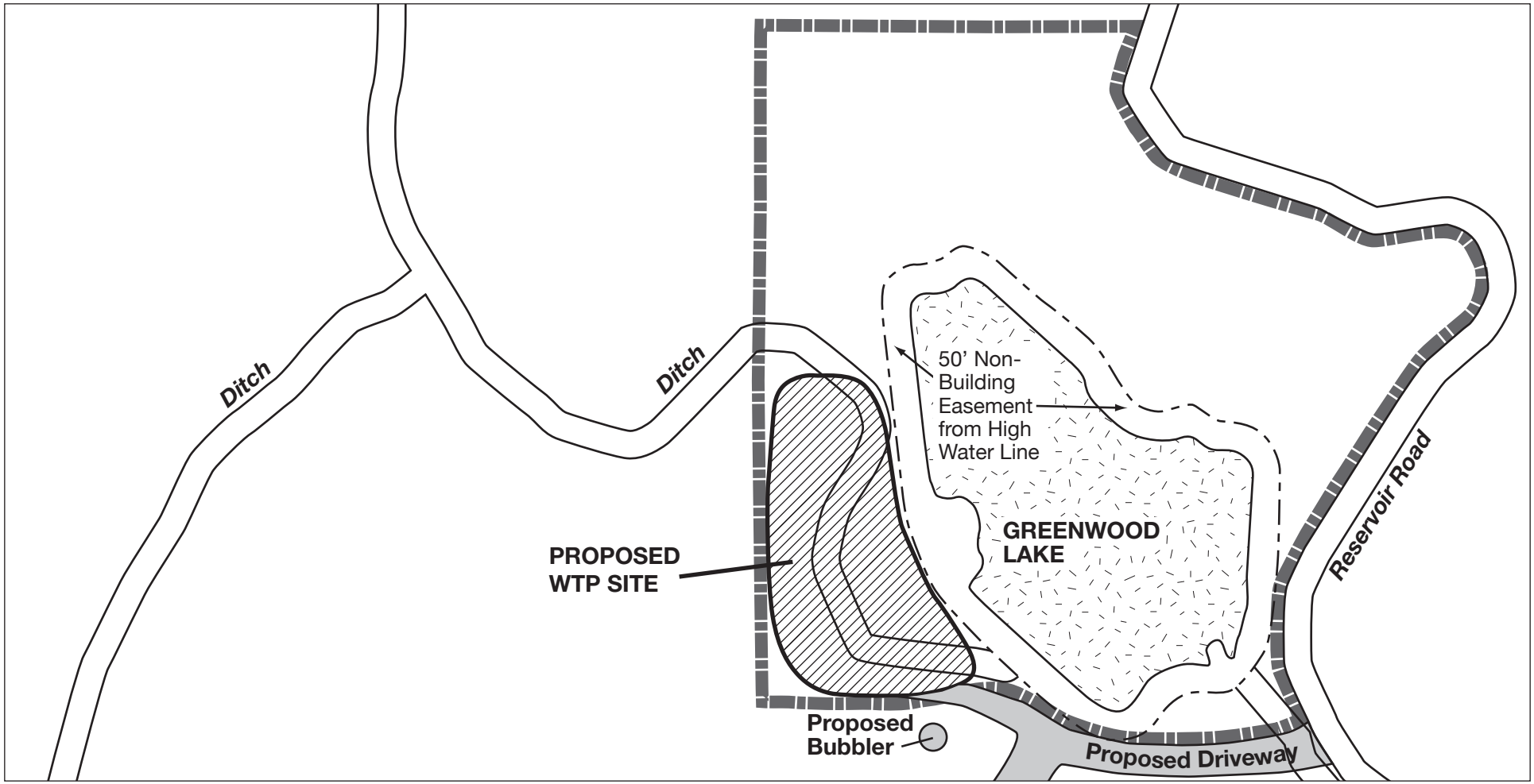
Greenwood Lake WTP Environmental Assessment

Figure 2
Project Location

The GDPUD's existing Greenwood Lake at elevation 2,435 feet above sea level (msl) is currently supplied with raw water via the Georgetown Divide Ditch originating on Pilot Creek at Stumpy Meadows Reservoir. No additional diversion from Stumpy Meadows Reservoir would be necessary to supply the proposed Greenwood Lake WTP. Greenwood Lake was created in approximately 1874 and has the capacity to store 6 to 10 acre-feet of water. The Greenwood Lake WTP would establish a maximum day treated water supply of 3 million gallons per day (mgd), or approximately 1,000 to 2,100 gallons per minute (gpm). The Proposed Action replaces the existing Auburn Lake Trails WTP, which currently treats up to 2.3 mgd. Though the treatment plant has a proposed design a capacity of 3 mgd, it could be expanded in the future. No expansion beyond 3 mgd is planned at this time, and any future expansion would require compliance with CEQA and possibly NEPA, depending on the funding source.

Greenwood Lake vicinity has historically been used for casual recreation including picnics and walks. El Dorado County once administered Greenwood Lake with restrooms and picnic tables; however their public recreation services stopped over 25 years ago. Since that time, GDPUD has attempted to protect Greenwood Lake as a public water supply with postings and rock barriers with limited success. The reservoir has been exposed to contamination through people and horses entering the lake, motorized vehicles operating in close proximity to the lake creating erosion, and refuse being dumped within the lake vicinity. In order to reduce the potential for raw water contamination, the GDPUD will install a six-foot chain link fence around the lake and proposed WTP and post information to indicate that the lake is a public drinking water supply and no access is permitted within the fenced area. Non-motorized, non-contact recreation uses would continue to be allowed outside the fenced area.

Portions of the GDPUD property and the margins of Greenwood Lake have historically been used by equestrians. The existing horse trail access would be retained, and where necessary realigned around the proposed WTP and Greenwood Lake areas outside of the fenced area. To reduce the potential for raw water contamination from wildlife and horses using the lake for drinking water, GDPUD will install a wildlife water "bubbler" in the area southwest of Greenwood Lake (see Figure 3).



SOURCE: Planning Partners, April 2007

Proposed Fence

Greenwood Lake WTP Environmental Assessment

Figure 3

Improvements in the Vicinity of Greenwood Lake

1.6 PERMITS AND APPROVALS

1.6.1 FEDERAL

Federal agencies have the following responsibilities related to the Proposed Action:

UNITED STATES

Environmental Protection Agency

- The EPA has issued a special appropriation grant to assist project construction and related costs.

- Compliance with the National Environmental Protection Act – The EPA will determine compliance with NEPA upon its review of the EA. This determination could result in a FONSI or find that preparation of an EIS is appropriate. No administrative action will be taken on a project until the prescribed minimum 30-day comment period for the FONSI has elapsed and the Agency has considered all comments.

STATE OF CALIFORNIA

State agencies have the following permitting authority related to the Proposed Action:

California Department of Health Services

- Water Supply Permit – The California Department of Health Services will issue a modified water supply permit to allow operation of a public water system as modified by the construction and operation of the Greenwood Lake WTP.
- Safe Drinking Water State Revolving Fund Program - The California Department of Health Services will approve a grant to fund construction of a public water system.

State Water Resources Control Board

- General Construction Activity (NPDES General Permit No. 99-08-DWQ) – The State Water Resources Control Board has adopted a General Construction Activity Storm Water Permit for storm water discharges associated with any construction activity, including clearing, grading, excavation, reconstruction, and dredge and fill activities, that results in the disturbance of at least one acre of total land area. This permit requires the preparation and implementation of a Storm Water Pollution Prevention Plan (SWPPP). The purpose of the SWPPP is to detail those measures that will be undertaken to prevent potential effects to water quality during construction.

LOCAL AGENCIES

Local agencies have the following responsibilities and permitting authority related to the Proposed Action:

Georgetown Divide Public Utility District

- Approve the Environmental Impact Report – The GDPUD will act as the lead agency as defined by CEQA, and will have the authority to determine if the EIR is adequate under CEQA.

- Approve the plans – The GDPUD will review and approve all construction plans and specifications for the Greenwood Lake WTP and would provide a portion of the funding necessary to construct the Proposed Action. This act will constitute "approval" of the project.

El Dorado County

- Encroachment Permit – El Dorado County has permit authority over GDPUD for any construction within public streets within the County maintained roadway system. This would apply to any construction within Sliger Mine Road.

El Dorado County Air Quality Management District

- Permit to Construct/Permit to Operate – These permits would be needed to install the emergency standby generator.

2 ALTERNATIVES CONSIDERED

2.1 ALTERNATIVES CONSIDERED AND ELIMINATED

Based on the requirements of NEPA, a list of alternatives was developed by the GDPUD. The following range of alternatives were considered in the Preliminary Engineering and Design Reports (KASL, 2005 and 2007) to address the GDPUD's need for improved water quality and decreased system operational costs and were rejected from further consideration due to the need for large development times and the potential for delays during the permitting process, excessive costs, and/or environmental effects.

2.1.1 DEVELOPING GROUNDWATER RESOURCES

The GDPUD considered the use of groundwater wells to meet the project objectives. To replace the 2.3 mgd (1,550 gpm) capacity of the existing Auburn Lake Trails WTP, over 300 wells would be required.

This alternative was rejected because: 1) groundwater resources in the Sierra Foothills at the midlevel elevations of the GDPUD are not a reliable source for public water supplies; 2) a large number of wells would be needed; 3) the ability to obtain the necessary permits for over 300 wells within the desired project development timeframe would be uncertain; 4) this system would require extensive raw water distribution and treatment infrastructure; and, 5) the potential well sites have not been identified but many of these sites are not currently under the control of the GDPUD, and securing such a large number of sites would be uncertain.

2.1.2 CONSOLIDATION WITH OTHER WATER SYSTEMS

GDPUD serves El Dorado County residents located on the "divide" between the South Fork and the Middle Fork of the American River. This alternative would seek to increase the GDPUD water treatment capacity through connecting with adjacent water districts.

This alternative was rejected because: 1) it would require interagency agreements which would be uncertain; 2) it would require extensive intersystem distribution systems; and, 3) the operational costs would far exceed the Proposed Action in order to pump treated water through the GDPUD service area.

2.1.3 MODIFYING EXISTING AUBURN LAKE TRAILS WTP

This alternative would seek to expand the existing Auburn Lake Trails WTP, which is approximately 30 years old. Existing maximum day demands are equal to or exceed this treatment plant's capacity. The existing filtration equipment has reached the end of its usable life. The existing treated water pumping, transmission mains, and filter system have limited capacity. The existing WTP system design does not meet current Department of Health Services treatment standards; additional pretreatment steps would have to be added if the existing in-line filters were to be modified. If the Auburn Lake Trails WTP were to be expanded, it would have to be substantially modified to improve capacity, performance and to meet health standards.

This alternative was rejected because: 1) available space at the existing Auburn Lake Trails WTP is inadequate to meet the new filtration system and for pretreatment facility designs to meet Surface Water Treatment Rule regulations; 2) the cost to rebuild the WTP may far exceed the cost of building a new system; 3) during reconstruction, there would be limited treated water available for the area residents; and, 4) the operational costs would continue to be burdened by pumping costs to users at higher elevations.

2.1.4 WTP LOCATIONS OTHER THAN AT GREENWOOD LAKE

This alternative would seek to construct a new WTP at a location other than at Greenwood Lake. Requirements for this alternative would include a safe and reliable source of untreated water supply and a location within the GDPUD western service area currently served by the Auburn Lake Trails WTP and Walton Lakes WTP. Additional requirements include an adequately sized parcel available to the District within the funding constraints of the project, and the District's desire to reduce the energy needed to treat and distribute water. This alternative was deemed to be infeasible because: 1) the source of water to be treated is held at Greenwood Lake, an existing regulatory reservoir on the District's water supply system; 2) the Greenwood Lake property is already owned by GDPUD and no low-cost alternative sites have been identified by the District adjacent to existing sources of untreated water; and 3) the proposed Greenwood Lake site is at a high elevation within its service area thereby permitting distribution by gravity rather than by pumping, and no other high elevation sites adjacent to existing sources of untreated water were identified by GDPUD.

2.1.5 OTHER WATER TRANSMISSION MAIN ALIGNMENT OPTIONS

During development of the proposed Greenwood Lake WTP project and water transmission main, a number of other alignments options were evaluated prior to selecting the proposed project segments assessed in the EA. These include SR 193 and Sliger Mine Road in Segment 2, and other cross-country options in Segment 3. All of these other preliminary alignment options for the water transmission main were considered and rejected because of: environmental effects; construction costs; acquisition costs; potential project delays due to permits; and long term operation and maintenance costs.

2.2 PROJECT ALTERNATIVES ANALYZED IN THIS EA

Two alternatives were selected for further study. NEPA require analysis of the No Action Alternative. The Proposed Action was selected as an alternative because it best meets the project objectives and minimizes environmental effects, costs and uncertainty in the project development process. The No Action Alternative and the Proposed Action are analyzed in Section 4 of this EA.

2.2.1 ALTERNATIVE 1 - NO ACTION ALTERNATIVE

The No Action Alternative is for comparative evaluation. NEPA Guidelines require discussion of the "No Action" alternative to allow decision makers to compare the effects of approving the Proposed Action with the effects of not approving the Proposed Action. Under the No Action Alternative, no new WTP and associated water system improvements would be constructed. The existing GDPUD water system would not change. The existing water quality issues and costs of pumping treated water uphill would continue.

2.2.2 ALTERNATIVE 2 - PROPOSED ACTION AND ITS SEGMENT ALTERNATIVES

The Proposed Action consists of the construction and operation of a new Greenwood Lake WTP and construction of approximately 3 miles of treated water pipeline, consisting of a new 16 to 20-inch diameter water pipe. In addition to providing intermediate connections, the project would connect the proposed Greenwood Lake WTP to the existing GDPUD treated water distribution system near the existing Auburn Lake Trails WTP. The Auburn Lake Trails WTP would be removed from service after the Greenwood Lake WTP begins operation.

The existing Georgetown Divide Ditch would be retained for conveying raw water to irrigation users; although the existing open ditch would be piped through the proposed WTP site itself. Approximately 3.5 cubic feet per second (cfs) of the existing 13 cfs at Greenwood Lake flowing in the Georgetown Divide Ditch is already allocated to the Auburn Lake Trails WTP. Implementation of the Proposed Action would result in as much as 4.5 cfs reduction in the water supply in the Georgetown Divide Ditch downstream of the proposed Greenwood Lake WTP. After the irrigation season (Mid-April through late September), during dry years there may be no water in the Georgetown Divide Ditch between the Greenwood Lake WTP and the Auburn Lake Trails WTP prior to recharge of the ditch by rainfall and natural runoff.

SITE PLAN

The proposed Greenwood Lake WTP would be centrally located in the Georgetown Divide PUD service area. Primary access is proposed from Reservoir Road and Loghouse Road to the north, which connect to SR 193 via Spanish Dry Diggings Road and Sliger Mine Road. A secondary access is proposed from a new private driveway off Reservoir Road to the south of Greenwood Lake that also serves as access to the Musso property. The area immediately surrounding the proposed WTP site is forested with adjacent rural residential / agricultural land uses. The proposed WTP would be entirely on GDPUD property, and all of the WTP structures would be setback a minimum of 30 feet from the property line.

A six-foot high chain link fence would encompass most of the parcel that includes Greenwood Lake and the proposed WTP site (APN 061-042-059-1). This proposed security fence would protect the water quality of Greenwood Lake and ensure compliance with DHS standards. Loghouse Road would be improved from its existing 10-foot wide road with asphalt paving over native soil to a 20-foot wide paved road with an improved structural section and 2-foot shoulders. The secondary driveway would be constructed as a paved road with an improved structural section and provide private property access to the adjacent Musso property to the south (APN 061-100-44-100); currently the Musso property access is along Loghouse Road, which passes through the site of the proposed WTP. The proposed Musso access would connect from Reservoir Road at the southern corner of Greenwood Lake to the existing Musso access at their property line. The existing horse trails along the perimeter of Greenwood Lake would be provided access along the southern boundary of Greenwood Lake. Figure 3 depicts the locations the proposed security fence, the relocated private driveway and the horse trail access in the vicinity of Greenwood Lake.

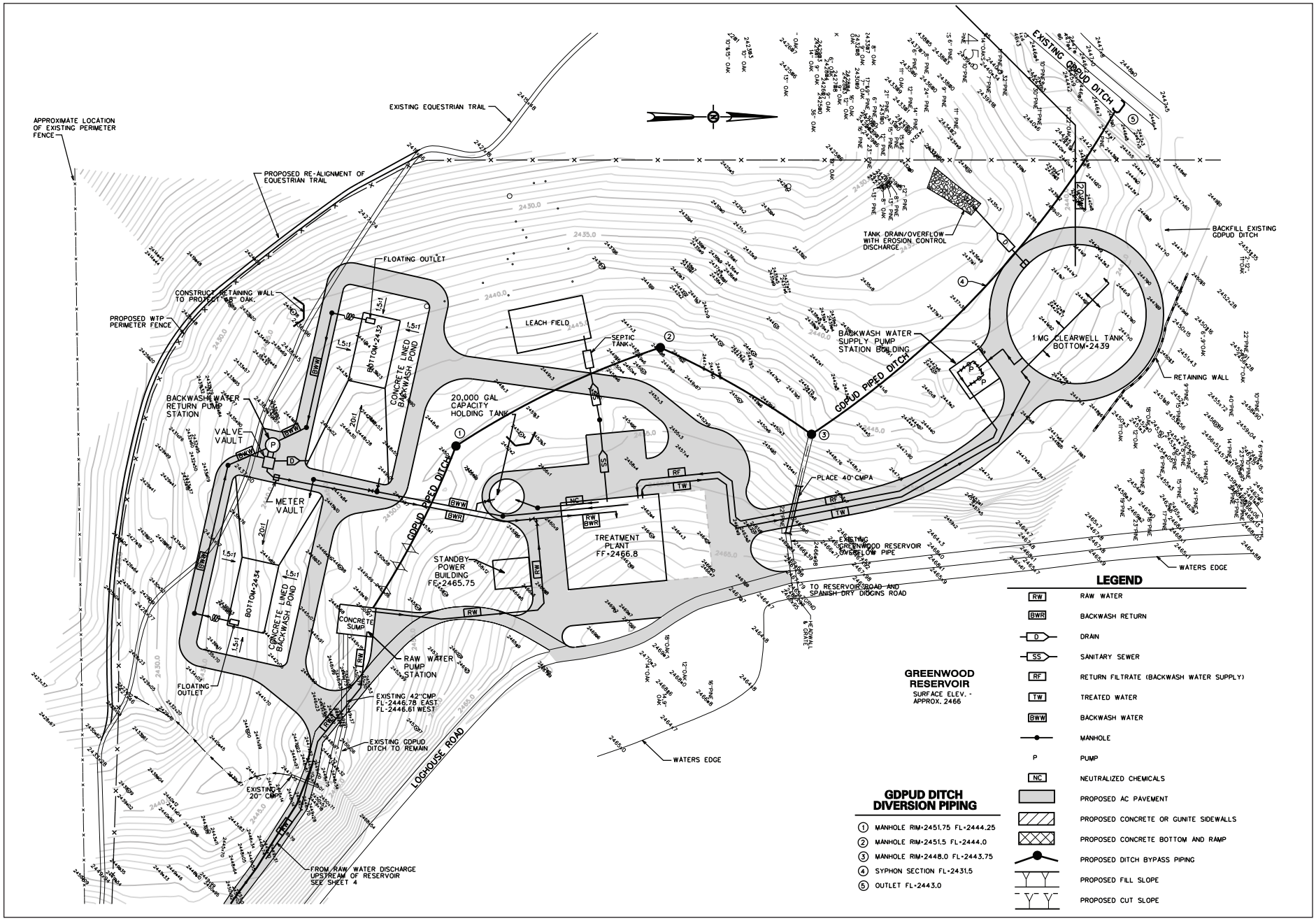
The proposed WTP structures and facilities would be located west of Greenwood Lake and would include the following components:

- Treated water storage clearwell tank painted forest green or similar color at the northern edge of the site;
- Treatment plant building near the center of the site;
- Standby power building south of the treatment plant building;
- Backwash water supply pump station building next to the clearwell tank;
- Raw water pump station along the west boundary;
- Two backwash recovery ponds on the south side of the site;
- A 20,000 gallon holding tank between the treatment plant and backwash ponds;
- Site improvements including a paved maintenance driveway, a leach field; and
- Piping the Georgetown Divide Ditch through the WTP site (Figure 4).

The three proposed buildings would be constructed of earth-toned cinder blocks and metal roofing materials. The site would be graded and surfaced as part of the construction for the water storage tank, the treatment facilities, backwash recovery ponds and the perimeter chain link fence. The cut and fill from construction would be balanced on the WTP site.

Approximately 700 feet of the existing open raw water ditch would be replaced by underground piping within the WTP site from the location of the raw water pump on the south side of the WTP to the north side of the treated water storage tank. Conveyance of raw water and rainfall runoff from upstream of the WTP to downstream of the WTP would continue to occur via the new 48 to 54-inch in diameter raw water pipeline. The raw water pipeline size would accommodate total ditch flows during the occasional WTP shutdown for cleaning and maintenance.

Stormwater from the site would be collected via drop inlets and routed through pipes to the southwest and northwest corners of the site, with erosion-protected outfalls to natural drainageways off-site. Any trees taken from the WTP area would be harvested by the Growlersburg State Conservation Camp for use in public projects such as park picnic benches. A new paved driveway would be constructed along the south side of the Lake to serve as an alternate WTP access, and replace the existing shared access through the WTP site to an adjacent private residence.



Greenwood Lake WTP Environmental Assessment

SOURCE: KASL, April 2007

Figure 4

WTP Site Plan

TREATMENT PLANT STRUCTURES

There would be three windowless block buildings with metal roofs constructed: a treatment plant; a standby power building; and a backwash water supply pump station building. The treatment plant building would be a 60 by 68-foot block wall building (with room to expand to 60 by 100 feet) and would be approximately 20 to 24 feet high with building floor level at 2,466 feet msl. In addition to the microfiltration membrane racks, valve racks, strainers, chemical facilities, air compressors, lab, office and equipment storage, the treatment plant building would also house the motor control center and the system instrumentation and controls.

The standby generator building would be an approximately 20 by 30-foot block wall building approximately 14 feet high at 2,466 feet msl to house the standby generator and workshop facilities. A 400 to 600 KW (approximately 200 horse brake power) diesel powered standby generator would be installed. The standby power supply would provide power to operate the WTP during an emergency. A Permit to Construct and a Permit to Operate would be obtained from the El Dorado County Air Quality Management District for the standby generator.

The backwash water supply pump station building would be an approximately 20 by 24-foot block wall building approximately 12 feet high at 2,440 feet msl to house the backwash water supply sump station, including two vertical turbine pumps.

2.2.3 PIPELINE CORRIDOR SEGMENT DESCRIPTIONS

The proposed treated water pipeline route has been separated into five major segments, described below, as depicted in Figure 2 (above) and summarized in Table 1. Route options within Segments 3, 4 and 5 are being considered to allow design flexibility to address any potential engineering, environmental, and property easement acquisition issues that might be identified during the project review and development process. The length of the treated water main would be between 14,350 and 15,740 feet, depending upon which segment variation is implemented.

Table 1	Greenwood Lake WTP Alignment Segments			
Start Location	**End Location**	**Segment Description**	**Segment ID**	**Alignment Description**
Auburn Lake Trails WTP	Sweet Water Trail	Sweetwater Trail	1	From the existing Auburn Lake Trails WTP to approximately 800 feet southeast to install 16" transmission water main along the north and east side of Sweetwater Trail, a public road.
Sweet Water Trail	Kaiser Siphon and Sliger Mine Road	Kaiser Siphon	2	From the southeastern connection in Sweetwater Trail, install 16" transmission water main approximately 4,270 feet to the connection at Kaiser Siphon and Sliger Mine Road. Approximately 2,200 feet would be along the southern side of an abandoned roadbed (old SR 193) between Sweetwater Trail and Kaiser Siphon. Approximately 2,070 feet would be parallel to the existing GDPUD Kaiser Siphon.
Sliger Mine Road at Kaiser Siphon	Blue Heron Way and Syd Road/Irene Lane	Blue Heron	3a, 3b, 3c	3a: At the intersection of Sliger Mine Road and Kaiser Siphon, install 20" transmission water main approximately 4,800 feet to the intersection of Blue Heron and Syd Road/Irene Lane. Approximately 750 feet would be along the southwest side of Sliger Mine Road, an El Dorado County paved roadway. Approximately 2,250 feet would be within Chipiona Way, an unpaved roadway and across Cunningham's private property. Approximately 1,800 would be within Blue Heron Way, an unpaved Roadway. 3b: Install 20" transmission water main along Sliger Mine Road for approximately 1,500 feet. At this point it traverses cross-country easterly for approximately 1,700 feet to Blue Heron Way. The proposed pipeline would then continue within Blue Heron Way approximately 1,700 feet to its intersection with Syd Road and Irene Way. 3c: Install 20" transmission water main along Sliger Mine Road for approximately 4,600 feet. At Sliger Mine Road and Syd Road Segment 3c turns east into Syd Road for approximately 300 feet.
Syd Road/Irene Lane	Irene Lane and GDPUD property	Irene Lane	4a, 4c	4a: Install 20" transmission water main approximately 1,970 feet along Irene Lane, an unpaved roadway. 4b: Install 20" transmission water main on Syd Road 300 feet east from its intersection with Sliger Mine Road, and along private right of way for approximately 2,000 feet to the existing Georgetown Divide Ditch.
Irene Lane	Greenwood Lake WTP	Georgetown Divide Ditch	5	5: Install 20" transmission water main approximately 2,800 feet between Irene Lane and the proposed Greenwood Lake WTP. Approximately 200 feet would be cross-country along the south property line of Tuttle, approximately 1,800 feet would be along the existing GDPUD raw water ditch.

Source: KASL Consulting Engineers and Planning Partners, 2006-2007

SEGMENT 1: SWEETWATER TRAIL PIPELINE SECTION

Only one potential pipeline alignment is identified in this section. Segment 1 extends about 800 feet from the existing Auburn Lake Trails WTP along Sweetwater Trail, a public roadway, in unincorporated El Dorado County. A new 16-inch diameter gravity-fed water main would be installed from an elevation of 1,765 feet msl at station 10+00 at Auburn Lake Trails WTP entrance to elevation 1,760 feet msl at station 18+03 along Sweetwater Trail. All of the proposed Segment 1 alignment would be along the north and east side of the existing Sweetwater Trail. Easement acquisition would not be required.

It is anticipated that a staging area would be located at the existing Auburn Lake Trails WTP site during construction of the Proposed Action.

SEGMENT 2: KAISER SIPHON PIPELINE SECTION

Only one pipeline alignment is proposed in this section. Segment 2 extends from Sweetwater Trail to the intersection of the existing Kaiser Siphon at Sliger Mine Road in unincorporated El Dorado County. Approximately 2,200 feet of new 16-inch diameter gravity-fed water main would be installed within old Hwy 193, an abandoned roadbed with limited use, starting at an elevation of 1,760 feet msl at station 10+00 Segment 2 at Sweetwater Trail to elevation 1,720 feet msl at station 32+, the projects intersection with the Kaiser Siphon (the portion of the Georgetown Divide Ditch which is in a pipe). Old Hwy 193 drops down below Sweetwater Trail to 1,640 msl at station 21+00, and climbs back up hill to its location parallel with Kaiser Siphon. Approximately 2,070 feet of new 16-inch diameter gravity-fed water main will be installed parallel and south of the existing Kaiser Siphon. An existing abandoned section of the Kaiser Siphon would be removed after the proposed 16-inch treated water main is installed parallel to the new operational section of the Kaiser Siphon.

Segment 2 would cross both private and public property. Easement would be acquired (APNs 074-230-07-100 Crowley; 074-030-31-100 Miller; 074-090-17-100 Zitta; 074-030-55-100 Leow; 074-030-37-100 Richardson, 061-061-31-100 Bureau of Land Management).

SEGMENT 3: BLUE HERON WAY PIPELINE SECTION

The pipeline would pass through one of three alternative alignments in this segment, either Segment 3a, 3b, or 3c. The GDPUD will make a decision on which alignment to pursue at the conclusion of the project development and environmental review process based on identified environmental effects, ease and cost of construction and maintenance, operational effectiveness, and the ease and cost of easement acquisition. It is anticipated that a construction staging area would be located near the intersection of Sliger Mine Road and Chipiona Way during construction of the Proposed Action.

Segment 3a includes approximately 4,800 feet of new 20-inch diameter water main in unincorporated El Dorado County. Segment 3a would follow a mix of public and private roadways and an abandoned roadway. An easement would be acquired (APN 061-590-17-100, Cunningham). Cunningham's private property was once graded as a road and is currently in a natural state; after construction the area will be repaired to its existing condition.

Segment 3a starts at the intersection of Sliger Mine Road and Kaiser Siphon, station 10+00 at an elevation of 1,810 msl, and travels approximately 750 feet northwest along the west side of Sliger

Mine Road, an El Dorado County maintained paved roadway, to station 17+50 at an elevation of 1,860 msl at the intersection of Sliger Mine Road and Chipiona Way. At this point, the 20-inch water main pipeline would turn northeast into Chipiona Way, an unpaved privately maintained roadway, and travel approximately 2,250 feet within Chipiona Way and across Cunningham's private property, to station 37+00 at an elevation of 2,110 feet msl. The proposed pipeline would then continue within Blue Heron Way, a privately maintained roadway, approximately 1,800 feet to its intersection with Syd Road and Irene Way at station 58+00 and 2,190 feet msl.

Segment 3b includes approximately 4,900 feet of new 20-inch diameter water main in unincorporated El Dorado County. Segment 3b would follow a mix of public and private property and trails. Easement acquisition would be required (APN 061-590-51-1, Johnson).

Segment 3b starts at Sliger Mine Road, an El Dorado County maintained paved roadway, at an elevation of 1,810 feet msl. The alignment continues within Sliger Mine Road right of way for approximately 1,500 feet. At this point it traverses cross-country easterly for approximately 1,700 feet to Blue Heron Way, a privately maintained roadway. The proposed pipeline would then continue within Blue Heron Way approximately 1,700 feet to its intersection with Syd Road and Irene Way at 2,190 feet msl.

Segment 3c starts at Sliger Mine Road, an El Dorado County maintained paved roadway, at an elevation of 1,810 msl ; the alignment follows Sliger Mine Road for approximately 4,900 feet. At Sliger Mine Road and Syd Road Segment 3c turns east into Syd Road, a privately maintained roadway, for approximately 400 feet.

SEGMENT 4: IRENE LANE PIPELINE SECTION

The pipeline would pass through one of two alternative alignments in Segment 4, either Segment 4a or 4b. The GDPUD will make a decision on which alignment to pursue at the conclusion of the project development and environmental review process based on identified environmental effects, ease and cost of construction and maintenance, operational effectiveness, and the ease and cost of easement acquisition.

Segment 4a includes approximately 1,970 feet of new 20-inch diameter water main in unincorporated El Dorado County. All of Segment 4a would be within Irene Lane, an unpaved privately maintained roadway. Repair and resurfacing would be required.

Segment 4a starts at the intersection of Syd Way and Irene Lane at station 10+00 at an elevation of 2,090 msl and extends to station 29+71 at an elevation of 2,240 msl.

Segment 4b includes approximately 2,300 feet of new 20-inch diameter water main in unincorporated El Dorado County. Segment 4b would follow a mix of existing private driveways and cross-country. New easements would be required (APNs 061-100-30-100, McGonigle; and 061-100-28-100, McGonigle).

Segment 4b starts from Syd Road 300 feet east from its intersection with Sliger Mine Road. The segment follows private property for approximately 2,000 feet to the existing Georgetown Divide Ditch.

SEGMENT 5: GEORGETOWN DIVIDE DITCH PIPELINE SECTION

The pipeline would pass through one alignment in Segment 5. Segment 5 would both follow private property requiring a new easement (APN 061-100-17-1 Tuttle) and the existing GDPUD property.

Segment 5 starts at Station 10+00 at an elevation of 2,240 msl at the end of Irene Lane. This segment follows the south property line of the Tuttle property cross county for approximately 200 feet. At station 11+10, the alignment connects with and runs parallel with the existing Georgetown Divide Ditch on GDPUD parcel for approximately 1,800 feet to station 38+00 at an elevation of 2,440 msl to the proposed connection to the treated water tank at the proposed Greenwood Lake WTP.

It is anticipated that a construction staging area would be located at the proposed Greenwood Lake WTP site, within the area that would be covered by the facilities and structures.

3 SCOPE OF THE ENVIRONMENTAL ANALYSIS

The EA focuses on the potential direct, indirect, secondary, and cumulative (adverse and beneficial) environmental effects from the two project alternatives: No Action and the Proposed Action (construction and operation of the proposed WTP and alternative pipeline segments). The following specific topics are included in the scope of this EA:

- Air Quality
- Biological Resources
- Cultural Environment
- Geology and Soils
- Hazards and Hazardous Materials
- Hydrology and Water Quality
- Land Use
- Noise
- Population, Housing and Growth Inducement
- Recreation
- Transportation and Traffic
- Cumulative Effects

In preparing an EA, EPA examines various federal cross-cutting laws and Executive Orders (EOs) in accordance with 40 CFR 6.300. The review of these laws and EOs are described below:

3.1 NATIONAL NATURAL LANDMARKS

The Secretary of the Interior is authorized to designate areas as National Natural Landmarks for listing on the National Registry of Natural Landmarks pursuant to the Historic Act of 1935, 16 U.S. Code (USC) 461 *et seq*. In conducting the environmental review of the Proposed Action, EPA is required to consider the existence and location of natural landmarks, using information provided by the National Park Service (NPS) pursuant to 36 CFR 62.6(d). No natural landmarks listed on the National Registry of Natural Landmarks were identified within the Project Area (NPS 2004).

3.2 HISTORIC AND CULTURAL RESOURCES

The *National Historic Preservation Act* (NHPA), as amended, 16 U.S.C. 470, directs federal agencies to integrate historic preservation into all activities which either directly or indirectly involve land use decisions. The NHPA is administered by the NPS, the Advisory Council on Historic Preservation (ACHP), State Historic Preservation Officers (SHPOs), and each federal agency. Implementing regulations include 36 CFR Part 800: *Regulations of the Advisory Council on Historic Preservation Governing the NHPA Section 106 Review Process*. Section 106 of the NHPA requires federal agencies to take into consideration the effect that an action may have on historic properties which are included on, or are eligible for inclusion on, the National Register of Historic Places (NRHP). The Section 106 review process is usually carried out as part of a formal consultation with the SHPO, the ACHP, and other parties, such as Indian tribes, that have knowledge of, or a particular interest in, historic resources in the area of the undertaking.

Consultation with the California State Historic Preservation Office (CSHPO) and tribes are discussed in Section 4.3. Section 106 Consultation has been initiated, and no adverse effects to important cultural resources would be expected to occur. The Section 106 review process and SHPO consultation would be completed prior to any ground-breaking activities related to the Proposed Action. Mitigation included in Section 4.3 would reduce effects related to discovery of unknown cultural resources in the vicinity of the two known resources in the project vicinity.

3.3 CULTURAL RESOURCES DATA

The *Archeological and Historic Preservation Act* (AHPA) of 1974, 16 USC 469 *et seq*. provides for the preservation of cultural resources if an EPA activity may cause irreparable loss or destruction of significant scientific, prehistoric, or archeological data. In accordance with the AHPA, the responsible official or the Secretary of the Interior is authorized to undertake data recovery and preservation activities. Consultation with the California State Historic Preservation Office (CSHPO), and tribes are discussed in Section 4.3 below. There are no known archaeological resources within the APE of the Greenwood Lake WTP project. However, it is possible that construction could result in the inadvertent discovery of unknown archaeological resources; therefore, mitigation is included for the event that undiscovered cultural resources are found during construction, and additional measures as recommended by a qualified archaeologist would be implemented to reduce these effects.

3.4 WETLANDS PROTECTION

EO 11990, "Protection of Wetlands" of 1977, requires federal agencies conducting certain activities to avoid, to the extent possible, adverse effects associated with the destruction or loss of wetlands and to avoid support of new construction in wetlands, if a practicable alternative exists. Discharge of dredge or fill material into wetlands and other waters of the U.S. are also regulated under Section 404 of the Clean Water Act. There are no federally protected wetlands as defined by Section 404 of the Clean Water Act in the project area that would be adversely affected by the Proposed Action (See Section 4.2 below).

3.5 FLOODPLAIN MANAGEMENT

EO 11988, "Floodplain Management" of 1977, requires federal agencies to evaluate the potential effects of actions they may take in a floodplain to avoid, to the extent possible, any adverse effects associated with the direct and indirect development of a floodplain. The Proposed Action is located in a portion of El Dorado County between the Middle and South Forks of the American River that is protected from major flooding by topography, and is not located within a floodplain.

3.6 IMPORTANT FARMLANDS

EPA Policy to Protect Environmentally Significant Agricultural Lands requires EPA to consider the protection of the nations' significant/important agricultural lands from irreversible conversion to uses that result in their loss as an environmental or essential food production resource. Moreover, the Farmland Protection Policy Act (FPPA), 7 USC 4201 *et seq*., and the U.S. Department of Agriculture's (USDA) implementing procedures require federal agencies to evaluate the adverse effects of their actions on prime and unique farmland, including farmland of statewide and local importance. The project does not involve conversion of, or otherwise affect, prime, unique, or

important farmland (NRCS 2005; NRCS 2007). A Farmland Conversion Impact Rating Form AD-1006 has been completed for the Proposed Action and submitted to NRCS for determination.

3.7 COASTAL ZONE MANAGEMENT ACT

The Coastal Zone Management Act (CZMA), 16 USC 1451 *et seq.,* requires that federal agencies in coastal areas be consistent with approved State Coastal Zone Management Programs, to the maximum extent possible. If an EPA action may affect a coastal zone area, the responsible official is required to assess the effect of the action on the coastal zone. The project site is at an elevation of 2,400 feet and is located over 100 miles east of a coastal area; therefore, the Proposed Action would not affect a coastal zone area (USGS 1973).

3.8 COASTAL BARRIER RESOURCES ACT

The Coastal Barrier Resources Act (CBRA), 16 USC 3501 *et seq*., generally prohibits new federal expenditures and financial assistance for development within the Coastal Barrier Resources System (CBRS) and therefore protects ecologically sensitive U.S. coastal barriers. Coastal barriers occur on all the coastlines of the United States (USFWS 2007). As stated above, the project site is at an elevation of 2,400 feet and is located over 100 miles east of a coastal area; therefore, the Proposed Action could not affect a coastal barrier (USGS 1973).

3.9 WILD AND SCENIC RIVERS

The Wild and Scenic Rivers Act (WSRA), 16 USC 271 *et seq*., establishes requirements applicable to water resource projects affecting wild, scenic, or recreational rivers within the National Wild and Scenic Rivers System, as well as rivers designated on the National Rivers Inventory. The project area lies along the topographic divide between the Middle Fork American River and the South Fork American River. No designated wild and scenic rivers occur within the Project Area (NWSRS 2007).

3.10 FISH AND WILDLIFE PROTECTION

The Fish and Wildlife Coordination Act (FWCA), 16 USC 661 *et seq*., requires federal agencies involved in actions that will result in the control or structural modification of any natural stream or body of water for any purpose, to take action to protect the fish and wildlife resources that may be affected by the action. The project area lies along the topographic divide between the Middle Fork American River and the South Fork American River, and no U.S. streams or water bodies would be modified with implementation of this project (see Section 4.2 and Section 4.6).

3.11 ENDANGERED SPECIES PROTECTION

The Endangered Species Act (ESA), 16 USC 1536 *et seq*., prohibits agencies from jeopardizing threatened or endangered species or adversely modifying habitats essential to their survival. Section 4.2 includes mitigation that would require preconstruction surveys for sensitive species, and implementation of mitigation should the surveys result in species detection. These measures would minimize effects on endangered species or to critical habitats as a result of implementation of the Proposed Action. As the lead federal agency for this EA, EPA is responsible for ensuring compliance with the federal ESA. In discharging this responsibility, EPA is using this EA and

Appendix B for informal consultation with the U.S. Fish and Wildlife Service regarding the potential effects of the project on federally protected special status species and habitats.

3.12 WILDERNESS PROTECTION

The Wilderness Act (WA), 16 USC 1131 *et seq*., establishes a system of National Wilderness Areas. The WA establishes a policy for protecting this system by generally prohibiting motorized equipment, structures, installations, roads, commercial enterprises, aircraft landings, and mechanical transport. While the Desolation and Granite Chief Wildernesses are located approximately 40 miles east of the Project Area, no wilderness areas are located within the Proposed Action area (Wilderness.net 2007).

3.13 AIR QUALITY

The Clean Air Act (CAA) requires federal actions to conform to any state implementation plan approved or promulgated under Section 110 of the Act. For EPA actions, the applicable conformity requirements specified in 40 CFR Part 51, Subpart W; 40 CFR Part 93, Subpart B; and the applicable state implementation plan must be met. Under the Federal Rule on General Conformity, 40 CFR Part 93, a conformity determination is required only when emissions occur in a non-attainment area. While construction and operation of the Proposed Action has the potential to result in air emissions, there would be no adverse effects to air quality. Implementation of Asbestos Hazards Dust Mitigation would minimize effects due to disturbance of naturally occurring asbestos (see Section 4.1).

3.14 ENVIRONMENTAL JUSTICE

In February 1994, President Clinton issued Executive Order 12898, entitled "Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations," and the accompanying presidential memorandum, which advises federal agencies to identify and address, whenever feasible, disproportionately high and adverse human health or environmental effects on minority communities and/or low-income communities.

A baseline environmental justice (EJ) screening process was used to identify minority or low-income communities within the Project Area. Preliminary screening for potential EJ issues is based on two general statistics. First, the screening process is used to ascertain whether the minority population percentage in the affected area is either greater than 50 percent or meaningfully greater than the minority population percentage in the general population (EPA 1997). The concept of race as used by the Census Bureau reflects self-identification and self-classification by people according to the race with which they most closely identify (U.S. Census 3-24 Bureau 1990). Second, low-income populations are identified using either Department of Health and Human Services (HHS) poverty guidelines or the Department of Housing and Urban Development (HUD) statutory definition of very low-income for the purposes of housing benefits (EPA 1997). The percentage of impoverished people in the affected area is compared with the percentage of people living below the poverty limit in the general population to determine if a significant difference exists.

As shown in Table 2 below, the minority characteristics of El Dorado County are similar to those of the reference populations in the State of California as a whole, and may be characterized as having less minority representation than the reference population. The affected area of the Proposed Action

would not be characterized as a low-income community, and poverty rates would be considered somewhat lower than the reference population within the state (see Table 2).

	El Dorado County	Comparative Geographic Unit – State of California
Total Population	175, 790	35,278,768
Number of Households	80,279	12,989,254
Minority Population (%)	11%	39%
White	89.2%	61%
Black	0.8%	6.1 %
Native American	1.3%	0.72%
Asian	3.7%	12.4%
Pacific Islander	<0.01%	0.35%
Other	4.99%	19.43%
Median Household Income (1999)	63,147	53,629
People below Poverty Level – 2005 (%)	7.7%	13.3%

Source: U.S. Bureau of the Census, Census 2007.

El Dorado County's population is not comprised of significantly higher percentages of minority or impoverished populations than California as a whole (see Table 13). Based on EPA's EJ criteria described above, the affected area for the project alternatives would not be characterized as a minority or low-income community. Additionally, no residents of the affected area would suffer any significant and unavoidable environmental effects. All identified environmental effects would be limited to the immediate areas of the Proposed Action facilities, with relatively few effects occurring offsite. All of the potential adverse effects of implementing the project would be reduced with the application of mitigation measures identified in this EA so as to have no adverse effects.

4 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

The Proposed Action, the Greenwood Lake WTP project, is in the western foothills of the Sierra Nevada at elevations ranging from approximately 1,500 feet to 2,400 feet msl. The WTP and pipeline corridor are within unincorporated El Dorado County. The pipeline corridor would generally follow public and private roadways, in both developed and undeveloped areas. In undeveloped areas that lack existing roadways, the pipeline corridor would traverses open space and agricultural land (i.e., range and pasture). The landscape varies from rolling to steep terrain with upland vegetation communities, including montane hardwood, Douglas fir, Blue oak woodland, ponderosa pine, montane hardwood-conifer, and annual grassland vegetation in the undeveloped areas. The treated water pipeline parallels and crosses the existing open water conveyance ditch (the Georgetown Ditch), but would not cross any streams.

4.1 CLIMATE, AIR QUALITY, VISIBILITY, AND ODOR

4.1.1 AFFECTED ENVIRONMENT

Western El Dorado County is located in the western foothills of the Sierra Nevada in the Mountain Counties Air Basin (MCAB). The MCAB, an area of approximately 11,000 square miles, includes Plumas, Sierra, Nevada, Amador, Calaveras, Tuolumne and Mariposa counties, as well as the central portion of Placer County and the west slope of El Dorado County. The MCAB is approximately 200 miles long (north to south) and averages 60 miles in width (east to west) and extends as far north as Quincy to as far south as Mariposa. From west to east, the topography in the MCAB and western El Dorado County is highly variable, ranging from rolling foothills at approximately 100 feet msl at the edge of the Sacramento valley to rugged mountain peaks with extreme slopes above 10,000 feet msl at the crest of the Sierra Nevada.

The mountainous terrain influences the air movement throughout the MCAB, with prevailing winds traveling north-south at lower elevations and southwest-northeast from lower elevations to higher elevations. As a result, pollutants from neighboring counties are transported into western El Dorado County during the day as the temperature rises, and return back to the Sacramento Valley at night as the temperature falls. Temperature inversions – a reversal of normal temperature patterns seen in the lower atmosphere – occur when cooler air is "trapped" under a layer of warmer air. As the inversion continues, air becomes stagnant and pollution becomes trapped close to the ground. During the summer, there are daytime temperature inversions in western El Dorado County at elevations from 2,000 to 2,500 feet. During the winter, there are daytime temperature inversions at elevations from 500 to 1,000 feet.

Because of the surrounding elevated terrain and the frequency of temperature inversions restricts lateral and vertical dilution of pollutants, the Sacramento Valley and western El Dorado County experience very high pollution potential. In addition, the abundant sunshine and warm summer temperatures support conditions in which photochemical oxidant pollutants easily form.

The MCAB portion of El Dorado County lies within the area designated by the EPA as the Sacramento Federal Ozone Nonattainment Area, comprised of Sacramento and Yolo counties, and parts of El Dorado, Solano, Placer, and Sutter counties. Table 3 presents the attainment status of air pollutants in Western El Dorado County.

Pollutant	State of California Attainment Status	Federal Attainment Status
Ozone – 1 hour	Nonattainment	(standard recently revoked)
Ozone – 8 hour	Nonattainment	Serious Nonattainment
Respirable Particulate Matter (PM_{10})	Nonattainment	Nonattainment
Fine Particulate Matter ($PM_{2.5}$)	Nonattainment	Nonattainment
Carbon Monoxide	Unclassified	Unclassified/Attainment
Nitrogen Dioxide	Attainment	Attainment
Lead	Attainment	No designation
Sulfur Dioxide	Attainment	Attainment
Sulfates	Attainment	No Federal Standard
Hydrogen Sulfide	Attainment	No Federal Standard

Source: California Air Resources Board and El Dorado Air District, 2006.

With the Clean Air Ozone Rules of 2004, El Dorado County has been classified as a "serious" nonattainment area for NAAQA 8-hour ozone (as is all of the Sacramento Metropolitan air quality planning area) and has until June 2013 to establish attainment in their Air Basin.

The MCAB is also nonattainment for federal PM_{10} (e.g., dust, discussed in more detail below) standards and nonattainment for state PM_{10} standards. The El Dorado County AQMD has adopted Rule 223-1 for managing fugitive dust during construction, and this rule applies to all public or private construction, grading and/or clearing of land. El Dorado County AQMD requires an Authority to Construct permit for all projects subject to air pollution control regulations because they emit air pollutants. Both Rule 223-1 and the Authority to Construct would be applicable to the Greenwood Lake WTP project.

Additionally, El Dorado County AQMD's Rule 233 requires a permit for any diesel-powered generator of greater than 50 brake-horsepower (bhp). As there will be an emergency diesel-powered back-up generator at the WTP site that will exceed 50-bhp; GDPUD will be obtaining an Authority to Construct/Permit to Operate this diesel generator.

The area's air quality monitoring network provides information on ambient concentrations of air pollutants in the MCAB. El Dorado County AQMD operates monitoring stations in El Dorado County, in the areas of Cool for O_3 and Placerville for PM_{10}. Table 3 compares a five-year summary of the highest annual criteria air pollutant emissions collected at these monitoring stations with applicable SAAQS and NAAQS, reporting that which is more stringent. O_3 and PM_{10} are expected to be fairly representative of the project site, due to the regional nature of these pollutants. As indicated in Table 4, there have been violations of one-hour and eight-hour O_3 and PM_{10} standards over the past 5 years. Carbon monoxide emissions were not monitored in El Dorado County.

Table 4 Summary Of Annual Air Quality Data For El Dorado County Air Quality					
Pollutant	**2002**	**2003**	**2004**	**2005**	**2006**
Ozone (O_3) 1-hour					
Monitoring location: El Dorado – Cool – Highway 193					
State Standard (1-hr avg. 0.09 ppm)					
Maximum Concentration	0.156	0.140	0.113	0.116	0.130
Number of Days State Standard Exceeded	50	31	13	22	38
Ozone (O_3) 8-hour					
Monitoring location: El Dorado – Cool – Highway 193					
State Standard (8-hr avg. 0.07 ppm)					
Federal Standard (8-hr avg. 0.08 ppm)					
Maximum Concentration	0.106	0.107	0.102	0.098	0.115
Number of Days Federal Standard Exceeded	42	22	8	22	30
Suspended Particulates (PM_{10})					
Monitoring location: Placerville – Gold Nugget Way					
State Standard (24-hr avg. 50 μg/m3)					
Federal Standard (24-hr avg. 150 μg/m3)					
Maximum 24-hr Concentration	37	51	28	27	21
Days Exceeding State Standards	0	1	0	0	0

Notes: Underlined Values in excess of applicable standard, ppm = parts per million, μg/m3 = micrograms per cubic meter

Source: California Air Resources Board 2006

There are no odor producing sources near the site of the Proposed Action. The proposed WTP and water pipeline would not produce any objectionable odors. Due to the remote location of the water treatment plant, no odor problems would be experienced in the project area.

4.1.2 ENVIRONMENTAL CONSEQUENCES

NO ACTION ALTERNATIVE

The No Action alternative would have no adverse effects on climate and air quality.

PROPOSED GREENWOOD LAKE WTP PROJECT

Construction and operation of the Proposed Action could generate air pollutants including ROG, NO_X and PM_{10}; the following air quality effect analysis assesses the potential for exceeding established significance criteria from project construction and operations.

Construction activities associated with the Proposed Action would result in short-term fugitive dust and ozone precursor emissions.

Table 5 presents as summary of estimated length and acreages by project segment. This data was used to calculate estimated fugitive dust and construction-related emissions by project segment. The width of the disturbance area varies widely by segment. For example, segments 1, 3, and 4 are primarily within existing roadway sections, and thus would disturb a cross section of approximately 4 feet. In areas where there is a dirt trail or no roadway right of way, the cross section of the

disturbance area expanded to 25 feet (dirt roadway). These distances and areas were used as inputs into a spreadsheet model for estimating emissions from roadway construction (SMAQMD 2006). For the purposes of this analysis, given the linear nature of the project it is assumed that no more than one acre would be under disturbance at any one time. As shown in Table 5, segments 2, 3, 4 and 5 disturb areas that are substantially greater than one acre. The segments range from 0.07 to 2.75 acres in total disturbance area.

Segment Description	Distance (feet)	Area Disturbed (acres)
1. Sweetwater Trail	800	0.07
2. Kaiser Siphon		
3. Blue Heron – alternative 3a	4,800	1.00
Alternative 3b	4,900	1.50
Alternative 3c	4,600	0.45
4. Irene Lane – Alternative 4a	1,970	0.45
Alternative 4b	2,300	1.22
5. Georgetown Divide Ditch	4,800	2.75
Proposed WTP	n/a	5

Source: Planning Partners March 2007.

Table 6 presents the construction-related emissions in pounds per day and tons per year. Any one segment could take four to twelve weeks to construct, the WTP could be constructed in up to six months and the total project could be constructed within nine to twelve months beginning in 2008. All of the emission estimates assume the use of a water truck during clearing, excavation and grading at each construction site and that no more than one acre per day would be disturbed at each construction area.

Table 6 Greenwood Lake WTP Construction Emissions[1]						
Segment Description	**Pollutant**					
	ROG		**NOx**		**PM_{10}**	
	lbs/day	**tons/yr**	**lbs/day**	**tons/yr**	**lbs/day**	**tons/yr**
1. Sweetwater Trail	5	0.03	26	0.19	7	0.04
2. Kaiser Siphon	8	.23				
3. Blue Heron – Alternative 3a	8	0.23	42	1	7	0.23
Alternative 3b	8	0.23	42	1.37	7	0.23
Alternative 3c	8	0.23	41	1	5	0.14
4. Irene Lane – Alternative 4a	5	0.10	25	0.62	4	0.08
Alternative 4b	7	0.10	38	0.65	6	0.13
5. Georgetown Divide Ditch	7	0.20	38	1.16	7	0.17
Proposed WTP	8	0.34	38	1.91	7	0.37
Total in tons/year	16	**1.13**	80	**6.25**	14	**1.08**
Significance Threshold	82	**15.0**	82	**15.0**	None	**15.0**
Amount Over Threshold		**0.0**		**0.0**		**0.0**
Significant?		**No**		**No**		**No**

1 Emissions calculated based on Sacramento Metropolitan AQMD (SMAQMD) Roadway Construction Emissions Model

Source: Planning Partners March 2007

The construction emissions associated with the Proposed Action would result in short-term fugitive dust emissions, including ROG, NO_x, and PM_{10}. The ROG emissions are estimated at 1.13 tons per year; the NO_x emissions are estimated to be at 6.25 tons per year; and the PM_{10} are estimated at 1.08 tons per year. In addition, none of the segments would individually exceed the daily pounds per day threshold. Given that it is probable that one segment and the WTP site could be under construction at the same time, the worst-case daily emission of NO_x would be 80 pounds per day, which also would not exceed the construction emission threshold for NO_x of 82 pounds per day. None of the construction emissions would exceed the El Dorado APCD significance criteria of 82 pounds per day; the project would comply with El Dorado APCD fugitive dust Rule 223-1.

The Proposed Action is in an area that has the potential for naturally occurring asbestos (NOA). Implementation of Mitigation Measure AQ-1 would reduce this potentially adverse air quality effect to no adverse effect.

To estimate the operations-related emissions from 10 vehicles per day, Urbemis Version 8.7 model was applied to project-related trips. The ROG emissions are estimated at 0.12 pounds per day and 0.02 tons per year; the NO_x emissions are estimated to be at 0.21 pounds per day and 0.04 tons per year; and the PM_{10} are estimated at 0.15 pounds per day and 0.03l tons per year. None of the operations emissions would exceed the El Dorado APCD significance criteria; there would be no adverse operational air quality effect.

4.1.3 AIR QUALITY MITIGATION MEASURES

AQ-1. Construction of the Proposed Action has the potential to disturb NOA. The GDPUD shall engage a licensed geologist or equivalent professional pursuant to the requirements of the Air Pollution Control Officer (APCO) to test for the presence of naturally occurring asbestos within Segments 1, 2, 3, 4, 5, and the proposed WTP site. For all areas where the presence of naturally occurring asbestos has been confirmed and where earth moving, trenching, or excavation would occur, a fugitive Dust Prevention and Control and Hazards Dust Mitigation Plan as required by the El Dorado County Air Quality Management District (AQMD) shall be prepared and implemented.

4.2 BIOLOGICAL RESOURCES

4.2.1 AFFECTED ENVIRONMENT

VEGETATION AND WILDLIFE

The Proposed Action (Greenwood Lake WTP and pipeline segments) are within a mixed montane hardwood-conifer floristic region of California. Natural vegetation in most of the project area is characterized by black oak, ponderosa pine and Jeffrey pine forest with an understory of poison oak/manzanita chaparral. The distribution of habitats in the WTP project area and along the pipeline segments were determined using land-cover data developed as part of a cooperative effort between the United States Forest Service and California Department of Forestry's Fire and Resource Assessment Program (CDF-FRAP 2002). FRAP combined habitat distribution data from numerous sources, including remotely sensed satellite imagery, into a format compatible for use within a geographic information system (GIS). These data were then used to produce a single multisource vegetation layer. Using the dominant vegetation/land-cover data, FRAP converted each data source into the California Wildlife Habitat Relationship System to create a statewide habitat layer. The resulting single GIS data layer provides the most accurate and comprehensive source of habitat information currently available for El Dorado County (FRAP 2004). Habitat types were quantified using the GIS land-cover data developed by FRAP (acreages are estimated in Table 7). Land cover was also confirmed in field visits by qualified biologists.

Vegetation types that occur in the WTP project area and along the pipeline segments include five natural cover types, and barren and developed areas (see Table 7). Appendix B, *Biological Resources*, presents an in-depth discussion of cover types, plant and animal species observed in the field (Appendix B, Tables 2 and 3).

Table 7 Vegetation Cover Type Acreages in the Greenwood Lake WTP Project Area						
Project Portion	**Annual Grassland**	**Douglas Fir**	**Ponderosa Pine**	**Montane Hardwood Woodland**	**Montane Hardwood Conifer**	**Developed/ Ag**
WTP	1.1				1.2	2.2
Segment 1	0.12	0.04				0.03
Segment 2		1.58				0.9
Segment 3a	0.01		0.07	0.21	0.06	0.3
Segment 3b	0.14		0.33	0.25	0.06	1.35
Segment 3c	0.23			0.06		0.22
Segment 4a	0.15			0.3		
Segment 4b	0.07			0.93	0.21	
Segment 5			0.30	0.43	0.91	0.05
Totals	**1.82**	**1.62**	**0.70**	**2.12**	**2.44**	**5.05**

Source: Planning Partners, March 2007

Construction and installation of the treated water main connecting the new Greenwood WTP to the existing Auburn Trails system would take place under one of the following scenarios:

- Scenario 1: Segments 1, 2, 3a, 4a and 5;
- Scenario 2: Segments 1, 2, 3b, 4a, and 5; and
- Scenario 3: Segments 1, 2, 3c, 4b and 5.

The following is a summary of total vegetative cover acreages in each scenario's construction ROW:

- Scenario 1 (Segments 1, 2, 3a, 4a and 5): 0.6 acre annual grassland; 1.6 acres Douglas fir; 0.4 acre ponderosa pine, 0.6 acre montane hardwood woodland, 0.9 acre montane hardwood conifer, and 1.3 acres developed or agricultural land;
- Scenario 2 (Segments 1, 2, 3b, 4a, and 5): 0.8 acre annual grassland; 1.6 acres Douglas fir; 0.6 acre ponderosa pine, 1.0 acre montane hardwood woodland, 0.9 acre montane hardwood conifer, and 2.3 acres developed or agricultural land;
- Scenario 3 (1, 2, 3c, 4b and 5): 0.9 acre annual grassland; 1.6 acres Douglas fir; 0.3 acre ponderosa pine, 1.4 acres montane hardwood woodland, 1.1 acres montane hardwood conifer, and 1.2 acres developed or agricultural land.

All scenarios include construction of the WTP, which would have an area of effect including 0.75 acres of annual grassland, 0.11 acres of montane-hardwood conifer and 2.25 acres of developed area (existing roadways).

THREATENED, ENDANGERED AND SENSITIVE SPECIES

Special-status plants and animal species that could occur in the project area are listed in Table 8. Species are included in the table if they were known to occur in the County and if they have known California Natural Diversity Data Base occurrences (CNDDB 2007) in the project area. Many of the

plant species in the table occur on gabbro/serpentine substrate. This substrate was not found in the project area. No special-status plant species were found on the project site. Species with a potential to be affected by the project are discussed after the table.

Common Name Scientific Name	Status[1]	Habitat and Range	Potential to be adversely affected by the project
Plants			
Nissenan Manzanita *Arctostaphylos myrtifoli*	1B.2	Closed cone coniferous forest. Metamorphic rocks in chaparral. Blooms Feb-March.	Very low. Appropriate habitat not available within project area. Not detected during surveys.
Brandegee's clarkia *Clarkia biloba ssp. Brandegee*	1B.2	Chaparral, cismontane woodlands, often in roadcuts. Blooms May-June.	Moderate. Suitable habitat available within project area. Not detected during surveys.
Parry's horkelia *Horkelia parryi*	1B.2	Chaparral, cismontane woodland openings especially in Ione formation. Blooms April-June.	None. Appropriate soils not available in project area. Not detected during surveys.
Layne's ragwort *Packera laynae*	FT, R	Ultramafic soil, chaparral, cismontane woodland. Blooms Apr-July.	Very Low. Appropriate soils not available in project area. Not detected during surveys.
Amphibians			
Foothill yellow-legged frog *Rana boylii*	CSC	Shallow streams with quiet pools, partly shaded, riffles with cobble size or larger rocky substrate	Low. Appropriate habitat not located during surveys, but may exist adjacent to Segments 2 and 5.
Reptiles			
Northwestern pond turtle *Emys (=Clemmys) m. marmorata*	CSC	Ponds, wetlands, and irrigation ditches	Moderate. Habitat available adjacent to Segments 2 and 5 and around Greenwood Lake.
California horned lizard *Phrynosoma coronatum frontale*	CSC	Open areas in woodland and chaparral with sandy soils	Very Low. Preferred habitat is not available within project vicinity. Project activity is unlikely to adversely affect species habitat.
Birds			
Cooper's hawk *Accipiter cooperii*	CSC	Nests in tall trees, especially pines. Forages in open woodlands	Moderate. Suitable nesting habitat available within forested portions of pipeline alignments.
Vaux's swift *Chaetura vauxi*	CSC	Riparian woodlands. Nests rarely in mid-elevation forests of the Sierra Nevada in redwood, Douglas fir, and occasionally other coniferous forest.	Moderate. Suitable nesting habitat available within forested portions of pipeline alignments.
Loggerhead shrike *Lanius ludovicianus*	CSC	Prefers open habitats with scattered shrubs, trees, posts, fences, utility lines or other perches.	Moderate. Suitable nesting habitat in project vicinity will be affected.

Table 8 Special Status Species Potentially Occurring In Project Area			
Common Name **Scientific Name**	**Status[1]**	**Habitat and Range**	**Potential to be adversely affected by the project**
Mammals			
Silver-haired bat *Lasionycteris noctivagans*	CSC	Forests, woodlands, and shrublands	Moderate. Tree roosting bat species may be adversely affected by vegetation removal.
[1]Protected Status Codes: FT Federally listed as Threatened R Plants that are designated as rare in California. CT California listed as Threatened CSC California Species of Special Concern FP Fully protected by California		CNPS Codes: Plants rare, threatened or endangered in CA List 1B.2 20-80% occurrences in California threatened	

Source: Planning Partners, April 2007

The following plant species: **Nissenan manzanita** (*Arctostaphylos myrtifoli*); **Parry's horkelia** (*Horkelia parryi*); and **Layne's ragwort** (*Packera laynae*) are rare plant species (1B.2) in California that are not expected to be adversely affected by the project. They were not detected during surveys conducted in the 2006 season. Additionally, specific soil or habitat types that support these species were not detected, and therefore the rare plant species listed above are not expected to occur within or adjacent to the project area.

Brandegee's clarkia (*Clarkia biloba ssp. Brandege*) Rare Plant, 1B.2
Brandegee's clarkia is a dicot in the family Onagraceae with lavender flowers. The species is a summer blooming annual herb that is native to California. It is included by the California Native Plant Society on list 1B.2 (rare, threatened, or endangered in CA and elsewhere) [CNPS 2003]. It has been recorded in El Dorado County on dry sites in the foothills below 500 meters (1,500 feet) elevation.

Foothill Yellow-legged Frog (*Rana boylii*) CSC
The foothill yellow-legged frog (FYLF) is a considered a sensitive species for some federal agencies, including the U. S. Forest Service and the Bureau of Land Management, and is a California Species of Special Concern. The FYLF is an inhabitant of streams and rivers in a variety of habitats including foothill woodland, chaparral, and forest within the Coast, Cascade, and Sierra Nevada ranges. The species ranges from sea level to 6,000 feet msl. The frog is generally found within a few feet of stream banks where it can bask on warm rocks, but escape quickly into the stream for protection. When frightened, it dives to the stream bottom and hides amid rocks, vegetation, and silt. They are active year round in warm climates, but become inactive or hibernate in colder climates.

Adult FYLF prey on both aquatic and terrestrial invertebrates, with adult insects and snails among preferred prey. Tadpoles graze on algae and diatoms along rocky stream bottoms. Principal predators of adult yellow-legged frogs include garter snakes, while fish readily feed on egg masses. No FYLF or suitable habitat for this species were observed during field surveys in the Greenwood Lake WTP project area or proposed pipeline segments.

Northwestern Pond Turtle (*Clemmys marmorata marmorata*) CSC
The northwestern pond turtle (NWPT) is considered a sensitive species by the US Forest Service and is a California Species of Special Concern that occurs primarily in foothills west of the Cascade-Sierra crest throughout California. The northwestern subspecies ranges north of the San Francisco Bay area and intergrades with the southwestern pond turtle in the southern portion of the Central Valley. NWPT is an aquatic turtle inhabiting streams, marshes, ponds, and irrigation ditches within woodland, grassland, and open forest communities, but require upland sites for nesting and over-wintering. The species inhabits stream as well as pond habitats. Stream habitat must contain large, deep pool areas (six feet) with moderate-to-good plant and debris cover, and rock and cobble substrates for escape retreats. Preferred depth in pond habitat is between three and five feet with mud substrate. Dense inshore vegetation is especially critical for hatchlings where they spend their first few years of life. Turtles from riverine systems overwinter in upland areas, while pond dwellers may remain as permanent residents with only nesting forays performed annually by gravid females. Northwestern pond turtle may have suitable habitat in and around Greenwood Lake.

California horned lizard (*Phrynosoma coronatum frontale*) CSC
The California horned lizard has a spotty distribution from Lake Shasta southward along the edges of the Sacramento Valley into much of the South Coast Ranges, San Joaquin Valley, and Sierra Nevada foothills. The California horned lizard occurs in several habitat types, including areas with an exposed, gravelly-sandy substrate containing scattered shrubs, floodplains and dry lake beds, clearings in riparian woodlands, dry uniform chamise chaparral to annual grassland with scattered perennial seepweed or salt brush. Most soils in the project area are very rocky silt loam (USGS 2006) and therefore the project area is unlikely to provide suitable habitat for the California horned lizard.

Cooper's hawk (*Accipiter cooperii*) CSC
Cooper's hawk is an uncommon, medium-sized accipiter that is a year-long California resident. Cooper's hawk prefers patchy deciduous and mixed forest, and nests in tall trees, especially pines. This hawk preys primarily on small birds and mammals, including starlings, blackbirds, sparrows, finches, chipmunks and squirrels. Cooper's hawks begin breeding as early as March. Most individuals do not breed until they are at least two years old. Cooper's hawks are monogamous and pairs build nests made of sticks and twigs lined with bark, conifer needles and down. Hatchling Cooper's hawks will fledge as early as June and as late as August. Habitat destruction, mainly in lowland riparian areas, has lead to the decline of this species in California since the 1940s (CDFG 2001). Suitable nesting trees and forage are available for Cooper's hawk in much of the project area.

Vaux's swift (*Chaetura vauxi*) CSC
Vaux's swift is a small swift with a gray-brown body that is a summer resident in northern California (Zeiner, et al 1990). The preferred habitat of the Vaux's swift is old growth redwood and Douglas-fir forests. Vaux's swift typically builds its nest on the vertical inner wall of a large (>20 inches dbh), hollow tree or snag, especially tall stubs charred by fire or "topped" trees with hollow trunks. Vaux's swift breeds from early May to mid-August. This bird forages over most terrains and habitats, but shows a preference for foraging over rivers and lakes and shows the highest abundance in a continuous mesic shrub association (Zeiner, et al 1990). Nesting and foraging habitat for Vaux's swift occurs throughout the project vicinity in forested areas.

Loggerhead shrike (*Lanius ludovicianus*)
The loggerhead shrike is a year long resident throughout the foothills and lowlands of California (Zeiner et al 1990). The loggerhead shrike is known to forage over open ground within areas of

short vegetation such as pastures with fence rows, old orchards, mowed roadsides, cemeteries, golf courses, riparian areas, open woodland, agricultural fields, desert washes, desert scrub, grassland, broken chaparral and beach with scattered shrubs (Unitt 1984; Yosef 1996). Individuals like to perch on posts, utility lines and often use the edges of denser habitats (Zeiner, et al 1990). The highest density of loggerhead shrikes occurs in open-canopied valley foothill hardwood, valley foothill hardwood-conifer, valley foothill riparian, pinyon-juniper, juniper, desert riparian, and Joshua tree habitats; it occurs only rarely in heavily urbanized areas, but is often found in open cropland (Zeiner, et al 1990). Nesting occurs in branches up to fifteen feet (4.5 m) above the ground, frequently in a shrub with thorns or with tangled branching habits (Zeiner, et al 1990). Nesting and foraging habitat for loggerhead shrike occurs throughout the project vicinity.

Silver-haired bat (*Lasionycteris noctivagans*) CSC

Silver-haired bats are among the most common bats in forested areas of America, and are most closely associated with coniferous or mixed coniferous and deciduous forest types, especially in areas of old growth (BCI 2006). They form maternity colonies almost exclusively in tree cavities or small hollows. Unlike many bat species, silver-haired bats also appear to hibernate mainly in forested areas, though they may be making long migrations from their summer forest to a winter forest site. Typical hibernation roosts for this species include small tree hollows, beneath exfoliating bark, in wood piles, and in cliff faces. Occasionally silver-haired bats will hibernate in cave entrances, especially in northern regions of their range. Like big brown bats, the silver-haired bats have been documented to feed on many insects perceived as pest species to humans and/or agriculture and forestry.

Even though they are highly dependent upon old growth forest areas for roosts, silver-haired bats feed predominantly in disturbed areas, sometimes at tree-top level, but often in small clearings and along roadways or water courses. Silver-haired bats feed primarily on small, soft-bodied insects. Silver-haired bats have been known to take flies, midges, leafhoppers, moths, mosquitoes, beetles, crane flies, lacewings, caddisflies, ants, crickets, and occasional spiders. Because silver-haired bats are dependent upon roosts in old growth areas, managing forests for diverse age structure and maintaining forested corridors are important to these bats (BCI 2006). Suitable habitat for silver haired bats is available in the project area.

SENSITIVE AND REGULATED HABITATS

Waters and Wetlands

The WTP project area and the proposed pipeline alignments were examined for evidence of regulated habitats such as waters and wetlands under the regulatory authority of the U.S. Army Corps of Engineers (Corps) under Section 404 of the Clean Water Act, and under the regulatory authority of CDFG pursuant to Section 1600 of the California Fish and Game Code. Although there are small areas where the soil is saturated due to leaking pipes or leaks from the Georgetown Divide Ditch, none of these areas support hydrophytic vegetation. The wet areas are not under Corps jurisdiction. The Georgetown Divide Ditch itself is not a natural watercourse and therefore not under CDFG jurisdiction.

Watersheds

The project area lies along the topographic divide between the Middle Fork American River and the South Fork American River. The western portions of the project (Segments 1, 2, 3, and 4) drain to

the north and northwest, down American Canyon and eventually to the Middle Fork American River. Conversely, Segment 5 and the Greenwood Lake WTP site drain to the south and southwest, into Greenwood Creek and eventually to the South Fork American River. While both the South and Middle Fork American rivers have high elevation headwaters along the Sierra Nevada crest and are dominated by snow-melt runoff, the local watersheds in the project area have maximum headwater elevations less than 3,000 feet. Therefore, channels in the local watersheds and project vicinity have rainfall-dominated runoff and streamflow patterns. Like many streams in the foothills, these 'intermittent' streams typically flow only during the wet season, but may range from having year-round flow in wet years, to little or no flow in dry years.

4.2.2 ENVIRONMENTAL CONSEQUENCES

NO ACTION ALTERNATIVE

There would be no adverse effects to sensitive species, vegetation and wildlife, including Oak and native trees with the No Action Alternative.

PROPOSED GREENWOOD LAKE WTP PROJECT

Grading, ground clearing, and construction associated with implementation of the Proposed Action could potentially result in adverse effects to sensitive plant and animal species.

Implementation of the Proposed Action would result in the removal of up to 3.5 acres of mature woody vegetation for construction of the Proposed Action under Scenario 1 (Segments 1, 2, 3a, 4a, 5), 4.1 acres under Scenario 2 (Segments 1, 2, 3b, 4a, 5) and 4.4 acres under Scenario 3 (Segments 1, 2, 3c, 4b, 5). This vegetation is likely to support reproducing migratory birds during the nesting season (March 1st to September 1st.) The removal of woody vegetation could affect nesting birds and bats, including California Species of Concern Cooper's hawk, Vaux's swift, loggerhead shrike and silver-haired bat.

Implementation of the Proposed Action would not directly affect any known occurrences of threatened or endangered plant species on the WTP site or along the pipeline alignments. Field reconnaissance surveys of the WTP site and Segments 1, 2, 3a, 3b, 3c, 4a, and 5 did not observe any of the rare plant species that have the potential to occur in the project area (Table 7). However, a rare plant study was not completed for all pipeline segments and route alternatives during the floristically appropriate period prior to this effect analysis. If rare plants are present in the WTP area, the project would destroy individuals and their habitat. Suitable habitat for Brandegee's clarkia is present in portions of Segments 2, 3a, 3b, 4a, 4b, 5 and the WTP site. Implementation of Mitigation Measure BIO- 1a would reduce this potentially adverse biology effect to no adverse effect.

Implementation of the Proposed Action would not directly affect any known occurrences of special-status animal species on the sites. Essential habitat for northwestern pond turtle and foothill yellow-legged frog is absent on the WTP site and along the pipeline segments. The likelihood that individuals of these species would be present on the site is extremely remote. Trees located within the project area provide potential nest sites for raptors such as Cooper's hawk, white-tailed kite, great horned owl, red-shouldered hawk, and red-tailed hawk. Removal of any trees that provide potential nest sites within the project area, construction activities conducted in the vicinity of potential nest trees, or ground-clearing activities could potentially effect tree and ground-nesting bird

species that are protected under the federal Migratory Bird Treaty Act of 1918 (16 USC 703-711) and California Fish and Game codes (Sections 3503, 3503.5, and 3800). The laws and regulations prohibit the take, possession, or destruction of birds, their nests, or eggs. Disturbance that causes nest abandonment and/or loss of reproductive effort could be considered a "take". Implementation of Mitigation Measure BIO-1b would reduce this potentially adverse biology effect to no adverse effect.

The Proposed Action would result in the direct loss of 91 oak trees with a diameter at breast height (dbh) greater than 6 inches, and 39 pine trees, for a total of 130 mature trees. Implementation of Mitigation Measure BIO-2 would reduce this potentially adverse biology effect to no adverse effect.

Implementation of the Proposed Action would alter habitat on approximately 4.5 acres, in the WTP project site and up to 7.2 acres along proposed water pipeline segments. Construction of the Greenwood Lake WTP and pipeline would result in grading and clearing within the construction zone. These activities would result in the alteration of habitat within the area affected. Some habitat disturbance would be temporary (vegetation is expected to regenerate over pipelines), and some would be permanent (e.g. permanent removal of 130 trees and 0.5 acres of Montane Hardwood woodland in the WTP site). However, these modifications are not generally expected to affect any native wildlife nursery areas, substantially interfere with the movement of native resident or migratory wildlife, or obstruct migratory wildlife corridors. Wildlife in the area have already acclimated to human activity along the roadways, and a most of the pipeline alignments would remain as undeveloped open space and would continue to be available for wildlife use and movement. There is a possibility that proposed grading and installation of pipeline segments could further degrade the value of the natural communities in the project area. Implementation of Mitigation Measure BIO-3 would reduce this potentially adverse biology effect to no adverse effect.

Implementation of the Proposed Action would result in loss of access to Greenwood Lake and the Georgetown Divide Ditch, which has been a source of drinking water for wildlife in the project area. Implementation of Mitigation Measure BIO-4 would reduce this potentially adverse biology effect to no adverse effect.

4.2.3 BIOLOGY MITIGATION MEASURES

BIO-1a. The GDPUD shall retain a qualified biologist to conduct a pre-construction survey for Brandegee's clarkia along Segments 2, 3a, 3b, 4b and 5 and the WTP project site between March and June prior to any ground clearing. If no individuals of this species are found on-site or within the disturbance radius, then construction can proceed without further mitigation for this rare plant. If the plant is detected in the construction area of effect, the GDPUD shall inform CDFG and request guidance regarding restoration and replanting of the area after the pipeline is installed to replace habitat for the plant and restore populations.

BIO-1b. To minimize effects to migratory birds as a result of project construction, the following measures shall be implemented by the GDPUD and its contractors:

A. Limit construction impact areas in those locations outside of existing roadways to minimize removal of vegetation.

B. Ensure that trenching in roadways occurs entirely within the roadway.

C. Ensure that no trees larger than 6 inches dbh are removed along roadways, unless absolutely necessary.

D. Minimize removal of native vegetation by locating staging areas and access routes in previously disturbed areas.

E. A tree survey shall be conducted prior to ground clearing. Project shall be designed to minimize removal of trees with a dbh greater than 30 inches.

F. Removal of vegetation should be conducted in the fall and winter (between September 15 and March 1) after fledging and before the initiation of breeding activities. If this is infeasible, conduct pre-construction surveys between February 15 and August 15 in potential nesting habitat to identify nest sites. The survey report shall be submitted to GDPUD for review and approval prior to initiation of grading.

G. A revegetation/habitat restoration plan shall be implemented to address short-term disturbance and long-term losses of potential nesting areas.

BIO-2. To minimize effects to native trees as a result of project construction, the following measures shall be implemented by the GDPUD and its contractors:

A. The WTP project will be designed to avoid and minimize the removal of native oak trees, especially those with a dbh greater than 30 inches. Trees that are not within the construction zone, or for which removal is not necessary due to safety issues, shall be avoided.

B. Prior to project construction, the GDPUD will conduct a survey to identify trees within the construction area that will be removed for pipeline installation. All native trees greater than 6 inches dbh, as measured 4.5 feet above grade, will be tallied, tagged, measured, and health and vigor evaluated. Mitigation will not be required for non-native trees, nor native trees less than 6 inches dbh.

C. All native trees to remain in place and located within 25 feet of ground disturbances shall be temporarily fenced with orange plastic construction (exclusion) fencing throughout all construction activities. The exclusion fencing shall be installed six feet outside the dripline of each specimen tree, and shall be staked a minimum of every six feet. The fencing is intended to prevent equipment operations in the proximity of protected trees that may compact soil, crush roots, or collide with the tree trunk and/or overhanging branches.

D. No construction equipment shall be parked, stored, or operated within six feet of any native oak tree dripline.

E. In accordance with the California State Senate Concurrent Resolution 17, each oak tree removed and/or damaged (e.g., more than 25 percent of root zone disturbed) will be replaced based on an inch for inch replacement of each native oak tree measuring greater than 6 inches in at dbh.

F. In accordance with El Dorado County General Plan Policy 7.4.5.2, a tree removal permit is required for removal of any native oak tree with a single main trunk of at least 6 inches dbh. The total of replacement trees shall have a combined diameter of the trees removed.

Replacement trees may be planted onsite or elsewhere within GDPUD property. Implementation of this mitigation measure will require the planting of acorns (three per planting hole) or installation of one-gallon container stock.

G. Seeds (acorns) and/or container-grown plants shall be obtained from within the project area, when feasible, or, alternatively, from contract-growers using locally occurring native plants. Advance notice shall be given to the suppliers or growers to ensure that the required species are ready at the proposed planting time. To enhance survival rates, tree plantings should be from liners or cuttings. Plant material in containers larger than one-gallon cans should be avoided, if possible.

H. Plants selected for revegetation will be appropriate for the project area and will not include any noxious or invasive weeds.

BIO-3. The GDPUD shall incorporate the following provisions into the grading, construction and revegetation plans for the Proposed Action:

A. Schedule major grading operations during dry months to reduce the amount and duration of soil exposed to erosion by wind, rain, runoff, and vehicle tracking.

B. All off-road equipment shall be cleaned of potential noxious weed sources (mud, vegetation) before entry into the project area, to help ensure noxious weeds are not introduced into the project area. The contractor shall employ whatever cleaning methods (typically with the use of a high-pressure water hose) are necessary to ensure that equipment is free of noxious weeds.

C. No dry-farmed straw will be used and certified weed-free straw shall be required where erosion control straw is used.

D. When possible, invasive plant species (e.g. scotch broom, yellow star thistle and Himalayan blackberry) shall be removed by hand rather than by chemical means. Where the use of herbicides is necessary, use only those approved for aquatic use.

E. Stabilize non-active areas as soon as practical after the cessation of soil disturbing activities or one day prior to the onset of precipitation.

F. Immediately reseed all newly graded slopes not in roadways with a mix of native grasses and forbs {e.g. California oatgrass (*Danthonia californica*), California fescue (*Festuca californica*) and California poppy (*Eschzcholzia californica*)} appropriate for the site rather than a conventional seed mix used for erosion control purposes (El Dorado County Fire Safe Council 2007).

G. Hydro-seed mulch or any other erosion control application must be certified weed-free.

H. Consult and cooperate with the El Dorado County Invasive Weed Management Program to eliminate Scotch Broom and Himalayan blackberry from the site and replace them with appropriate native shrub and ground cover species.

BIO-4. To minimize the effects on local wildlife from the loss of drinking water in the ditch, the GDPUD shall install two wildlife bubblers in addition to the bubbler near the WTP as proposed (see Figure 3). One shall be installed along Georgetown Divide Ditch near the connection of Segment 3 and Segment 4 near Irene Lane and Blue Heron Road, and one shall be installed near the south end of Segment 5 closer to its connection with Segment 4a.

4.3 CULTURAL RESOURCES

4.3.1 AFFECTED ENVIRONMENT

Prefield background research indicated that the entire project area and area of potential effect (APE) was to be regarded as extremely sensitive in respect to both prehistoric and historical cultural resources. From the perspective of prehistoric Native American inhabitants of the region, the project area was an integral part of the "Cosumnes River resource exploitation zone," occupied seasonally, or perhaps locally on a year-around basis, by the Eastern Miwok and probably some of their Yokuts neighbors (Kroeber 1925). Thus, archaeological sites are likely to be found in the region. Additionally, the project area is situated in the Mother Lode mining region, which of course is extremely rich in historical remains, consisting primarily, but not exclusively, of mines, mining features and their associated infrastructures.

Pursuant to the requirements of Section 106 of the National Historic Preservation Act (NHPA), Native Americans with the potential for interest in the project area as identified by the California Native American Heritage Commission were contacted to provide comments on the project. This consultation did not identify any concerns on the part of Native Americans. Additionally, consultation with the California State Historic Preservation Office (CSHPO), as required by Section 106, has been initiated by EPA to solicit concurrence with the findings of the cultural resources investigation.

Inspection of the APE revealed that two cultural resources are potentially affected by the Proposed Action.

GREENWOOD #1: A SEGMENT OF THE GEORGETOWN DIVIDE DITCH AND GREENWOOD LAKE

Constructed in the 1850s (Bowman 1874; Sioli 1883), the Georgetown Divide Ditch, originally called the Pilot Hills Ditch and later, the Main Ditch, was built to convey water from sources in the higher reaches of the Sierra Nevada to mining operations near the communities of Georgetown and Greenwood. Mining was by sluice and hydraulic operations, but those methods eventually became unprofitable, and in respect to the latter in the late 1800s, illegal; but the ditch continued to be used to distribute water to small farms and ranches in the Georgetown Divide region (Starns 2004).

A segment of the Georgetown Divide Ditch was recorded elsewhere in El Dorado County by a cultural resources team under contract to the U.S. Forest Service. A U. S. Forest Service number (FR 05-3-53-334), a State of California primary number (P-09-001212) and trinomial (CA-ELD-959H) were assigned to this cultural resource; these designators are understood to apply to the entire Georgetown Divide Ditch system, although the vast majority of the system has not been recorded. The ditch is lengthy, traversing some 75 miles along the mid-slopes of the Sierra Nevada foothills, and contributing raw water to Georgetown Reservoir and Greenwood Lake. The proposed WTP

will be constructed near Greenwood Lake; potable water will be conveyed from the treatment plant southwest, augmenting other potable water sources. Part of the present route of the Georgetown Divide Ditch is paralleled by the proposed potable water pipeline, which will be installed during the Greenwood Lake WTP Project. At the site of the proposed WTP, a section of the Georgetown Divide Ditch 700 feet in length will be piped, as it is elsewhere along its route in El Dorado County. Greenwood Lake, constructed in 1874, has the capacity to store 6 to 10 acre-feet of water. It is proposed, as part of the Greenwood Lake WTP Project, to erect a six-foot chain link fence around the lake to reduce the potential for raw water contamination.

GREENWOOD #2: ABANDONED SECTION OF STATE ROUTE 193

This historical resource consists of an abandoned segment of California State Route 193 approximately 2,640 feet long and 13 feet wide. During its period of use, the road was maintained by grading. It is presently covered with vegetation and forest litter. The proposed Greenwood Lake WTP Project pipeline would be constructed in the bed of the abandoned road segment.

4.3.2 ENVIRONMENTAL CONSEQUENCES

NO ACTION ALTERNATIVE

There would be no adverse cultural resource effects with the No Action Alternative.

PROPOSED GREENWOOD LAKE WTP PROJECT

Construction associated with implementation of the Proposed Action could result in a substantial adverse change from the loss or degradation of a known or unknown archaeological resource. There are no known archaeological resources within the APE of the Greenwood Lake WTP project. However, in view of past Native American occupancy and use of this part of California, it is possible that construction could result in the inadvertent discovery of unknown archaeological resources. Such effect could occur at the site of the proposed WTP, or along the pipeline route. Implementation of Mitigation Measure CUL-1 would reduce this potentially adverse cultural resource effect to no adverse effect.

Construction associated with implementation of the proposed Greenwood Lake WTP project could result in the disturbance of known or unknown historic resources. Two known cultural resources are found within the APE of the Proposed Action. Greenwood #2 is an abandoned segment of SR-193, and is assessed as ineligible for the National Register of Historic Places (NRHP). Excavation of the pipeline trench, installation of the pipeline, and subsequent restoration of the roadbed to its present appearance is considered to have no adverse effect on the abandoned road segment. Greenwood #1, Georgetown Divide Ditch (CA-ELD-959H), is assessed as ineligible for the NRHP. The construction and operation of the WTP and installation of the pipeline in a GDPUD easement adjacent to the existing Georgetown Divide Ditch is considered to have no adverse effect on the Georgetown Divide Ditch and Greenwood Lake water conveyance system because the integrity of the resource will be maintained. However, given the historic sensitivity of the area, there is the potential that unknown resources could be discovered in the vicinity of known resources. Implementation of Mitigation Measure CUL-2 would reduce this potentially adverse cultural resource effect to no adverse effect.

Construction associated with implementation of the proposed Greenwood Lake WTP project could result in the disturbance of unknown human remains. There are no known prehistoric, historic, or current human gravesites located within the APE of the proposed Greenwood Lake WTP Project. However, given the past Native American occupancy and use of this area of California and the extent and intensity of historic occupation, it is possible that construction could result in the inadvertent discovery of human remains. Implementation of Mitigation Measure CUL-3 would reduce this potentially adverse cultural resource effect to no adverse effect.

4.3.3 CULTURAL RESOURCES MITIGATION MEASURES

CUL-1. In the event that undiscovered cultural resources are found during construction or other activities in the APE of the Proposed Action, the responsible field manager or construction foreman shall order discontinuation of all activities within a minimum of 100 feet of the discovery and promptly contact a qualified archaeologist regarding evaluation of the find. Mitigation, as recommended by the archaeologist or appropriate Native American representative, shall be implemented.

CUL-2. In the event that undiscovered cultural resources are found during construction or other activities in the APE of the Proposed Action, the responsible field manager or construction foreman shall order discontinuation of all activities within a minimum of 100 feet of the discovery and promptly contact a qualified archaeologist regarding evaluation of the find. Appropriate mitigation, as recommended by the archaeologist and Native American monitor (if applicable) shall be implemented.

CUL-3. In the event of discovery of human skeletal remains, however fragmentary or disturbed from their original context, the El Dorado County Coroner and the Native American Heritage Commission, Sacramento (916-653-4082) are to be notified. The responsible field manager or construction foreman shall order discontinuation of all activities within a minimum of 100 feet of the discovery. Appropriate mitigation, as recommended by the El Dorado County Coroner and/ or the representative of NAHC, shall be implemented.

4.4 GEOLOGY AND SOILS

4.4.1 AFFECTED ENVIRONMENT

GEOLOGY

The project is situated within the low foothills of the Sierra Nevada geomorphic province (Bailey 1966) in proximity to the Foothills Fault System (FFS), with segments of the pipe alignment traversing the FFS.

The Geology is mainly composed of Paleozoic Era (290 to 700+ million years before present) and Mesozoic Era (65 to 290 million years before present) metamorphic and igneous rocks. The project area is located with in an area of low seismic activity within the Foothills Fault System. Faults present within a five mile radius of the site are; the Melones Fault Zone; Bear Mountain Fault Zone including the Maidu Fault; the Weimar Fault, Gills Hill Fault and Forrest Hill Fault. The pipe alignment traverses the Melones Fault Zone in Segment 2 near the intersection of Sliger Mine Rd and Highway 193. The Melones Fault zone forms the contact between the Paleozoic Era and Mesozoic Era rocks found in the project area. Paleozoic Era aged rocks found within the study area

are the metasedimentary and metavolcanic rocks of the Permian aged (290 -230 million years before present) Calaveras Complex. The Calaveras Complex rocks are located to the east of the Melones Fault Zone which has a strike to northwest to southeast. Located to the west of the Melones Fault Zone are rocks of the Jurassic aged (135 to 192 million years before present) Mariposa Formation. The Mariposa Formation is composed of sedimentary deposits ranging from slate to greywacke to conglomerate. The western contact of the Mariposa Formation in the Project is fault bounded by the Melones Fault Zone. To the west of the Mariposa Formation geology is composed of Mélange terrain metasedimentary and metavolcanic rocks, the mentioned Mélange deposits range in age from Paleozoic to Mesozoic (Wagner, et al 1981).

At the base of the Calaveras Complex north of Sliger Mine Road, ultra mafic rocks (igneous rocks containing high concentrations of iron and magnesium, and low concentrations of silica) have been identified by Wagner (Wagner, et al 1981). The presence of ultramafic rocks did raise concerns regarding Natural Occurring Asbestos (NOA). NOA laboratory testing reported NOA as non-detect.

The majority of the site near the existing Greenwood Reservoir and Georgetown Divide Ditch consists of timber, and is classified by the Natural Resources Conservation Service (NRCS) as vegetative soils good for irrigated orchards, irrigated pasturelands, dryland pasture and woodland (NRCS soils codes BkD and SsC). Soils on the project site consist of Boomer very rocky loam, 3 to 30 percent slopes (NRCS soils code BkD); and Sites clay loam, 9 to 15 percent slopes (NRCS soils codes SsC). They both have a woodland-site suitability of 4, meaning they are moderately suitable for forestlands on a scale of 1 to 6.

The Boomer series consists of deep and very deep, well-drained soils that formed in material weathered from metavolcanic rock. These soils are on uplands. The mean annual precipitation is about 45 inches and the mean annual temperature is about 55 degrees Fahrenheit (F). Boomer soils are used for forestry and watershed.

MINERAL RESOURCES

All of Segments 1, 2, 3, 4 and 5 are located in areas identified as Mineral Resource Zone (MRZ) 2a and 2b.

- MRZ-2a is defined as: Areas underlain by mineral deposits where geologic data indicate that significant measured or resources are present.
- MRZ-2b is defined as: Areas underlain by mineral deposits where geologic information indicates that significant inferred resources are present.

In the mid 1800s, extensive quartz veins and free gold were found throughout the Greenwood Mining District.[1] Hard rock and seam mining were the only methods during the early period of the Gold Rush. As time passed and mining became more industrialized, hydraulic mining was used in the district. Approximately five million dollars in gold was mined from the Greenwood District, of which half is said to have come from the Sliger Mine alone. Other big producing mines were the Nagler or French Mine, which during the 1880s was still in operation and reporting two million dollars in gold harvested. The Taylor and Rosecrans Mines were major hard rock mines, as were

[1] The Greenwood Mining District is the mining district in the general area of the WTP project site and pipeline alignments.

Spanish Dry Diggings, Black Oak Mine, and the Rosecrans; all of whom combined produced millions of dollars in extracted gold. Most mining in the Greenwood Mining District was geologically restricted to the Greenwood Seam and the Mariposa Belts that are located to the north and west of the site of the Proposed Action.

SEISMICITY

The project area is located with in an area of low to moderate seismic activity, within the Foothills Fault System. Faults present within a five mile radius of the site are; the Melones Fault Zone; Bear Mountain Fault Zone including the Maidu Fault; the Weimar Fault, Gills Hill Fault and Forrest Hill Fault. No active faults[2] that displace near-surface bedrock or residual soils are known to exist near the proposed alignment. The project is not located within or adjacent to any Fault Rupture Hazard Zones along active faults (Hart and Bryant 1999). Accordingly, the California Building Code (CBC) indicates the site lies within Seismic Zone 3.[3]

SOILS

Table 9 lists the soil types encountered along the Project alignment and describes their general characteristics as well as their erosion hazard rating. Many of the soils in the area have moderate to very severe erosion hazard, and are highly sensitive to disturbance by grading or other development activities.

Soil ID	Soil Type	Description	Storie Index, Road Use, Erosion Hazard
BkD	Boomer Very Rocky Loam, 3 to 30 % slope, Soils cover approx. 40% of the Project alignment	Slopes range from 3 to 30 percent with rocky outcrops, soil is well drained, parent material is schist, ground water is uncommon in the soil profile.	SI – 7, Road Use 0.5, moderate to severe erosion
BkE	Boomer Very Rocky Loam, 30 to 50 % slope, soils cover approx. 2% of the Project alignment	Similar to BkD, but with increased slope.	SI – 7, Road Use 0.5, very severe erosion
MbE	Mariposa Very Rocky Silt Loam, 3 to 50 % slopes, soils cover approx. 35% of the Project alignment	Slopes range from 3 to 50 percent with rocky outcrops, soil is well drained, parent material is metamorphic rocks, slate and schist, ground water is uncommon in the soil profile.	SI – 14, Road Use 0.5, moderate to severe erosion
MbF	Mariposa Very Rocky Silt Loam, 50 to 70 % slopes, soils cover approx. 2% of the Project alignment	Similar to MbE, but with increased slope.	SI – 14, Road Use 0.5, very severe erosion
SsC	Sites Clay Loam, 9 to 15 % slopes, soils cover approx. 1% of the Project alignment	Slope ranges from 9 to 15 percent with little to no rock fragments present, soil is well drained, parent material is metamorphic rocks, ground water is uncommon in the soil profile.	SI – 65, Road Use 0.5, moderate to severe erosion.

Source: USDA Conservation Service – Web Soil Survey http://websoilsurvey.nrcs.usda.gov/app/WebSoilSurvey.aspx

[2] An active fault is one that has experienced historic movement (e.g., observed/recorded motion in last ~150 years) or exhibits evidence of surface rupture during the Holocene Epoch (i.e., about the last 10,000 years).

[3] Persons living in seismic zone 3 have a one in ten chance of experiencing an earthquake with an active peak acceleration level of 0.03g (3/10 the acceleration of gravity) within a fifty year period.

Soil liquefaction is a phenomenon in which saturated soil loses shear strength and deforms from ground shaking during an earthquake. The El Dorado County General Plan indicates that potential soil liquefaction areas in El Dorado County are limited to unconsolidated, clean saturated silts and sands along drainages and stream channels. The Proposed Action site is not located in an area with soil or saturation conditions that have a low liquefaction potential.

Expansive soil conditions refer to soils that exhibit significant changes in volume related to changes in soil moisture content. Expansive soils can cause damage to structures sensitive to soil movement. ENGEO 2006 completed 15 test pits and five borings along the proposed alignment, excavations were not completed along Segment 1 and alternative Segments 3B, 3C and 4B. Potentially expansive soils were identified by ENGEO 2006 in the vicinity of the proposed water storage tank area and WTP buildings, Segment 5.

SLOPES AND OTHER HAZARDS

Topography within the project area is varied, with complex rolling hills, narrow valleys, and few areas that are level or nearly level. Many of the ridge crests are rounded and convex. Side slopes are typically steep to very steep, with bedrock or deposits of alluvium or colluvium. The ridge and valley orientations are generally controlled by the geologic materials and structures.

The native rock types, geologic structures, and soils are generally stable. Historic mining activity has not been identified along the alignment.

4.4.2 ENVIRONMENTAL CONSEQUENCES

NO ACTION ALTERNATIVE

Implementation of the No Action Alternative would have no adverse geology and soils effects.

PROPOSED GREENWOOD LAKE WTP PROJECT

Implementation of the Proposed Action would cause no adverse effect on available mineral resources in the vicinity of construction.

The Proposed Action could be exposed to seismic damage and liquefaction in the vicinity of construction. The project would result in the construction of structures for human occupancy and use within an area without identified active fault traces, although potentially active faults do occur locally and major regional faults are capable of producing moderate to strong shaking and liquefaction in the project area. The El Dorado County General Plan indicates soil liquefaction areas are limited to clean silts along drainages and streams. The project is not located in an area with soil or saturation conditions subject to liquefaction. The Proposed Action plans will use construction standards in compliance with the UBC, such as good shoring practice and robust construction to protect the health and safety of workers and future uses. Application of standard geotechnical engineering analysis for design and safety procedures during construction would limit seismic hazard risks to levels acceptable for the region. Implementation of the proposed Greenwood Lake WTP Project would be compatible with the state and local policies and regulations to avoid and minimize potential adverse risks to persons or structures from seismic hazards.

Implementation of the Proposed Action would cause the potential for damage and worker safety risk from expansive soils and soil erosion in the vicinity of construction. The Greenwood Lake WTP Project would be constructed in an area where most of the soils have moderate to very severe erosion hazard. Construction activities in some Segments (e.g., 1, 3a, 3c,4a) would generally be limited to the existing paved roadways, certain segments would disturb soils in unpaved roadways or in new right-of-way (Segments 2, 3b, and 5). Construction of the project would be required to adhere to the following standards: 1) Use of standard engineering building codes, 2) Implementation of sound engineering and construction practices, 3) Obtain and implement Construction Activity NPDES permits, and 4) Comply with local grading and trenching precaution ordinances. Adherence with these requirements would reduce the potential of trench failure, erosion and sedimentation along the pipeline corridor. However, the high erosion hazards, shallow depths and somewhat low fertility of the soils and the varied, steep topography may limit the effectiveness of standard practices to prevent excessive erosion and sedimentation during and following construction (rills or gullies that are initiated during construction would not likely heal). Implementation of the Proposed Action, while compatible with the state and local policies and regulations to avoid and minimize soil erosion and sedimentation, could result in excessive soil erosion from grading and/or modifications to storm drainage. Trench shoring and regrading completed in accordance with UBC standards, as outlined in Mitigation Measure GEO-3 would reduce these potentially adverse geology and soils effects to no adverse effect.

4.4.3 GEOLOGY AND SOILS MITIGATION MEASURES

GEO-3. Implement Mitigation Measure HYD-1.

4.5 HAZARDS AND HAZARDOUS MATERIALS

4.5.1 AFFECTED ENVIRONMENT

The project site is located in the area between the South and Middle Forks of the American River known as the Georgetown Divide. The James Marshal Gold Discovery locale is approximately 8 miles due south of the project location. Rich placer gold deposits were mined in the Georgetown area and gave the town its nickname of "growlers burg" due to the plentiful gold nuggets "growling" in the prospectors pans. In the mid 1800s extensive quartz veins and free gold were found throughout the Greenwood Mining District. Hard rock and seam mining were the only methods used during the early period of the Gold Rush; however, as time passed and mining became more industrialized operations in the district turned to hydraulic mining. Around five million dollars in gold was mined from the Greenwood District, of which half is said to have come from the Sliger Mine alone. Known quartz-seam gold diggings present in the area are Spanish Dry Diggings, French Hill Mine, Sliger Mine, Continental Mine, Grit Mine, Shenanigan Mine and the Heinz Gilbert Mine. These quartz diggings are at distances greater than one mile from the proposed pipeline alignment.

Regulatory information concerning the Proposed Action APE was requested from Environmental Data Resources, Inc. (EDR). Investigation methodologies were consistent with typical Phase I Environmental Site Assessment.

SOLID WASTE FACILITY/LANDFILL SITES

The Solid Waste Facility/Landfill Sites records typically contain an inventory of the solid waste disposal facilities. There is one site within 0.25-mile of proposed pipeline alignment Segment 2, the Greenwood Waste Disposal Site. Upon completion of the pipeline alignment and vicinity survey, this facility was established to be located topographically upgradient to certain sections of the potential construction area, but is separated from the pipeline alignment by a significant topographic ridge. Based on the location and proximity to the proposed pipeline alignment, this facility has a low potential of affecting the Proposed Action or construction operations.

UNDERGROUND STORAGE TANK (UST)

UST records typically contain information of known UST locations and known UST related effects to groundwater. One site was identified, greater than two miles from the proposed pipeline alignment, the CDF Growlersburg Conservation Camp located at 5440 Longview Lane. Upon completion of the alignment and vicinity survey the site appears to be located topographically upgradient to the proposed pipeline alignment. Based in the location and proximity of the site to the proposed pipeline alignment, this facility has a low potential of affecting the Proposed Action or construction operations.

HAZNET

HAZNET records typically contain data extracted from the manifests received by California Department of Toxic Substance Control (DTSC). Two sites were identified within three miles of proposed pipeline alignment: 1) the CDF Growlersburg Conservation Camp discussed under the UST paragraph above; and the Wylie Logging located at 4120 Ricci Rd. Based in the location and proximity of these sites to the Proposed Action alignment, these facilities have a low potential of affecting the Proposed Action or construction operations.

NATURAL OCCURRING ASBESTOS

Based on geologic mapping, there are concerns regarding worker health and safety with regards to naturally occurring asbestos (NOA) based on: "Asbestos Review Areas Western Slope County of El Dorado State of California" (Bruyn 2005). In addition, selected likely NOA Project parcel assessor's parcel numbers were entered into the El Dorado County AQMD website asbestos review locator. The Parcels within Segments 1 and 2 reported positive for the potential NOA in the locator asbestos review area. As part of the reconnaissance effort of December 6, 2006, soil and rock samples were collected for NOA analysis. Samples were collected using a rock hammer and samples were placed in Ziplock™ plastic bags. Soil and rock samples were described using the USCS classification where appropriate. Characteristics described were grainsize, hardness and when appropriate moisture content and plasticity. Samples were shipped to EMSL Analytical, Inc. of San Leandro, California. Samples were analyzed for NOA using the California Air Resources Board (CARB) 435 method. No asbestos in the samples was detected in laboratory tests.

Table 10 summarizes all potential hazards in the project area by segment. The main finding is the potential for NOA in Segments 1, 2, 3a, 3b and , 3c.

Table 10 Potential Location of Hazardous Sites				
Segment ID	**ROW Type: (paved, shoulder, unpaved, new)**	**Toxic Sites Identified (1)**	**Construction Method *****	**Soil Type**
1	Auburn Lake Trails WTP; paved on Sweet Water Trail.	NOA, Auburn Lake Trials Onsite WW	Open trench.	Mariposa Very Rocky Silt Loam 3 to 50 percent slopes.
2	Unpaved road bed (old SR 193); Existing GDPUD Kaiser Siphon.	NOA	Open trench	Boomer Very Rock Loam 3 to 50 percent slopes, Mariposa Very Rocky Silt Loam 3 to 50 percent slope.
3a	Paved roadway on Sliger Mine Rd; unpaved roadway on Chipiona Way, Blue Heron Way; open land across Cunningham's property	NOA	Open trench	Boomer Very Rock Loam 3 to 50 percent slopes, Mariposa Very Rocky Silt Loam 3 to 50 percent slope.
3b	Paved roadway on Sliger Mine Rd; open land; unpaved roadway on Blue Heron Way.	NOA	Open trench	Boomer Very Rock Loam 3 to 50 percent slopes, Mariposa Very Rocky Silt Loam 3 to 50 percent slope.
3c	Paved roadway on Sliger Mine Rd and Syd Rd.	NOA	Open trench, and attached to bridge at creek crossing	Boomer Very Rock Loam 3 to 50 percent slopes, Mariposa Very Rocky Silt Loam 3 to 50 percent slope.
4a	Unpaved roadway on Irene Lane.	None	Open trench	Boomer Very Rock Loam 3 to 50 percent slopes.
4b	Paved along Syd Rd and unpaved private right of way.	None	Open trench	Boomer Very Rock Loam 3 to 50 percent slopes.
5	Across open land private and GDPUD owned, existing GDPUD ditch, along existing unpaved horse trail.	None	Open trench	Boomer Very Rock Loam 3 to 50 percent slopes.

(1) Toxics records identified during Governmental Records Search – Proximity and Confirmed by Survey.

* ROW is the 'temporary' ROW, which would be disturbed during construction activities, including active work areas, access, and/or storage of materials, vehicles, or equipment.

** ROW type characterized by surface cover and condition: Paved = ROW will be entirely in the area of an existing paved road surface; Shoulder = ROW will include both paved road surface and unpaved road shoulder; Unpaved = ROW will be entirely within the area of an existing unpaved (gravel or dirt) road surface; and, New = ROW will be on areas that are undeveloped, open space, or agricultural lands.

*** Methods include: Open trench; and, Attached (above ground, attached to existing or proposed bridge structures)

Source: Dunn Environmental, Inc. 2007

4.5.2 ENVIRONMENTAL CONSEQUENCES

NO ACTION ALTERNATIVE

Implementation of the No Action Alternative would have no adverse hazards and hazardous materials effects.

PROPOSED GREENWOOD LAKE WTP PROJECT

Trenching and other construction related to the Proposed Action could result in the exposure of construction workers, nearby residents, and the environment to NOA present in soils and rocks. During construction and without best management practices, any existing hazardous materials and NOA containing soils that may be encountered would pose a hazard for construction workers and the environment. Construction workers typically are at the greatest risk of exposure to contaminated soil. Accidents or spills during transport of trench spoils could have the potential to expose the public and the environment to NOA. Implementation of Mitigation Measure HAZ-1 would reduce this potentially adverse hazards effect to no adverse effect.

Although the existing Auburn Lake Trails WTP has the potential for hazardous contaminants, the project area is completely outside the existing WTP and there would be no exposure of workers or existing adjacent land uses to hazardous materials as a result of construction activities. As no adverse effects would occur, no mitigation measures would be required.

4.5.3 MITIGATION MEASURES FOR HAZARDS AND HAZARDOUS MATERIALS

HAZ-1. The following measures shall be implemented prior to the start of construction or prior to the start of construction in any Segment if construction is phased (Measure HAZ-1a). Measures HAZ-1b, and HAZ-1c shall be implemented during project construction.

HAZ-1a: In order to prevent exposure or construction workers or the public to NOA, a limited corridor soil investigation related to asbestiform containing soils along the pipeline alignment shall be completed prior to the initiation of construction within pipeline segments 1, 2, and 3 to determine the level of dust control mitigation efforts. Potential remediation options may include encapsulation of NOA containing soils and reuse onsite or implementing the preferred alternative of a dust mitigation plan that addresses the County requirements determined by the El Dorado County AQMD and compliant with the District's Rule 223-2 Fugitive Dust – Asbestos Hazard Mitigation.

HAZ-1b: Excavation and materials to be used for reuse during pipeline development shall be identified and best management practices shall be used to handle and document placement of fill. Procedures should be clearly documented to identify suspect asbestiform soils. Contaminated soils, if documented for reuse, may be reused in construction fill. Soils that cannot be used in encapsulated areas and exceed designated and hazardous waste limits may be required to be removed from the pipeline work area. These soils shall be required to be transported under manifest by licensed waste haulers for proper disposal or incorporated into fill areas as appropriate.

HAZ-1c: Dust control plans shall be implemented at all times during construction to minimize the exposure to NOA and other dust emissions. See Mitigation Measure AQ-1 in Section 4.1, *Air Quality*, of this EA for the requirements of a Dust Control Plan.

4.6 HYDROLOGY AND WATER QUALITY

4.6.1 AFFECTED ENVIRONMENT

WATERSHEDS AND STREAMS

The project area lies along the topographic divide between the Middle Fork American River and the South Fork American River. The western portions of the project (Segments 1, 2, 3, and 4) drain to the north and northwest, down American Canyon and eventually to the Middle Fork American River. Conversely, Segment 5 and the Greenwood Lake WTP site drain to the south and southwest, into Greenwood Creek and eventually to the South Fork American River. While both the South and Middle Fork American rivers have high elevation headwaters along the Sierra Nevada crest and are dominated by snow-melt runoff, the local watersheds in the project area have maximum headwater elevations less than 3,000 feet. Therefore, channels in the local watersheds and project vicinity have rainfall-dominated runoff and stream flow patterns. Like many streams in the foothills, these 'intermittent' streams typically flow only during the wet season, but may range from having year-round flow in wet years, to little or no flow in dry years.

SURFACE WATER SUPPLY INFRASTRUCTURE

The surface water features of the project area include several constructed private and public water supply system components, including ditches, flumes, pipelines/siphons and a wide range of storage ponds and reservoirs. The Georgetown Divide Ditch is a 75 mile long water conveyance facility extending from 20,000 acre-foot capacity Stumpy Meadows Reservoir east of Georgetown, and serving the ~75,000 acre GDPUD service area.

The Georgetown Divide Ditch enters the Greenwood Lake WTP site from the southeast, flows into the small reservoir (about 6 to 10 acre-foot capacity), and then continues west as a gentle cross-slope ditch for about 1,000 feet before turning southwest at the Spanish Dry Diggings diversion. The section of ditch between Greenwood Lake and the diversion to Spanish Dry Diggings is lined with gunite. Downstream of Spanish Dry Diggings diversion, the ditch heads down a steep slope for about 2,600 feet in an unlined 6 to 8 feet deep gully with a stable cobble to bedrock channel bed (although the gully banks are of finer soil materials). The ditch continues another 4,800 feet as an open channel with cobble/gravel bed and/or lining to enter the Kaiser Siphon pipeline just upslope of Sliger Mine Road. Downstream of the 3,000-foot long siphon pipeline, the water conveyance continues in an open, partially lined ditch for about 2,400 feet to the Auburn Lake Trails WTP.

SURFACE DRAINAGE

Much of the pipeline route is within active public and private roadways. The portions of the pipeline route along paved public roadways (e.g., Segments 1, 3c) typically have earthen roadside ditches, and some short sections have protective riprap, but no formal stormwater drainage infrastructure. Roadside ditch capacity varies, and many of the ditches along steeply sloping road sections are eroded. The unpaved private roads along the pipeline route also typically do not have constructed stormwater drainage features, with discontinuous and varied capacity earthen roadside ditches to convey runoff. Although the unpaved roads have modified the surface runoff patterns, there are few obvious drainage problems. The roads may concentrate flows and in some locations, overflows may discharge to adjoining steep side slopes. In some locations, the private roads ascend/descend

steep slopes and poor soils, and there is minor soil erosion, rills, and gullies (e.g., Segments 3a, 3b, and 4a).

The pipeline route also crosses some areas that are not active roadways. Some of these cross-country sections are abandoned/inactive road alignments that had been graded for or used as roads and trails dozens to decades of years ago (e.g., Segments 2, 3a). A few of the cross-country sections of the pipeline routes have relatively undisturbed topography, but they have experienced land use/vegetation cover disturbance (e.g., Segments 4b, 5). The present drainage of these areas is typically dominated by sheet flow surface runoff over the duff (leaf litter) and concentrated runoff in natural swales or abandoned shallow roadside ditches.

WATER QUALITY

The surface water sources from the crest of the Sierra Nevada in the upstream watersheds of the Middle and South Fork American River are of high quality. However, immediate upstream surface water sources, while still of good quality, are subject to more contaminants in the storage and conveyance systems (e.g., open reservoirs and ditches). The high quality source water is often degraded as it is conveyed in open canals and ditches, and affected by drainage off naturally eroding slopes, and/or lands used for timber production, active or abandoned mines, grazed and cropped areas and residential/commercial development (DWR 2005).

Water samples collected upstream and downstream of Greenwood Lake in September 2006 were screened for carbamates, chlorinated acidity, chlorinated pesticides, PCBs, metals, pesticides, purgeable organic compounds, and 18 conventional chemistry parameters (California Laboratory Services 2006). No contaminants were detected in either upstream or downstream samples, although aluminum (38 μg/L) and iron (110 μg/L) were detectable in the upstream sample.

4.6.2 ENVIRONMENTAL CONSEQUENCES

NO ACTION ALTERNATIVE

The No Action Alternative would have potential adverse water quality effects in the Georgetown Divide region. The existing Auburn Lake Trails WTP would continue to treat water in the region at its current limited capacity and treatment processes, which no longer meet federal and state water quality standards.

PROPOSED GREENWOOD LAKE WTP PROJECT

Implementation of the Proposed Action could create short-term degradation of water quality in local water bodies or downstream receiving waters, particularly in areas where the steep slopes and/or sensitive soils reduce the effectiveness of typical measures at eliminating sediment or other pollutant discharges during or following the construction phase. The Greenwood Lake WTP project will be required to comply with the Construction NPDES General Permit conditions and develop and implement a Stormwater Pollution Prevention Plan. The SWPPP will incorporate measures or comparable Best Management Practices (BMP) erosion and sediment controls, means of waste disposal, control of post-construction sediment and erosion control measures and maintenance responsibilities, water quality monitoring and reporting responsibility during storm events, corrective actions for identified water quality problems, and non-storm water management controls. The

project will likely be required to comply with El Dorado County grading permit requirements and be consistent with the measures to prevent and limit disturbance to soils, waters, and water quality in Chapter 15.14 of County Code. However, the revised ordinance has not yet been approved, so there is some uncertainty about the requirements and compliance monitoring. While meeting these regulatory requirements would reduce the effect severity, the residual effect remains adverse, at least in areas with sensitive water bodies, steep slopes, and erodible soils. Implementation of Mitigation Measure HYD-1 would reduce this potentially adverse hydrology and water quality effect to no adverse effect.

Implementation of the proposed Greenwood Lake WTP project would increase the volume and peak flow of runoff generated within the WTP site. While the area of the site is relatively small, it is located along the crest of the local watershed and, if changes in hydrology are not adequately controlled, runoff could result in downslope and downstream peak flows that adversely affect erosion and sedimentation. Implementation of Mitigation Measure HYD-2 would reduce this potentially adverse hydrology and water quality effect to no adverse effect.

The Greenwood Lake WTP project would permanently modify the soil and drainage properties in some portions of the pipeline trench and at the WTP site, including areas located on or draining to steep slopes, erodible soils and surface water bodies that could experience an increase in on- or off-site erosion and sedimentation over the life of the project. Implementation of Mitigation Measure HYD-3 would reduce this potentially adverse hydrology and water quality effect to no adverse effect.

The Greenwood Lake WTP project would be owned and operated by the GDPUD, in compliance with federal and state water quality regulations, and the project facilities would increase the ability of the overall water supply system to protect the quality of water delivered. This would have no adverse effect on hydrology and water quality.

Implementation of the proposed Greenwood Lake WTP project would not increase overall water use, but will replace portions of the existing raw water open Georgetown Divide Ditch with an enclosed treated water pipeline that would seasonally reduce flows in the ditch and decrease seepage losses to groundwater in unlined portions of the ditch. This would have no adverse effect on hydrology and water quality.

4.6.3 MITIGATION MEASURES FOR HYDROLOGY AND WATER QUALITY

HYD-1. The following effect avoidance and minimization measures shall be implemented by the GDPUD or its contractors to minimize construction-related effects to on- and off- site erosion, sedimentation, and water quality:

A. Implement Mitigation Measure BIO-3.

B. The SWPPP required by law to be prepared for the project shall include specific measures to direct and control construction phase runoff to prevent discharge of sediment or other pollutant laden runoff into the existing surface water bodies on-site, including Greenwood Lake and the Georgetown Divide Ditch.

C. All imported or net fill used in construction staging areas, temporary access roads, building pad work areas, and trench excavation waste shall be removed to re-expose the native soil and shall be re-contoured immediately at the end of construction to original topography to minimize the potential for stormwater runoff to accumulate, pond, and/or discharge along concentrated flow lines off-site. (An exception will be that those staging areas within the final project footprint on the WTP site will be graded to match the project plans).

D. The re-vegetation plan for all areas required by law to be prepared for the project shall include specific measures to address short-term stabilization of the surfaces (e.g., geotechnical measures and/or re-vegetation including species to provide interim protection), as well as measures to increase the likelihood that long-term re-vegetation will be successful (e.g., soil amendments to correct fertility problems).

HYD-2.

A. The final design for the Greenwood Lake WTP site and associated roadways shall include roadside drainage features to prevent untreated stormwater from roadways and the surfaced areas of the WTP from entering Greenwood Lake and/or the Georgetown Ditch.

B. The final design of the Greenwood Lake WTP shall incorporate stormwater collection, treatment, and discharge features that are adequately sized and located to prevent off-site discharge of stormwater with elevated contaminants (e.g., oil/grease, sediment).

C. The final design of the Greenwood Lake WTP shall incorporate stormwater discharge features that are sized and located to provide stormwater discharge volumes and peak flows similar to existing conditions within the three primary natural swales on the south, southwest and west sides of the site.

HYD-3.

A. To reduce the potential for long-term erosion and sedimentation and downslope water quality effects in pipeline sections that are not part of an existing paved or unpaved road, the final contouring of the pipeline alignment and cover will meet native grade smoothly to avoid concentrating flows, and may include small crossing bars and/or insloping to reduce the potential for rills and gully development. Revegetation shall occur immediately after construction. If non-native plant restrictions or other considerations limit the short-term effectiveness of vegetation at preventing erosion, then geotextile or other erosion control measures will be installed on steep slopes and/or shallow soils, to assist with revegetation success and limit short term erosion that hampers long-term vegetation establishment.

B. To reduce the potential for long-term erosion and sedimentation and water quality effects downslope from the Greenwood Lake WTP, implement Mitigation Measure HYD-2, and provide the stormwater outfalls with sufficient energy dissipation features and downslope protection within existing swales and gullies (hardened surfaces that

progressively decrease in hydraulic roughness downslope, transitioning to geo- or bio-technical materials) to reduce the potential erosion where the flows meet native soils.

4.7 LAND USE

4.7.1 AFFECTED ENVIRONMENT

Human development in this area includes a mix of older, centralized communities in Auburn and Placerville, rural developed areas such as Georgetown and Cool, agriculture in the form of vineyards, pasture and grazing land, and managed forests, and past and existing mining operations. There are no large cities in the project area. The largest major city is Sacramento, approximately 40 miles west of El Dorado County.

The general land use pattern of the corridor is rural residential/residential agriculture. Even the developed areas retain a small town aspect, avoiding the congestion and high activity levels of the Sacramento urban area, the region's primary metropolitan area. The common land uses of the region are open space and low intensity agricultural and residential uses.

4.7.2 ENVIRONMENTAL CONSEQUENCES

NO ACTION ALTERNATIVE

There would be no adverse land use effects with the No Action Alternative

PROPOSED GREENWOOD LAKE WTP PROJECT

Implementation of the Proposed Action would result in new structures adjacent to Greenwood Lake. Because the location and height of these structures are consistent with the requirements of the El Dorado County Zoning Code, there would be no adverse effect.

Construction activities associated with the new Greenwood Lake WTP project would result in changes to the existing visual character. Even though a temporary degradation of visual quality and character may occur in cross-country sections of Segments 2 - 5, they would not be considered substantial as there are a limited number of public and private viewers in these locations and the effects would be temporary. The primary public views of the WTP site are currently from within the project site by visitors to Greenwood Lake. Due to the parcel's varying terrain and vegetation consisting of numerous tall deciduous and evergreen trees, the site of the proposed WTP cannot be seen from any off-site public viewing points. Users of the equestrian trail and the private access to the Musso property would be able to see the WTP facility buildings, storage tank, and security fencing. However, because the coloration and materials used to construct and surface the buildings, tank and fencing would be consistent with the coloration of the surrounding natural environment, there would be no adverse land use effect.

Construction activities associated with the new Greenwood Lake WTP project could result in a new source of light and glare. Because the lighting fixtures associated with the project would not be a major change from the residential and agricultural/ranch light levels already experienced in the vicinity, there would be no adverse effect on area light and glare.

4.7.3 MITIGATION MEASURES FOR LAND USE

None required.

4.8 NOISE

4.8.1 AFFECTED ENVIRONMENT

The Proposed Action area is located in a rural portion of El Dorado County removed from major urban noise sources; there are no major industrial noise sources located in the vicinity. The Georgetown Airport is located approximately 1.5 miles to the east of Greenwood Lake. The predominant noises at the proposed site are characterized as semi-rural, consisting of noise from activities at surrounding rural residences and agricultural (timber) operations. Traffic noise from Spanish Dry Diggins Road is not noticeable; however, existing off-road recreational vehicle activities are noticeable in the project area.

Noise effects from a Proposed Action can be categorized as those resulting from construction and those from operational activities. Construction noise would have a short-term effect; operational noise would continue throughout the lifetime of the project. There are existing residences immediately adjacent to the pipeline construction route within Segments 1, 4, and 5 that may be affected.

4.8.2 ENVIRONMENTAL CONSEQUENCES

NO ACTION ALTERNATIVE

There would be no adverse noise effects from the No Action Alternative.

PROPOSED GREENWOOD LAKE WTP PROJECT

Implementation of the Proposed Action would cause a substantial temporary or periodic increase in ambient noise and vibration levels in the vicinity of construction activities over the construction period of four to twelve weeks per segment and overall of nine to twelve months. Sensitive receptors include scattered rural residences along the whole alignment. Typical composite noise levels for construction activities, and distances of various noise contours from construction sites, are presented in Table 11.

Table 11 Typical Noise Levels During Construction				
		Approximate Distance (ft.) to Reduce Noise to Given Level (dBA, Leq) [b]		
Construction Activity	**Noise Level at 50 feet (dBA, Leq) [a]**	**60**	**65**	**70**
Ground Clearing	84	790	450	250
Excavation	89	1,400	800	450
Foundations	78	400	220	130
Erection	85	890	500	280
Finishing (exterior)	89	1,400	800	450
Blasting	90-105	1,450 +	840 +	460+

a U.S. Environmental Protection Agency, Noise from Construction Equipment and Operations, Building Equipment, and Home Appliances, December 1971; Queensland Government, Department of Industrial Relations 2006.

b Calculations assume a 6 dBA reduction for each doubling of distance from the noise source.

Source: U.S. Environmental Protection Agency, Noise from Construction Equipment and Operations, Building Equipment, and Home Appliances, 1971; Queensland Government, Department of Industrial Relations 2006, http://www.dir.qld.gov.au/workplace/law/codes/abrasiveblast/blasting/noise/index.htm.

Most activities associated with construction of the proposed WTP and pipeline would be considered "Excavation" as set forth in Table 11. However, there is the potential for controlled blasting to excavate in areas of hard rock. If controlled blasting were to occur, it would tend be outside of existing paved roadways, which is primarily in Segments 2 and 5. The noise nuisance levels caused by blasting, as shown in Table 11, would be between 90 and 105 dBA at the ear of the operator. This would pose a potential health risk to the construction workers and to any nearby residents.

Other construction activities would be considered an intermittent noise effect throughout the construction of the project and would vary in their effects on noise sensitive receptors, depending on the presence of intervening barriers or other insulating materials. Although construction activities would likely occur only during daytime hours, construction noise would still be considered disruptive to local residents. Implementation of Mitigation Measures NSE-1a and 1b would reduce these potentially adverse construction noise effects to no adverse effect.

Noise induced by the Proposed Action could arise from two sources: operational noise from new facilities, and increased traffic noise on local roadways from maintenance workers and supply vehicles accessing the various facility sites along the overall project. The operations of the proposed WTP facilities at Greenwood Lake could potentially increase noise levels in the area from the operations of: the pumps, the water storage tank, the filtering systems, and the backwash ponds. Sound from the water tank would be limited to low-level noises associated with water filling the tank. Pumps or other electrical equipment would be either in block buildings or submerged underwater and would produce noise levels at 40 to 45 dB Leq at a distance of 100 feet from the WTP (Bollard Acoustical Consultants 2007). Given that the nearest residence is located more than 0.25-mile from the WTP site (over 1,000 feet), and there are no other sensitive receptors in the area, operational noise levels from the Proposed Action would be a less than 45 dB to the nearest receptor. Given the above, operational noises from the project would produce no adverse operational noise effect.

4.8.3 MITIGATION MEASURES FOR NOISE

NSE-1a. With the exception of controlled blasting activities, all phases of construction shall be limited to the hours between 7:00 a.m. and 7:00 p.m. on weekdays (Monday through Friday) and from 8 a.m. to 5 p.m. on weekends and federally recognized holidays. Blasting is allowed only on weekdays (Monday through Friday) from 10:00 a.m. and 4:00 p.m. Exceptions are allowed if it can be shown that construction beyond these times is necessary to meet regulatory deadlines or to alleviate traffic congestion and safety hazards.

All equipment used in construction shall be equipped with mufflers and noise suppression devices to the maximum extent feasible.

NSE-1b. In areas of controlled blasting, the contractor shall:

A. Give 30 and 5-day written notices to all residences, businesses and utility owners within a half mile from the controlled blasting area;

B. Inspect all structures within 300 feet of the blast site no more than two weeks prior to commencement of controlled blasting;

C. Proceed in accordance with the Construction Safety Orders of the Division of Industrial Safety of the California Department of Industrial Relations, Federal Safety Requirements and the El Dorado County Sheriff;

D. Use best available technology, such as blast mats or other techniques, to minimize noise generated by blasting; and,

E. Provide all personnel in the controlled blasting area to wear ear and other appropriate protection during blasting excavation activities.

4.9 POPULATION, HOUSING AND GROWTH INDUCEMENT

4.9.1 AFFECTED ENVIRONMENT

As reported by the California Department of Finance (DoF), El Dorado County had an estimated population of 156,299 in 2000 (DoF 2006a). El Dorado County has a 2006 estimated population of 176,204 (DOF 2006a). The population of El Dorado County has grown more rapidly over the past fifteen years than the rest of California. According to the 1990 U.S. Census, the population of the County was 125,995 (El Dorado County 2004b). This represents an increase of 28 percent between 1990 and 2000, while California experienced an overall growth of 23.7 percent during the same period (El Dorado County 2004b). The current annual percent change in population for the County is 2.22 percent, which is more than California's 1.5 annual percent change (DOF 2005b).

El Dorado County anticipates rapid growth in the area through 2010 with its population reaching 188,471 by 2010 at a 2.1 percent average annual growth rate (DOF 2004). According to the adopted Department of Finance population projections between 2000 and 2050, population growth in the County is projected to only slightly slow down in the time period between 2010 and 2020 with population projections for year 2020 estimated to be 221,289 at a 1.7 percent average annual growth

rate (DOF 2004). Table 12 below provides El Dorado County and California Department of Finance population and growth projections through the year 2020.

Year	Population	Change (%)	Average Annual Growth (persons per year)	Average Annual Growth Rate (%)
1990	125,995	—	—	—
2000	156,299	28	3,030	2.2
2006 (estimate)	176,204[1]	12.8	3,333	2.1
2010 (forecast)	188,471[2]	20.6	3,217	2.1
2020 (forecast)	221,289[2]	17.4	3,282	1.7

[1] Department of Finance Estimate, January 1, 2006

[2] Department of Finance, Population Projections by Race/Ethnicity, Gender and Age for California and Its Counties, 2000-2050, 2004

Sources: US Census Bureau, 1990 & 2000 Census; El Dorado County General Plan Housing Element, 2004; Department of Finance, 2004 and 2006a.

According to the 2005 US Census, the racial and ethnic composition of the County is predominantly White, with 89.2 percent White, 0.8 percent Black or African American, 3.7 percent Asian, 1.3 percent American Indian and Alaskan Native, less than 0.01 percent Native Hawaiian/Other Pacific Islander, and 5 percent other (see Table 13 below). Compared to racial and ethnic representations throughout California, El Dorado County has a higher representation of Whites and a smaller representation of Hispanic, Asians, Blacks and Native Hawaiian/Other Pacific Islander.

Race	Number	Percent
Total Population	175, 790	100
White	156,856	89.2
American Indian and Alaska Native	2,147	1.3
Asian	6,582	3.7
Black or African American	1,386	0.8
Native Hawaiian and Other Pacific Islander	50	0.01
All Other (including 2 or more race s)	8,769	5

Source: U.S. Census Bureau, American Fact Finder website: http://factfinder.census.gov/home, accessed April 26, 2007

There were 80,279 housing units in the County in 2005, with an average of 2.7 persons per household. Approximately 74 percent of the occupied housing in the County was owner-occupied (U.S. Census 2007). The number of households in El Dorado County in 2010 will increase by at least 16,800 units, when applying the Department of Finance population projections for 2010.

In February 2007, the labor force in El Dorado County totaled 94,900 persons, with an unemployment rate of 5.2 percent (or 5,000 unemployed persons) (EDD 2007). Service providing occupations such as government; trade, transportation and utilities; retail and related occupations are currently the largest employment sectors in the County.

4.9.2 ENVIRONMENTAL CONSEQUENCES

NO ACTION ALTERNATIVE

There would be no adverse population, housing, or growth inducement effects with the No Action Alternative.

PROPOSED GREENWOOD LAKE WTP PROJECT

Implementation of the Proposed Action could potentially induce population growth in areas not currently planned for growth in the *El Dorado County General Plan*. Induced growth includes the direct employment, population, or housing growth of a project as well as the secondary or indirect growth accompanying direct growth.

The Georgetown Divide area and western El Dorado County area are currently served by Auburn Lake Trails WTP and Walton Lakes WTP facilities, with treatment plant capacities of 2.3 million gallons per day (mgd) and 2.7 mgd, respectively. The proposed Greenwood Lake WTP would replace the Auburn Lake Trails WTP and would reduce some of the demand on the Walton Lakes WTP. The proposed Greenwood Lake WTP would divert water from the existing GDPUD water supply ditch approximately 3 miles upstream from the existing Auburn Lake Trails WTP, thereby improving the reliability of the treatment plant supply and the quality of the raw water supply. The proposed Greenwood Lake WTP would be permitted by DHS to process up to 3 mgd; however, because the District would be using a new filter system with which they have no experience regarding its actual processing rate during storms and other high turbidity events, the proposed WTP is being designed with a new filter system with a theoretical maximum capacity of up to 4.5 mgd. While theoretically this could increase the area water supply by up to 2.3 mgd, realistically the proposed WTP would be operating at 3 mgd and practically would increase area water supply by 0.7 mgd.

The Proposed Action does not include direct construction of any housing units. The estimated population living in the project area following the construction of the pipeline project would not directly increase.

Implementation of the Proposed Action would create short-term and long-term employment opportunities. While construction employment would be created during the project construction phase, the necessary employees could be expected to be provided by the local labor pool, without the importation of significant amounts of new labor based on a 5.2 percent unemployment rate (5,000 unemployed workers) in February 2007 (EDD 2007). No long-term employment opportunities would be created by the GDPUD to support the Greenwood Lake WTP project as most workers would transfer from the existing Auburn Lake Trails WTP that would be decommissioned after completion of the Greenwood Lake WTP.

The Proposed Action would increase the overall water supply in the project area by theoretically up to 2.3 mgd and practically by 0.7 mgd. This infrastructure project would increase the treated domestic water capacity for this portion of unincorporated El Dorado County, and thus directly remove an existing barrier to population growth in this area of the County. An analysis of existing parcels in the project area that may or may not be currently underserved by existing treated domestic water service – that is currently do not have access to a treated water main hookup --shows that up

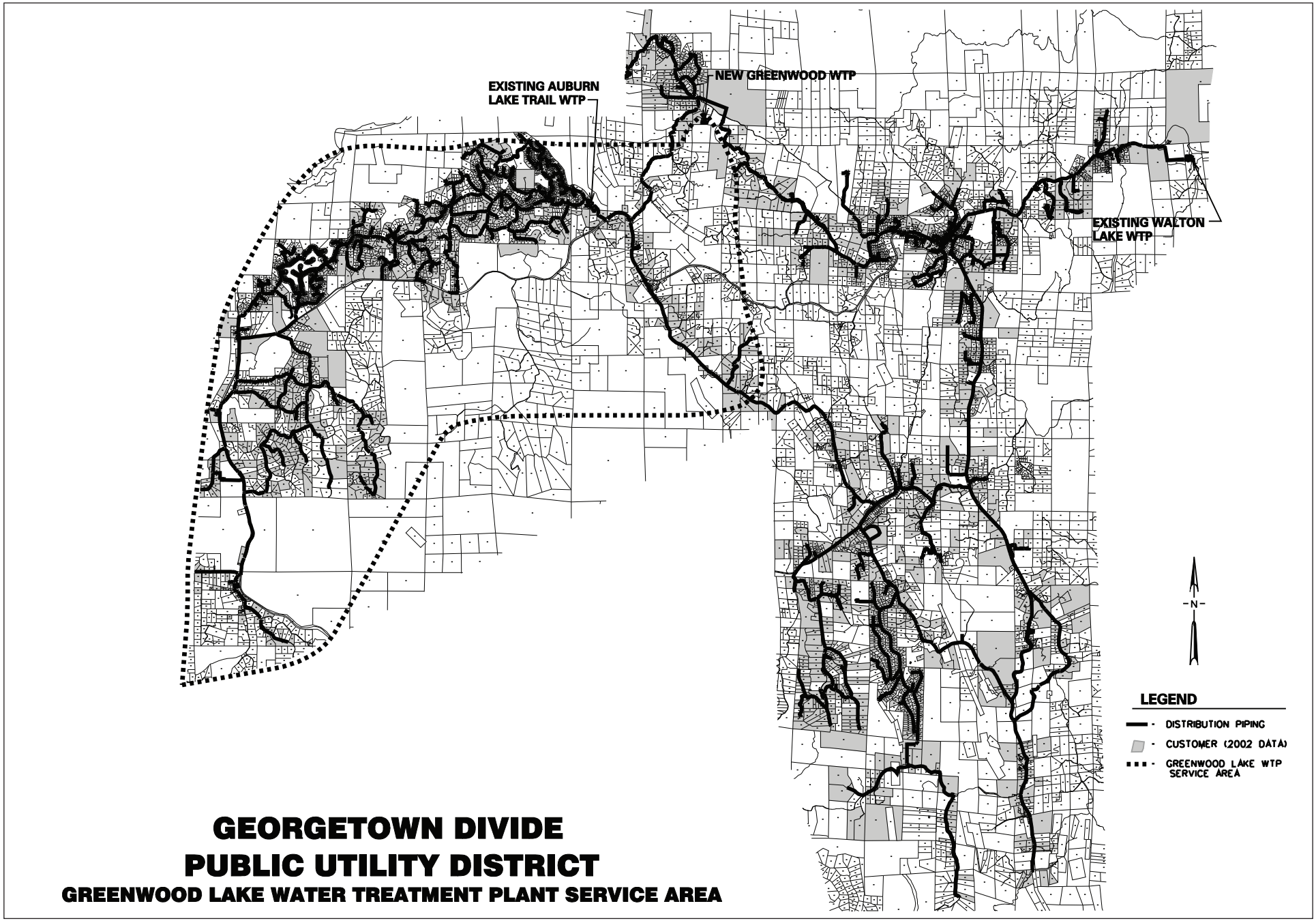
to 31 to 33 residential units could be induced due to the availability of new water service provided by the Greenwood Lake WTP project. However, each of the underserved parcels has other constraints impeding their development with urban uses in addition to lacking domestic water service, including lack of sewer service.

A second way in which the proposed Greenwood Lake WTP would reduce an infrastructure barrier to growth would be by generally increasing the supply of treated water within the plant's service area. As shown in Table 14, implementation of the Greenwood Lake WTP would directly increase treated water service capacity by 0.7 mgd over the existing capacity of Auburn Lake Trails WTP. Based on existing consumption patterns of 1 gallon per minute per household, this increase would allow the GDPUD to serve an additional 467 households over existing conditions within the service area of the Greenwood Lake WTP. (The service area is illustrated in Figure 5.) Theoretically, with a maximum microfiltration capacity of 4.5 mgd at the proposed plant, total capacity could be increased by 2.3 mgd, thereby serving an additional 1,533 households. With a future potential WTP capacity of 10 mgd, an additional 5,133 households could be served.

Capacity Condition	Service Level (mgd)	Capacity Increase over Existing Conditions (mgd)	Total Households Served	Additional Households Served over Existing Conditions
Existing Auburn Lake Trails WTP	2.3	n/a	1,508	n/a
Proposed Capacity Increase	3.0	0.7	1,975	+467
Theoretical Capacity Increase	4.5	2.3	3.041	+1,533
Future Potential Buildout	10	7.7	6,641	+5,133

Source: Planning Partners, 2007; KASL Engineering, 2007.

However, as proposed and permitted the project would serve only an additional 467 households, as the Greenwood Lake WTP would be licensed by DHS to operate at 3.0 mgd. The potential additional capacity that could be provided by the new microfilters would not directly increase the proposed WTP's actual operating levels; rather it would only "theoretically" increase the potential operating capacity. Because the microfilters are a new technology for the GDPUD and because the plant would be authorized to be operated only at 3.0 mgd, the proposed project would not serve 3,041 households, but rather would serve 1,975 households (an additional 467 households over the existing service capacity).



SOURCE: KASL Engineers, December 2005

Greenwood Lake WTP Environmental Assessment

Figure 5

GDPUD Service Area

This immediate capacity increase to serve an additional 467 households would be a removal of an infrastructure barrier to growth in the Georgetown Divide area. An additional 467 households is well within the levels of development allowed under the existing El Dorado County General Plan (ECGP). As with those parcels that are adjacent to the proposed pipeline, other constraints impeding the development of vacant parcels within the plant's service area with developed uses, including lack of sewer service, would remain.

The lack of sufficient water treatment capacity and/or a treated water delivery system are not the only infrastructure barriers to growth related to water treatment and distribution that are currently in place. The following barriers to growth in the region would remain in place and would not be removed or modified as part of the Proposed Action:

- The proposed treatment capacity Greenwood Lake WTP would be practically operating at 3.0 mgd (although theoretically up to 4.5 mgd with the new filtration system), which is more than the existing treatment capacity of 0.7 mgd (and theoretically up to 2.3 mgd) of the existing Auburn Lake Trails WTP. This is well within the levels required by existing and planned urban uses within the service area of the WTP under the existing approved El Dorado County General Plan.
- The existing distribution system would need to be expanded and/or upgraded beyond that proposed to accommodate the potential expansion of urban growth.
- Potential development at densities and intensities greater than that permitted by the El Dorado County General Plan and Zoning Ordinance would likely require the provision of community wastewater collection and treatment.

If the above water treatment and/or distribution issues were resolved, any proposed growth that could potentially exceed that identified under the approved General Plan would require an amendment of the *El Dorado County General Plan*. Any amendments to the *El Dorado County General Plan* would be a discretionary act, and would be subject to CEQA and preparation of an environmental document.

The provision of expanded treated domestic water capacity to serve the lower Georgetown Divide area of western El Dorado County would result in the removal of two important "infrastructure barriers" to growth. Because other existing and continuing barriers would not be removed or modified by the project, the Proposed Action's inducement of this growth due to the removal of an important infrastructure barrier would not be considered an adverse effect to population, housing and growth inducement.

In addition, the Proposed Action could potentially have a future capacity to treat up to 10 mgd with potential future expansions. A potential future capacity increase of up to 10 mgd could increase service to an additional 5,133 households. This potential water treatment capacity could result in indirect growth inducement. Because the future WTP expansion would require CEQA review, and because any growth beyond those levels already approved within the *El Dorado County General Plan* and Zoning Code would also require CEQA review, and because other existing and continuing barriers would not be removed or modified by the project, the Proposed Action's potential inducement of this growth due to the removal of an important infrastructure barrier would not be considered an adverse effect to population, housing, and growth inducement. Finally, there may not be sufficient potential new customers within the Greenwood Lake WTP service area to justify an expansion to 10 mgd, and the GDPUD has no plans to expand its service area.

The Proposed Action alignment in Segments 1 and 5 passes through areas designated for agricultural uses, a designation that allows for no more than one residential unit per 10 acres. The Proposed Action could provide water capacity to greater densities than allowed by the existing zoning. However, the existing General Plan land use map and zoning land use designations and regulations remain in place. Any modification for the existing General Plan and Zoning Code would require a General Plan Amendment or modification of the Zoning Code and an accompanying CEQA analysis of growth inducement. While the successful implementation of the Proposed Action may increase the capacity of treated domestic water to the GDPUD and western El Dorado County, the Proposed Action would not directly provide development beyond that which has been anticipated in the *El Dorado County General Plan*, and the project's inducement of this growth due to removal or modification of an institutional barrier would have no adverse effect.

4.9.3 MITIGATION MEASURES FOR POPULATION, HOUSING AND GROWTH INDUCEMENT

None required.

4.10 RECREATION

4.10.1 AFFECTED ENVIRONMENT

Greenwood Lake vicinity has historically been used for casual recreation including picnics and walks. El Dorado County once administered Greenwood Lake with restrooms and picnic tables; however their public recreation services stopped over 25 years ago. Since that time, GDPUD has been protecting Greenwood Lake as a public water supply through posting signs and rock barriers to limit access. Even though the reservoir has been posted as a protected public water supply, it has continued to be contaminated through people and horses entering the lake, motorized vehicles operating in close proximity to the lake creating erosion, and by refuse ranging from household trash to car bodies being dumped within the lake vicinity. Monitoring activities by GDPUD have documented that the presence of recreational users has degraded the water quality of the existing lake and this has lead, in part, to the need to construct the proposed Greenwood Lake WTP project to meet current water treatment requirements.

An equestrian trail, known as the Sharpless Trail, crosses the southern portion of the District's property. This trail provides an east-west connector trail from the intersection of Sliger Mine Road and Syd Road, across private property up to Greenwood Lake. From Greenwood Lake the trail continues eastward on Reservoir Road providing local access to such regional trails as the Western States Trail and Larimer Trail, and ultimately the Tahoe Basin and Pacific Crest Trails. The Sharpless Trail is popular with both hikers and equestrians in the Greenwood and Georgetown vicinity as a means of accessing trails extending both up-country to the Western States, Lake Tahoe and Pacific Crest Trails and below to Cool and the Auburn State Recreation Area. In addition to the Sharpless Trail, another local trail crosses GDPUD property to the north of Greenwood Lake and the proposed water treatment plant. This local trail is accessed from Sliger Mine Road and Loriel Lane to the northwest of the project site and runs south-southeast to connect to the Bradley Spicer Trail at Reservoir Road north and east of Greenwood Lake.

4.10.2 ENVIRONMENTAL CONSEQUENCES

NO ACTION ALTERNATIVE

There would be no adverse recreation effects with implementation of the No Action Alternative.

PROPOSED GREENWOOD LAKE WTP PROJECT

Implementation of the Proposed Action would effect the recreational activities that have historically taken place adjacent to Greenwood Lake on the property where the proposed WTP would be located. As a result of the exposure of Greenwood Lake to contaminants, the Proposed Action includes installation of a chain link fence around both Greenwood Lake and the WTP site to protect public health and safety of the domestic water supply, compliance with DHS standards. A green-coated six-foot chain link fence would encompass most of GDPUD's 34-acre parcel (see Figure 3). Construction of the proposed Greenwood Lake WTP project would preclude existing recreational activities that have historically taken place in and around the lake, including picnicking, nature viewing and swimming. Implementation of Mitigation Measures REC-1 would reduce this potentially adverse recreation effect to no adverse effect.

Construction of the Greenwood WTP and associated fencing around Greenwood Lake could sever regional equestrian trail connections. The project description has been revised to retain existing horse trail access, and where necessary realigned around the proposed WTP and Greenwood Lake areas outside of the fenced area. To reduce the potential for raw water contamination from horses using the lake for drinking water, GDPUD will install a wildlife bubbler to provide access to water for animals that have been historically using Greenwood Lake for drinking water. The wildlife bubbler would be located along the trail south of the proposed WTP. Implementation of Mitigation Measures REC-2 would reduce this potentially adverse recreation effect to no adverse effect.

4.10.3 MITIGATION MEASURES FOR RECREATION

REC-1. GDPUD shall provide a multiple use trail on the GDPUD Greenwood Lake property for the improvement and benefit of local recreation areas and users.

REC-2. The GDPUD shall work with the GDRD and the El Dorado Equestrian Trails Foundation to maintain the connectivity of the Sharpless Trail to the existing equestrian trails both west and east of the Greenwood Lake WTP parcel. Access shall be maintained both during construction and operation of the Greenwood Lake WTP. Should detours be necessary during the construction period to safely conduct equestrians through the work area, such detours shall be clearly marked and developed sufficiently to allow for safe passage.

4.11 TRANSPORTATION

4.11.1 AFFECTED ENVIRONMENT

The following is a description of the potentially affected roadways within the project vicinity.

Sweetwater Trail is a two-lane, two-way, public maintained paved road connecting State Route (SR) 193 to the Auburn Lake Trails WTP and the Auburn Lake Trails residential community.

Sliger Mine Road is a paved, two-way county maintained roadway. The Proposed Action would potentially effect the segment of Sliger Mine Road between Kaiser Siphon and Syd Road.

Chipiona Way is a two-lane, two-way, privately maintained unpaved road.

Blue Heron Way is two-lane, two-way, privately maintained unpaved road.

Irene Lane is two-lane, two-way, privately maintained road.

Loghouse Road and Reservoir Roads are two-lane, two-way, privately maintained paved and partially paved roads.

4.11.2 ENVIRONMENTAL CONSEQUENCES

NO ACTION ALTERNATIVE

There would be no adverse construction or operation-related transportation effects from implementation of the No Action Alternative.

PROPOSED GREENWOOD LAKE WTP PROJECT

Construction of the Proposed Action would temporarily increase traffic delays in the vicinity of construction activities intermittently over the construction period of four to twelve weeks per segment and overall of nine to twelve months. These potential adverse effects would occur in the following areas:

Segment 1: Sweetwater Trail

Segment 2: No active roadways are located in this segment.

Segment 3: Sliger Mine Road, Syd Way, Chipiona Way, Blue Heron Way

Segment 4: Irene Lane, private roads

Segment 5: No active roadways are located in this segment.

WTP: Loghouse Road, Reservoir Road

No work would occur within the right-of-way of SR 193.

At the end of each construction day, the project contractor would be required to backfill all trenches within paved streets to permit travel so that no open trenches would be left overnight or during weekends or holidays.

The GDPUD is required to obtain encroachment permits for work within public roadways from El Dorado County and to comply with all encroachment permit conditions. However, temporary project-related construction effects could generate delays and would result in potential adverse effects. Implementation of Mitigation Measure TRAF-1 would reduce this potentially adverse transportation effect to no adverse effect.

4.11.3 MITIGATION MEASURES FOR TRANSPORTATION

TRAF-1. Prior to the initiation of construction within any public roadway, the GDPUD's construction contractor shall prepare a Traffic Management Plan to be submitted to El Dorado County for coordination and approval. The Traffic Management Plan shall include a construction schedule by location and the estimated period of time of closure for each roadway segment. The Traffic Management Plan shall be coordinated with local emergency service providers to maintain emergency access to areas affected by traffic closures during the construction period by, if necessary, providing alternate routes, repositioning emergency equipment, or coordinating with nearby service providers for coverage during construction closures. If necessary, the Traffic Management Plan will include measures to permit the passage of traffic during specified portions of the construction day so that no location is continually denied access during the construction period (e.g., opening the route to traffic through the construction zone for several times per day). The project contractor will be required to notify all affected residences and businesses, post the construction effect schedule in all the local jurisdictions place of business, and place articles and/or advertisements in appropriate local newspapers regarding construction effects and schedules.

4.12 ENERGY AND NATURAL RESOURCES

4.12.1 AFFECTED ENVIRONMENT

The project area electricity is provided by the Pacific Gas and Electric Company (PG &E). The electricity distribution system appears adequate for the Project's current needs as no evidence of brownouts or other forms of power shortages have been identified. Various local companies provide natural gas to users in the Project area.

Water is the only natural resource consumed in significant quantities by the GDPUD water supply system and other area users. Water use in the project area is discussed in the Section 4.6, *Hydrology and Water Quality*, of this EA.

4.12.2 ENVIRONMENTAL CONSEQUENCES

NO ACTION ALTERNATIVE

There would be no energy and natural resources effects from implementation of the No Action Alternative.

PROPOSED GREENWOOD LAKE WTP PROJECT

The Proposed Action is not expected to impose significant adverse effects on energy supplies and natural resources. The water supply distribution system would flow by gravity and the new, more efficient WTP would decrease the use of electricity for water treatment, filtration or other portions of the potable water distribution system over that currently being used by the Auburn Lake Trails WTP. The rate of future development in the project area is expected to be influenced more by the local economy than the availability of municipal water availability (see Section 4.9, *Population, Housing and Growth Inducement*).

4.13 PUBLIC HEALTH AND SAFETY

See Section 4.5, *Hazards and Hazardous Materials* and Section 4.6, *Hydrology and Water Quality*.

4.14 CUMULATIVE EFFECTS

The improvements associated with the Proposed Action of constructing a new WTP and treated water pipeline as identified in Section 2.1.2 are expected to generate no adverse cumulative effects. Currently, existing maximum day demands are equal to or exceed the existing water treatment plant's capacity and the existing system design does not meet current Department of Health Services treatment standards. Implementation of the Proposed Action would also serve to decrease energy costs as the current system is below most of its users and requires the use of pumps whereas the Proposed Action would be gravity fed.

The 2004 *El Dorado County General Plan EIR* presents an assessment of the cumulative effects associated with the construction and operation of urban and rural development, and utility infrastructure necessary to support planned development, including water distribution and treatment facilities in El Dorado County. Because the Greenwood Lake WTP project was included in the forecast contained in the 2004 General Plan EIR, the potential cumulative effects identified by the 2004 General Plan EIR for planned urban and rural development, including expanding water distribution and treatment facilities, would apply. Environmental issue areas listed below were assessed for cumulative effects.

AIR QUALITY

The cumulative setting for air quality is western El Dorado County of the Mountain Counties Air Basin (MCAB). As identified in the 2004 General Plan EIR, cumulative air quality effects are adverse.

Effect: Air Quality

Implementation of the Proposed Action has the potential to result in short-term air quality effects during the construction period. With implementation of the mitigation measures identified in Section 4.1, *Air Quality*, of this EA and compliance with the El Dorado County APCD regulations, these effects would be reduced to no adverse effect. Because the project would have only short-term air quality effects, because these effects can be reduced to no adverse effect with implementation of the above measures, and because the project's contribution to cumulative air quality effects would not be cumulatively considerable, the cumulative effects would not be adverse.

Mitigation Measure CUM-1: None required.

BIOLOGICAL RESOURCES

The cumulative setting for biological resources is western El Dorado County. As identified in the 2004 General Plan EIR, cumulative biological resource effects are not adverse.

Effect: Biological Resources

Implementation of the Proposed Action is expected to have adverse biological resources effects during construction and operation from loss of approximately 5 to 7 acres of habitat. With implementation of the mitigation measures identified in Section 4.2, *Biological Resources*, of this EA and compliance with El Dorado County, CDF&G and USFWS requirements, these effects would be reduced to no adverse effect. Because the project would incorporate all County-recommended strategies to reduce erosion and sedimentation and thereby protect habitat; because the project would avoid all effects to sensitive plant and animal species habitats; because the project would comply with the County tree ordinance; because the total loss of habitat is the minimum amount necessary for a project of this length; because all biological resource effects can be reduced to no adverse effect with implementation of the above measures; and because the project's contribution to cumulative biological resource effects would not be cumulatively considerable, the cumulative effect would not be adverse.

Mitigation Measure CUM-2: None required.

CULTURAL RESOURCES

The cumulative setting for cultural resources is El Dorado County. As identified in the 2004 General Plan EIR, cumulative cultural resource effects are not adverse.

Effect: Cultural Resources

Implementation of the Proposed Action is expected to have potentially adverse cultural resources effects during the construction period. With implementation of the mitigation measures identified in Section 4.3, *Cultural Resources*, of this EA and compliance the requirements of the SHPO, these effects would be reduced to no adverse effect. Because the project would avoid all effects to sensitive cultural resources during project operations; because the all potential construction-related cultural resource effects can be reduced to no adverse effect with implementation of the above measures; because the county-wide cumulative cultural resource effects are not adverse; and because the project's contribution to cumulative cultural resource effects would not be cumulatively considerable, the cumulative effects would not be adverse.

Mitigation Measure CUM-3: None required.

GEOLOGY AND SOILS

The cumulative setting for geologic, soils and mineral resources is El Dorado County. As identified in the 2004 General Plan EIR, cumulative geologic, soils and mineral resource effects are not adverse.

Effect: Geology and Soils

Implementation of the Proposed Action is expected to have a potentially adverse geologic, soils and mineral resource effects during the construction period. With implementation of the mitigation

measures identified in Section 4.4, *Geology and Soils*, of this EA and compliance the requirements of El Dorado County, these effects would be reduced to no adverse effect. Because the project would avoid all effects to sensitive geologic, soils and mineral resources during project operations; because all potential construction-related geologic, soils and mineral resource effects can be reduced to no adverse effect with implementation of the above measures; because the county-wide cumulative geologic, soils and mineral resource effects are not adverse; and because the project's contribution to cumulative geologic, soils and mineral resource effects would not be cumulatively considerable, the cumulative effects would not be adverse.

Mitigation Measure CUM-4: None required.

HUMAN HEALTH AND SAFETY

The cumulative setting for human health and safety resources is El Dorado County. As identified in the 2004 General Plan EIR, cumulative human health and safety resource effects are adverse.

Effect: Hazards and Hazardous Materials

Implementation of the Proposed Action is expected to have a potentially significant human health and safety resource effects during the construction period. With implementation of the mitigation measures identified in Section 4.5, *Hazards and Hazardous Materials*, of this EA and compliance the requirements of El Dorado County APCD and Environmental Management, these effects would be reduced to no adverse effect. Because the project would reduce the exposure of illegal dumping (currently a concern for risk to hazardous exposure in El Dorado County); because the project could avoid all effects to sensitive human health and safety resources during project operations through compliance with OSHA, building code, and State health and safety regulations; because the all potential construction-related human health and safety resource effects can be reduced to no adverse effect with application of El Dorado County APCD NOA dust control regulations; and because the project's contribution to cumulative human health and safety resource effects would not be cumulatively considerable, the cumulative effect would not be adverse.

Mitigation Measure CUM-5: None required.

LAND USE AND HOUSING

The cumulative setting for land use and housing resources is El Dorado County. As identified in the 2004 General Plan EIR, cumulative land use and housing resource effects are not adverse to build-out of the year 2025.

Effect: Land Use and Housing

Implementation of the Proposed Action is not expected to have adverse land use and housing effects during the construction and operation periods. Because the project would avoid all effects to land use and housing resources during project construction and operations; because the county-wide land use and housing effects are not adverse at the year 2025 development level; and because the

project's contribution to cumulative land use and housing effects would not be cumulatively considerable, the cumulative effect would not be adverse.

Mitigation Measure CUM-6: None required.

NOISE

The cumulative setting for noise is El Dorado County. As identified in the 2004 General Plan EIR, cumulative noise effects are noise.

Effect: Noise

Implementation of the Proposed Action has the potential to result in short-term noise effects during the construction period; with implementation of the mitigation measures identified in Section 4.8, *Noise*, of this EA and compliance with the El Dorado County regulations, these effects would be reduced to no adverse effect. Because the project would have only short-term noise effects; because these effects can be reduced to no adverse effect with implementation of the above measures; and because the project's contribution to cumulative noise effects would not be cumulatively considerable, the cumulative effect would not be adverse.

Mitigation Measure CUM-7: None required.

TRAFFIC AND CIRCULATION

The cumulative setting for traffic and circulation is El Dorado County. As identified in the 2004 General Plan EIR, cumulative traffic and circulation effects are adverse.

Effect: Traffic and Circulation

Implementation of the Proposed Action has the potential to result in short-term traffic and circulation effects during the construction period; with implementation of the mitigation measures identified in Section 4.11, *Traffic and Circulation*, of this EA and compliance with the El Dorado County regulations, these effects would be reduced to no adverse effect. Because the project would have only short-term traffic and circulation effects; because these effects can be reduced to no adverse effect with implementation of the above measures; and because the project's contribution to cumulative traffic and circulation effects would not be cumulatively considerable, the cumulative effect would not be adverse.

Mitigation Measure CUM-8: None required.

VISUAL RESOURCES

The cumulative setting for visual and aesthetic resources is El Dorado County. As identified in the 2004 General Plan EIR, cumulative visual resource effects are not adverse for build-out to the year 2025.

Effect: Visual and Aesthetic Resources

As identified in Section 4.7, *Land Use*, of this EA, implementation of the Proposed Action has no adverse visual and aesthetic resource effects because the project design complies with El Dorado County regulations and includes design features to blend the project buildings and features with the landscape. Because the project's visual and aesthetics effects would not be adverse, and because the project's contribution to cumulative visual and aesthetic resource effects would not be cumulatively considerable, the cumulative effect would not be adverse.

Mitigation Measure CUM-9: None required.

WATER RESOURCES

The cumulative setting for water resources is El Dorado County. As identified in the 2004 General Plan EIR, cumulative water resource effects are adverse.

Effect: Water Resources

Implementation of the Proposed Action is expected to have potentially adverse water resource effects during the construction and operation periods. With implementation of the mitigation measures identified in Section 4.6, *Hydrology and Water Quality*, of this EA and compliance with the requirements of El Dorado County, these effects would be reduced to no adverse effect. Because the project would incorporate all County-recommended strategies to reduce erosion and sedimentation; because the potential operation- and construction-related hydrology and water quality resource effects can be reduced to no adverse effect with application of El Dorado County regulations; and because the project's contribution to cumulative human hydrology and water quality resource effects would not be cumulatively considerable, the cumulative effect would not be adverse.

Mitigation Measure CUM-10: None required.

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6 PREPARERS

6.1 PREPARERS

The following individuals prepared this EA:

GEORGETOWN DIVIDE PUBLIC UTILITY DISTRICT

Hank White

Steve Gau

PLANNING PARTNERS

Robert D. Klousner - Principal-in-Charge

Valerie Rosenkrantz - Project Manager, Air Quality, Population and Housing, Noise, Traffic

Raadha Jacobstein – NEPA issues

Julia Dumars - Biological Resources

Pat Dunn - Geology & Soils, Hazards and Hazardous Materials

Elizabeth Greathouse - Cultural Resources

Diana Hurlbert - Land Use, Recreation

Virginia Mahacek - Hydrology

Debby Martin - Biological Resources

Lew Napton - Cultural Resources

Dale Nutley - Graphics

Mary Wilson - Project Coordinator

KASL ENGINEERING, INC.

Jack Scroggs - Principal Engineer

Charlie Moore

7 LIST OF FREQUENTLY USED ACRONYMS

Acronym	Definition
µm	Micron
AAI	All Appropriate Inquiries
af	Acre feet
APCD	Air Pollution Control Districts
APCO	Air Pollution Control Officer
APE	Area of Potential Effect
AQMD	Air Quality Management District
ASTM	American Society of Testing and Materials
bgs	Below ground surface
bhp	Brake-horsepower
BMP	Best Management Practices
BOC	U. S. Bureau of Census
CA FID	California State Water Resources Control Board – Facility Inventory Database
CARB	California Air Resources Board
CAA	United States Clean Air Act
CBC	California Building Code
CCAA	California Clean Air Act
CCR	California Code of Regulations
CDFA	California Department of Food and Agriculture
CDFG	California Department of Fish and Game
CEQA	California Environmental Quality Act
CESA	California Endangered Species Act
cfs	Cubic feet per second
CGS	California Geological Survey
CHHSL	California Human Health Screening Levels
CIP	Clean-In-Place
CNDDB	California Natural Diversity Database
CO	Carbon Monoxide
Corps	U. S. Army Corps of Engineers
CRHP	California Register of Historic Places
CRHR	California Register of Historical Resources
CWA	United States Clean Water Act
Db	Decibel
Dba	A-weighted decibel
dbh	Diameter at breast height
CNPS	California Native Plant Society
CVRWQCB	Central Valley Regional Water Quality Control Board
DHS	State Department of Health Services
DOF	California Department of Finance
DTSC	Department of Toxic Substance Control
EA	Environmental Assessment
ECGP	El Dorado County General Plan
EDR	Environmental Data Resources, Inc.
EIS	Environmental Impact Statement

Acronym	Definition
EIR	Environmental Impact Report
EO	Executive Order
EPA	U. S. Environmental Protection Agency
FDP	Fugitive Dust Plan
FESA	Federal Endangered Species Act
FFS	Foothills Fault System
FIFRA	Federal Insecticide, Fungicide, and Rodenticide Act
FINDS	Facility Index System
FONSI	Finding of No Significant Impact
FSC	Federal Species of Concern
FYLF	Foothill yellow-legged frog
GDPUD	Georgetown Divide Public Utility District
GDRD	Georgetown Divide Recreation District
gpd	Gallons per day
gpm	Gallons per minute
GIS	Geographic Information System
HAZNET	California Department of Toxic Substances and Control – Annual Hazard Waste Manifests
HUD	U.S. Department of Housing and Urban Development
Hz	Hertz
IS	Initial Study
ISAC	Invasive Species Advisory Committee
ITP	Incidental Take Permits
L_{eq}	Energy-equivalent noise level
L_{dn}	Day-night average noise level
LOS	Levels of service
MBTA	Migratory Bird Treaty Act
MCAB	Mountain Counties Air Basin
mg	Million gallons
mgd	Million gallons per day
MMP	Mitigation Monitoring and Reporting Plan
MOU	Memorandum of Understanding
mph	Miles per hour
MRZ	Mineral Resource Zone
msl	Mean sea level
NAAQS	National Ambient Air Quality Standards
NAHC	Native American Heritage Commission
NEPA	National Environmental Policy Act
NISC	National Invasive Species Council
NISMP	National Invasive Species Management Plan
NOA	Naturally occurring asbestos
NOI	Notice of Intent
NOP	Notice of Preparation
NO_x	Oxides of nitrogen
NPDES	National Pollutant Discharge Elimination System
NRCS	Natural Resources Conservation Service

Acronym	Definition
NRHP	National Register of Historic Places
NWPT	Northwestern pond turtle
O_3	Ozone
OPR	Office of Planning and Research
OSHA	Occupational Safety and Health Administration
PAH	Polycyclic aromatic hydrocarbons
PM_{10}	Respirable particulate matter
$PM_{2.5}$	Fine particulate matter
ppm	Parts per million
RCRA-SQG	Resource Conservation and Recovery Act – Small Quantity Generators
ROG	Reactive organic gases
ROW	Right of way
RWQCB	Regional Water Quality Control Boards
SAA	Streambed Alteration Agreement
SAAQS	State Ambient Air Quality Standards
SDWA	Safe Drinking Water Act
SIP	State Implementation Plan
SMARA	Surface Mining and Reclamation Act
SO_2	Sulfur Dioxide
SR	State Route
SWEEPS	Statewide Environmental Evaluation and Planning Systems
SWPPP	Storm Water Pollution Prevention Plan
SWRCB	State Water Resources Control Board
TOG	Total organic gases
UBC	Uniform Building Code
USDA	United States Department of Agriculture
USFWS	United States Fish and Wildlife Service
UST	Underground storage tank
VELB	Valley elderberry longhorn beetle
WDS	California State Water Resources Control Board – Waste Discharge System
WST	Western spadefoot toad
WTP	Water Treatment Plant

APPENDIX A

AD1006, FARMLAND CONVERSION IMPACT RATING

May 17, 2007

Ms. Hue Dang, District Conservationist
National Resource Conservation Service
100 Forni Road, Suite A
Placerville CA 95667

RE: Georgetown Divide Public Utility District's Proposed Greenwood Lake Water Treatment Plant – Request for Determination of Compliance with the Farmland Protection Policy Act, AD-1006 (via email)

Dear Ms. Dang:

The Georgetown Divide Public Utility District (GDPUD) is proposing to construct a new water treatment plant (WTP) at the existing Greenwood Lake and an approximately 3-mile treated water pipeline to connect the new WTP to the District's existing distribution facilities. An Environmental Impact Report (EIR) is being prepared in compliance with the California Environmental Quality Act and an Environmental Assessment (EA) is being prepared in compliance with the National Environmental Policy Act. The GDPUD is seeking federal funds through the Safe Drinking Water State Revolving Fund Program. In light of the federal participation and that the project is on land zoned for agricultural uses by El Dorado County, we request your review of any potential farmland conversion impacts in compliance with Farmland Protection Policy Act, AD-1006. Please find attached to this email transmittal the Farmland Conversion Impact Rating form, and a USGS map with the proposed project location and it's alternative pipeline alignments.

The project would convert up to 4.5 acres of an area next to the existing Greenwood Lake into a WTP site. In addition, several treated water pipeline alignments are being evaluated, potentially converting 2.78 to 2.94 miles into a public utility corridor. Where the proposed pipeline follows an existing road right-of-way, no further land use conversion would take place. Where the proposed treated water pipeline follows a cross-country route, at least 15 feet (and up to 25 feet in areas of steep slope or other construction constraints) would be converted into a public utility corridor. The treated water pipeline options are estimated to convert 5.1 to 8.6 acres. The overall project would directly convert 9.6 to 13.4 acres into a WTP or public utility easement.

The proposed WTP site is on a 34-acre parcel owned by the GDPUD. While no further direct land use conversion is anticipated on this parcel beyond the proposed 4.5 acres for the WTP, potentially the total parcel would directly and indirectly be converted from agricultural use into public utility-related activities.

Please send your written response of your review of the proposed Greenwood Lake WTP and Treated Water Pipeline Project to:

Ae-Ran Davis, US Environmental Protection Agency
75 Hawthorne Street (WTR-3)
San Francisco, CA 94105
Phone: 415-972-3570
Fax: 415-947-3537
davis.ae-ran@epa.gov

We'd appreciate you sending a copy of your response to GDPUD and Planning Partners. If you need additional information to make your determination, please contact me by email at vrosenkrantz@e-planningpartners.com or by telephone at (352) 384-9143. Thank you for your consideration of this request.

Sincerely,

Valerie Rosenkrantz
Planning Partners
GDPUD Greenwood Lake WTP EIR and EA Project Manager

attachments
c: Ae-Ran Davis, U.S. EPA
Hank White, GDPUD General Manager, PO Box 4240, Georgetown CA 95634
Robert D. Klousner, Planning Partners Principal, 7620 Lakehill Ct, Elk Grove CA 95624

U.S. Department of Agriculture

FARMLAND CONVERSION IMPACT RATING

PART I *(To be completed by Federal Agency)*	Date Of Land Evaluation Request April 27, 2007
Name Of Project Greenwood Lake Water Treatment Plant	Federal Agency Involved US EPA
Proposed Land Use WTP and transmission pipeline	County And State El Dorado, CA; Georgetown Divide PUD; EDAPCD
PART II *(To be completed by NRCS)*	Date Request Received By NRCS

Does the site contain prime, unique, statewide or local important farmland? *(If no, the FPPA does not apply -- do not complete additional parts of this form).*	Yes ☐	No ☐	Acres Irrigated	Average Farm Size
Major Crop*(s)*	Farmable Land In Govt. Jurisdiction Acres: %		Amount Of Farmland As Defined in FPPA Acres: %	
Name Of Land Evaluation System Used	Name Of Local Site Assessment System		Date Land Evaluation Returned By NRCS	

PART III *(To be completed by Federal Agency)*	Alternative Site Rating			
	Site A	Site B	Site C	Site D
A. Total Acres To Be Converted Directly				
B. Total Acres To Be Converted Indirectly				
C. Total Acres In Site	34	0	0	0
PART IV *(To be completed by NRCS)* Land Evaluation Information				
A. Total Acres Prime And Unique Farmland				
B. Total Acres Statewide And Local Important Farmland				
C. Percentage Of Farmland In County Or Local Govt. Unit To Be Converted				
D. Percentage Of Farmland In Govt. Jurisdiction With Same Or Higher Relative Value				
PART V *(To be completed by NRCS)* Land Evaluation Criterion Relative Value Of Farmland To Be Converted *(Scale of 0 to 100 Points)*	0	0	0	0

PART VI *(To be completed by Federal Agency)* Site Assessment Criteria *(These criteria are explained in 7 CFR 658.5(b)*	Maximum Points	Site A	Site B	Site C	Site D
1. Area In Nonurban Use					
2. Perimeter In Nonurban Use					
3. Percent Of Site Being Farmed					
4. Protection Provided By State And Local Government					
5. Distance From Urban Builtup Area					
6. Distance To Urban Support Services					
7. Size Of Present Farm Unit Compared To Average					
8. Creation Of Nonfarmable Farmland					
9. Availability Of Farm Support Services					
10. On-Farm Investments					
11. Effects Of Conversion On Farm Support Services					
12. Compatibility With Existing Agricultural Use					
TOTAL SITE ASSESSMENT POINTS	160	0	0	0	0
PART VII *(To be completed by Federal Agency)*					
Relative Value Of Farmland *(From Part V)*	100	0	0	0	0
Total Site Assessment *(From Part VI above or a local site assessment)*	160	0	0	0	0
TOTAL POINTS *(Total of above 2 lines)*	260	0	0	0	0

Site Selected: Site A is the preferred Alt, other feasible alternative is No Action	Date Of Selection anticipated Oct 2007	Was A Local Site Assessment Used? Yes ☐ No ☐

Reason For Selection:

(See Instructions on reverse side)

This form was electronically produced by National Production Services Staff

Clear Form

Form AD-1006 (10-83)

STEPS IN THE PROCESSING THE FARMLAND AND CONVERSION IMPACT RATING FORM

Step 1 – Federal agencies involved in proposed projects that may convert farmland, as defined in the Farmland Protection Policy Act (FPPA) to nonagricultural uses, will initially complete Parts I and III of the form.

Step 2 – Originator will send copies A, B and C together with maps indicating locations of site(s), to the Natural Resources Conservation Service (NRCS) local field office and retain copy D for their files. (Note: NRCS has a field office in most counties in the U.S. The field office is usually located in the county seat. A list of field office locations are available from the NRCS State Conservationist in each state).

Step 3 – NRCS will, within 45 calendar days after receipt of form, make a determination as to whether the site(s) of the proposed project contains prime, unique, statewide or local important farmland.

. Step '4 – In cases where farmland covered by the FPPA will be converted by the proposed project, NRCS field offices will complete Parts II, IV and V of the form.

Step 5 – NRCS will return copy A and B of the form to the Federal agency involved in the project. (Copy C will be retained for NRCS records).

Step 6 – The Federal agency involved in the proposed project will complete Parts VI and VII of the form.

Step 7 – The Federal agency involved in the proposed project will make a determination as to whether the proposed conversion is consistent with the FPPA and the agency's internal policies.

INSTRUCTIONS FOR COMPLETING THE FARMLAND CONVERSION IMPACT RATING FORM

Part I: In completing the "County And State" questions list all the local governments that are responsible for local land controls where site(s) are to be evaluated.

Part III: In completing item B (Total Acres To Be Converted Indirectly), include the following:

1. Acres not being directly converted but that would no longer be capable of being farmed after the conversion, because the conversion would restrict access to them.

2. Acres planned to receive services from an infrastructure project as indicated in the project justification (e.g. highways, utilities) that will cause a direct conversion.

Part VI: Do not complete Part VI if a local site assessment is used.

Assign the maximum points for each site assessment criterion as shown in § 658.5 (b) of CFR. In cases of corridor-type projects such as transportation, powerline and flood control, criteria #5 and #6 will not apply and will, be weighed zero, however, criterion #8 will be weighed a maximum of 25 points, and criterion #11 a maximum of 25 points.

Individual Federal agencies at the national level, may assign relative weights among the 12 site assessment criteria other than those shown in the FPPA rule. In all cases where other weights are assigned relative adjustments must be made to maintain the maximum total weight points at 160.

In rating alternative sites, Federal agencies shall consider each of the criteria and assign points within the limits established in the FPPA rule. Sites most suitable for protection under these criteria will receive the highest total scores, and sites least suitable, the lowest scores.

Part VII: In computing the "Total Site Assessment Points" where a State or local site assessment is used and the total maximum number of points is other than 160, adjust the site assessment points to a base of 160. Example: if the Site Assessment maximum is 200 points, and alternative Site "A" is rated 180 points:

$$\frac{\text{Total points assigned Site A}}{\text{Maximum points possible}} = \frac{180}{200} \times 160 = 144 \text{ points for Site "A."}$$

Site Assessment Scoring for the Twelve Factors Used in FPPA

The Site Assessment criteria used in the Farmland Protection Policy Act (FPPA) rule are designed to assess important factors other than the agricultural value of the land when determining which alternative sites should receive the highest level of protection from conversion to non agricultural uses.

Twelve factors are used for Site Assessment and ten factors for corridor-type sites. Each factor is listed in an outline form, without detailed definitions or guidelines to follow in the rating process. The purpose of this document is to expand the definitions of use of each of the twelve Site Assessment factors so that all persons can have a clear understanding as to what each factor is intended to evaluate and how points are assigned for given conditions.

In each of the 12 factors a number rating system is used to determine which sites deserve the most protection from conversion to non-farm uses. The higher the number value given to a proposed site, the more protection it will receive. The maximum scores are 10, 15 and 20 points, depending upon the relative importance of each particular question. If a question significantly relates to why a parcel of land should not be converted, the question has a maximum possible protection value of 20, whereas a question which does not have such a significant impact upon whether a site would be converted, would have fewer maximum points possible, for example 10.

The following guidelines should be used in rating the twelve Site Assessment criteria:

1. How much land is in non-urban use within a radius of 1.0 mile from where the project is intended?

More than 90 percent:	15 points
90-20 percent:	14 to 1 points
Less than 20 percent:	0 points

This factor is designed to evaluate the extent to which the area within one mile of the proposed site is non-urban area. For purposes of this rule, "non-urban" should include:

- Agricultural land (crop-fruit trees, nuts, oilseed)
- Range land
- Forest land
- Golf Courses
- Non paved parks and recreational areas
- Mining sites
- Farm Storage
- Lakes, ponds and other water bodies
- Rural roads, and through roads without houses or buildings
- Open space
- Wetlands
- Fish production
- Pasture or hayland

Urban uses include:

- Houses (other than farm houses)
- Apartment buildings
- Commercial buildings
- Industrial buildings
- Paved recreational areas (i.e. tennis courts)
- Streets in areas with 30 structures per 40 acres
- Gas stations

- Equipment, supply stores
- Off-farm storage
- Processing plants
- Shopping malls
- Utilities/Services
- Medical buildings

In rating this factor, an area one-mile from the outer edge of the proposed site should be outlined on a current photo; the areas that are urban should be outlined. For rural houses and other buildings with unknown sizes, use 1 and 1/3 acres per structure. For roads with houses on only one side, use one half of road for urban and one half for non-urban.

The purpose of this rating process is to insure that the most valuable and viable farmlands are protected from development projects sponsored by the Federal Government. With this goal in mind, factor S1 suggests that the more agricultural lands surrounding the parcel boundary in question, the more protection from development this site should receive. Accordingly, a site with a large quantity of non-urban land surrounding it will receive a greater
number of points for protection from development. Thus, where more than 90 percent of the area around the proposed site (do not include the proposed site in this assessment) is non-urban, assign 15 points. Where 20 percent or less is
non-urban, assign 0 points. Where the area lies between 20 and 90 percent non-urban, assign appropriate points from 14 to 1, as noted below.

Percent Non-Urban Land within 1 mile	**Points**
90 percent or greater	15
85 to 89 percent	14
80 to 84 percent	13
75 to 79 percent	12
70 to 74 percent	11
65 to 69 percent	10
60 to 64 percent	9
55 to 59 percent	8
50 to 54 percent	7
45 to 49 percent	6
40 to 44 percent	5
35 to 39 percent	4
30 to 24 percent	3
25 to 29 percent	2
21 to 24 percent	1
20 percent or less	0

2. How much of the perimeter of the site borders on land in non-urban use?

More than 90 percent:	l0 points
90 to 20 percent:	9 to 1 point(s)
Less than 20 percent:	0 points

This factor is designed to evaluate the extent to which the land adjacent to the proposed site is non-urban use. Where factor #1 evaluates the general location of the proposed site, this factor evaluates the immediate perimeter of the site. The definition of urban and non-urban uses in factor #1 should be used for this factor.

In rating the second factor, measure the perimeter of the site that is in non-urban and urban use. Where more than 90 percent of the perimeter is in non-urban use, score this factor 10 points. Where less than 20 percent, assign 0 points. If a road is next to the perimeter, class the area according to the

use on the other side of the road for that area. Use 1 and 1/3 acre per structure if not otherwise known. Where 20 to 90 percent of the perimeter is non-urban, assign points as noted below:

Percentage of Perimeter Bordering Land	Points
90 percent or greater	10
82 to 89 percent	9
74 to 81 percent	8
65 to 73 percent	7
58 to 65 percent	6
50 to 57 percent	5
42 to 49 percent	4
34 to 41 percent	3
27 to 33 percent	2
21 to 26 percent	1
20 percent or Less	0

3. How much of the site has been farmed (managed for a scheduled harvest or timber activity) more than five of the last ten years?

More than 90 percent:	20 points
90 to 20 percent:	19 to 1 point(s)
Less than 20 percent:	0 points

This factor is designed to evaluate the extent to which the proposed conversion site has been used or managed for agricultural purposes in the past 10 years.

Land is being farmed when it is used or managed for food or fiber, to include timber products, fruit, nuts, grapes, grain, forage, oil seed, fish and meat, poultry and dairy products.

Land that has been left to grow up to native vegetation without management or harvest will be considered as abandoned and therefore not farmed. The proposed conversion site should be evaluated and rated according to the percent, of the site farmed.

If more than 90 percent of the site has been farmed 5 of the last 10 years score the site as follows:

Percentage of Site Farmed	Points
90 percent or greater	20
86 to 89 percent	19
82 to 85 percent	18
78 to 81 percent	17
74 to 77 percent	16
70 to 73 percent	15
66 to 69 percent	14
62 to 65 percent	13
58 to 61 percent	12
54 to 57 percent	11
50 to 53 percent	10
46 to 49 percent	9
42 to 45 percent	8
38 to 41 percent	7
35 to 37 percent	6
32 to 34 percent	5
29 to 31 percent	4
26 to 28 percent	3

23 to 25 percent	2
20 to 22 percent percent or Less	1
Less than 20 percent	0

4. Is the site subject to state or unit of local government policies or programs to protect farmland or covered by private programs to protect farmland?

Site is protected:	20 points
Site is not protected:	0 points

This factor is designed to evaluate the extent to which state and local government and private programs have made efforts to protect this site from conversion.

State and local policies and programs to protect farmland include:

State Policies and Programs to Protect Farmland

1. Tax Relief:

   A. Differential Assessment: Agricultural lands are taxed on their agricultural use value, rather than at market value. As a result, farmers pay fewer taxes on their land, which helps keep them in business, and therefore helps to insure that the farmland will not be converted to nonagricultural uses.

      1. Preferential Assessment for Property Tax: Landowners with parcels of land used for agriculture are given the privilege of differential assessment.

      2. Deferred Taxation for Property Tax: Landowners are deterred from converting their land to nonfarm uses, because if they do so, they must pay back taxes at market value.

      3. Restrictive Agreement for Property Tax: Landowners who want to receive Differential Assessment must agree to keep their land in - eligible use.

   B. Income Tax Credits

   Circuit Breaker Tax Credits: Authorize an eligible owner of farmland to apply some or all of the property taxes on his or her farmland and farm structures as a tax credit against the owner's state income tax.

   C. Estate and Inheritance Tax Benefits

   Farm Use Valuation for Death Tax: Exemption of state tax liability to eligible farm estates.

2. "Right to farm" laws:

   Prohibits local governments from enacting laws which will place restrictions upon normally accepted farming practices, for example, the generation of noise, odor or dust.

3. Agricultural Districting:

   Wherein farmers voluntarily organize districts of agricultural land to be legally recognized geographic areas. These farmers receive benefits, such as protection from annexation, in exchange for keeping land within the district for a given number of years.

4. Land Use Controls: Agricultural Zoning.

Types of Agricultural Zoning Ordinances include:

A. Exclusive: In which the agricultural zone is restricted to only farm-related dwellings, with, for example, a minimum of 40 acres per dwelling unit.

B. Non-Exclusive: In which non-farm dwellings are allowed, but the density remains low, such as 20 acres per dwelling unit.

Additional Zoning techniques include:

A. Slidinq Scale: This method looks at zoning according to the total size of the parcel owned. For example, the number of dwelling units per a given number of acres may change from county to county according to the existing land acreage to dwelling unit ratio of surrounding parcels of land within the specific area.

B. Point System or Numerical Approach: Approaches land use permits on a case by case basis.

LESA: The LESA system (Land Evaluation-Site Assessment) is used as a tool to help assess options for land use on an evaluation of productivity weighed against commitment to urban development.

C. Conditional Use: Based upon the evaluation on a case by case basis by the Board of Zoning Adjustment. Also may include the method of using special land use permits.

5. Development Rights:

A. Purchase of Development Rights (PDR): Where development rights are purchased by Government action.

Buffer Zoning Districts: Buffer Zoning Districts are an example of land purchased by Government action. This land is included in zoning ordinances in order to preserve and protect agricultural lands from non-farm land uses encroaching upon them.

B. Transfer of Development Rights (TDR): Development rights are transferable for use in other locations designated as receiving areas. TDR is considered a locally based action (not state), because it requires a voluntary decision on the part of the individual landowners.

6. Governor's Executive Order: Policy made by the Governor, stating the importance of agriculture, and the preservation of agricultural lands. The Governor orders the state agencies to avoid the unnecessary conversion of important farmland to nonagricultural uses.

7. Voluntary State Programs:

A. California's Program of Restrictive Agreements and Differential Assessments: The California Land Conservation Act of 1965, commonly known as the Williamson Act, allows cities, counties and individual landowners to form agricultural preserves and enter into contracts for 10 or more years to insure that these parcels of land remain strictly for agricultural use. Since 1972 the Act has extended eligibility to recreational and open space lands such as scenic highway corridors, salt ponds and wildlife preserves. These contractually restricted lands may be taxed differentially for their real value. One hundred-acre districts constitute the minimum land size eligible.

Suggestion: An improved version of the Act would state that if the land is converted after the contract expires, the landowner must pay the difference in the taxes between market value for the land and the agricultural tax value which he or she had been

paying under the Act. This measure would help to insure that farmland would not be converted after the 10 year period ends.

B. Maryland Agricultural Land Preservation Program: Agricultural landowners within agricultural districts have the opportunity to sell their development rights to the Maryland Land Preservation Foundation under the agreement that these landowners will not subdivide or develop their land for an initial period of five years. After five years the landowner may terminate the agreement with one year notice.

   As is stated above under the California Williamson Act, the landowner should pay the back taxes on the property if he or she decides to convert the land after the contract expires, in order to discourage such conversions.

C. Wisconsin Income Tax Incentive Program: The Wisconsin Farmland Preservation Program of December 1977 encourages local jurisdictions in Wisconsin to adopt agricultural preservation plans or exclusive agricultural district zoning ordinances in exchange for credit against state income tax and exemption from special utility assessment. Eligible candidates include local governments and landowners with at least 35 acres of land per dwelling unit in agricultural use and gross farm profits of at least $6.000 per year, or $18,000 over three years.

8. Mandatory State Programs:

A. The Environmental Control Act in the state of Vermont was adopted in 1970 by the Vermont State Legislature. The Act established an environmental board with 9 members (appointed by the Governor) to implement a planning process and a permit system to screen most subdivisions and development proposals according to specific criteria stated in the law. The planning process consists of an interim and a final Land Capability and Development Plan, the latter of which acts as a policy plan to control development. The policies are written in order to:

   - prevent air and water pollution;
   - protect scenic or natural beauty, historic sites and rare and irreplaceable natural areas; and
   - consider the impacts of growth and reduction of development on areas of primary agricultural soils.

B. The California State Coastal Commission: In 1976 the Coastal Act was passed to establish a permanent Coastal Commission with permit and planning authority The purpose of the Coastal Commission was and is to protect the sensitive coastal zone environment and its resources, while accommodating the social and economic needs of the state. The Commission has the power to regulate development in the coastal zones by issuing permits on a case by case basis until local agencies can develop their own coastal plans, which must be certified by the Coastal Commission.

C. Hawaii's Program of State Zoning: In 1961, the Hawaii State Legislature established Act 187, the Land Use Law, to protect the farmland and the welfare of the local people of Hawaii by planning to avoid “unnecessary urbanization”. The Law made all state lands into four districts: agricultural, conservation, rural and urban. The Governor appointed members to a State Land Use Commission, whose duties were to uphold the Law and form the boundaries of the four districts. In addition to state zoning, the Land Use Law introduced a program of Differential Assessment, wherein agricultural landowners paid taxes on their land for its agricultural use value, rather than its market value.

D. The Oregon Land Use Act of 1973: This act established the Land Conservation and Development Commission (LCDC) to provide statewide planning goals and guidelines.

Under this Act, Oregon cities and counties are each required to draw up a comprehensive plan, consistent with statewide planning goals. Agricultural land preservation is high on the list of state goals to be followed locally.

If the proposed site is subject to or has used one or more of the above farmland protection programs or policies, score the site 20 points. If none of the above policies or programs apply to this site, score 0 points.

5. How close is the site to an urban built-up area?

The site is 2 miles or more from an urban built-up area	15 points
The site is more than 1 mile but less than 2 miles from an urban built-up area	10 points
The site is less than 1 mile from, but is not adjacent to an urban built-up area	5 points
The site is adjacent to an urban built-up area	0 points

This factor is designed to evaluate the extent to which the proposed site is located next to an existing urban area. The urban built-up area must be 2500 population. The measurement from the built-up area should be made from the point at which the density is 30 structures per 40 acres and with no open or non-urban land existing between the major built-up areas and this point. Suburbs adjacent to cities or urban built-up areas should be considered as part of that urban area.

For greater accuracy, use the following chart to determine how much protection the site should receive according to its distance from an urban area. See chart below:

Distance From Perimeter of Site to Urban Area	Points
More than 10,560 feet	15
9,860 to 10,559 feet	14
9,160 to 9,859 feet	13
8,460 to 9,159 feet	12
7,760 to 8,459 feet	11
7,060 to 7,759 feet	10
6,360 to 7,059 feet	9
5,660 to 6,359 feet	8
4,960 to 5,659 feet	7
4,260 to 4,959 feet	6
3,560 to 4,259 feet	5
2,860 to 3,559 feet	4
2,160 to 2,859 feet	3
1,460 to 2,159 feet	2
760 to 1,459 feet	1
Less than 760 feet (adjacent)	0

6. How close is the site to water lines, sewer lines and/or other local facilities and services whose capacities and design would promote nonagricultural use?

None of the services exist nearer than 3 miles from the site	15 points
Some of the services exist more than one but less than 3 miles from the site	10 points
All of the services exist within 1/2 mile of the site	0 points

This question determines how much infrastructure (water, sewer, etc.) is in place which could facilitate nonagricultural development. The fewer facilities in place, the more difficult it is to develop an area. Thus, if a proposed site is further away from these services (more than 3 miles distance away), the site should be awarded the highest number of points (15). As the distance of the parcel of land to services decreases, the number of points awarded declines as well. So, when the site is equal to or further than 1 mile but less than 3 miles away from services, it should be given 10 points. Accordingly, if this distance is 1/2 mile to less than 1 mile, award 5 points; and if the distance from land to services is less than 1/2 mile, award 0 points.

Distance to public facilities should be measured from the perimeter of the parcel in question to the nearest site(s) where necessary facilities are located. If there is more than one distance (i.e. from site to water and from site to sewer), use the average distance (add all distances and then divide by the number of different distances to get the average).

Facilities which could promote nonagricultural use include:

- Water lines
- Sewer lines
- Power lines
- Gas lines
- Circulation (roads)
- Fire and police protection
- Schools

7. Is the farm unit(s) containing the site (before the project) as large as the average-size farming unit in the county? (Average farm sizes in each county are available from the NRCS field offices in each state. Data are from the latest available Census of Agriculture, Acreage of Farm Units in Operation with $1,000 or more in sales.)

As large or larger:	10 points
Below average: Deduct 1 point for each 5 percent below the average, down to 0 points if 50 percent or more is below average	9 to 0 points

This factor is designed to determine how much protection the site should receive, according to its size in relation to the average size of farming units within the county. The larger the parcel of land, the more agricultural use value the land possesses, and vice versa. Thus, if the farm unit is as large or larger than the county average, it receives the maximum number of points (10). The smaller the parcel of land compared to the county average, the fewer number of points given. Please see below:

Parcel Size in Relation to Average County Size	Points
Same size or larger than average (l00 percent)	10
95 percent of average	9
90 percent of average	8
85 percent of average	7
80 percent of average	6
75 percent of average	5
70 percent of average	4
65 percent of average	3
60 percent of average	2
55 percent of average	1
50 percent or below county average	0

State and local Natural Resources Conservation Service offices will have the average farm size information, provided by the latest available Census of Agriculture data

8. If this site is chosen for the project, how much of the remaining land on the farm will become non-farmable because of interference with land patterns?

Acreage equal to more than 25 percent of acres directly converted by the project	10 points
Acreage equal to between 25 and 5 percent of the acres directly converted by the project	9 to 1 point(s)
Acreage equal to less than 5 percent of the acres directly converted by the project	0 points

This factor tackles the question of how the proposed development will affect the rest of the land on the farm The site which deserves the most protection from conversion will receive the greatest number of points, and vice versa. For example, if the project is small, such as an extension on a house, the rest of the agricultural land would remain farmable, and thus a lower number of points is given to the site. Whereas if a large-scale highway is planned, a greater portion of the land (not including the site) will become non-farmable, since access to the farmland will be blocked; and thus, the site should receive the highest number of points (10) as protection from conversion

Conversion uses of the Site Which Would Make the Rest of the Land Non-Farmable by Interfering with Land Patterns

Conversions which make the rest of the property nonfarmable include any development which blocks accessibility to the rest of the site Examples are highways, railroads, dams or development along the front of a site restricting access to the rest of the property.

The point scoring is as follows:

Amount of Land Not Including the Site Which Will Become Non-Farmable	Points
25 percent or greater	10
23 - 24 percent	9
21 - 22 percent	8
19 - 20 percent	7
17 - 18 percent	6
15 - 16 percent	5
13 - 14 percent	4
11 - 12 percent	3
9 - 11 percent	2
6 - 8 percent	1
5 percent or less	0

9. Does the site have available adequate supply of farm support services and markets, i.e., farm suppliers, equipment dealers, processing and storage facilities and farmer's markets?

All required services are available	5 points
Some required services are available	4 to 1 point(s)
No required services are available	0 points

This factor is used to assess whether there are adequate support facilities, activities and industry to keep the farming business in business. The more support facilities available to the agricultural

landowner, the more feasible it is for him or her to stay in production. In addition, agricultural support facilities are compatible with farmland. This fact is important, because some land uses are not compatible; for example, development next to farmland cam be dangerous to the welfare of the agricultural land, as a result of pressure from the neighbors who often do not appreciate the noise, smells and dust intrinsic to farmland. Thus, when all required agricultural support services are available, the maximum number of points (5) are awarded. When some services are available, 4 to 1 point(s) are awarded; and consequently, when no services are available, no points are given. See below:

Percent of Services Available	Points
100 percent	5
75 to 99 percent	4
50 to 74 percent	3
25 to 49 percent	2
1 to 24 percent	1
No services	0

10. Does the site have substantial and well-maintained on farm investments such as barns, other storage buildings, fruit trees and vines, field terraces, drainage, irrigation, waterways, or other soil and water conservation measures?

High amount of on-farm investment	20 points
Moderate amount of non-farm investment	19 to 1 point(s)
No on-farm investments	0 points

This factor assesses the quantity of agricultural facilities in place on the proposed site. If a significant agricultural infrastructure exists, the site should continue to be used for farming, and thus the parcel will receive the highest amount of points towards protection from conversion or development. If there is little on farm investment, the site will receive comparatively less protection. See-below:

Amount of On-farm Investment	Points
As much or more than necessary to maintain production (100 percent)	20
95 to 99 percent	19
90 to 94 percent	18
85 to 89 percent	17
80 to 84 percent	16
75 to 79 percent	15
70 to 74 percent	14
65 to 69 percent	13
60 to 64 percent	12
55 to 59 percent	11
50 to 54 percent	10
45 to 49 percent	9
40 to 44 percent	8
35 to 39 percent	7
30 to 34 percent	6
25 to 29 percent	5
20 to 24 percent	4
15 to 19 percent	3
10 to 14 percent	2
5 to 9 percent	1
0 to 4 percent	0

11. Would the project at this site, by converting farmland to nonagricultural use, reduce the support for farm support services so as to jeopardize the continued existence of these support services and thus, the viability of the farms remaining in the area?

Substantial reduction in demand for support services if the site is converted	10 points
Some reduction in demand for support services if the site is converted	9 to 1 point(s)
No significant reduction in demand for support services if the site is converted	0 points

This factor determines whether there are other agriculturally related activities, businesses or jobs dependent upon the working of the pre-converted site in order for the others to remain in production. The more people and farming activities relying upon this land, the more protection it should receive from conversion. Thus, if a substantial reduction in demand for support services were to occur as a result of conversions, the proposed site would receive a high score of 10; some reduction in demand would receive 9 to 1 point(s), and no significant reduction in demand would receive no points.

Specific points are outlined as follows:

Amount of Reduction in Support Services if Site is Converted to Nonagricultural Use	**Points**
Substantial reduction (100 percent)	10
90 to 99 percent	9
80 to 89 percent	8
70 to 79 percent	7
60 to 69 percent	6
50 to 59 percent	5
40 to 49 percent	4
30 to 39 percent	3
20 to 29 percent	2
10 to 19 percent	1
No significant reduction (0 to 9 percent)	0

12. Is the kind and intensity of the proposed use of the site sufficiently incompatible with agriculture that it is likely to contribute to the eventual conversion of the surrounding farmland to nonagricultural use?

Proposed project is incompatible with existing agricultural use of surrounding farmland	10 points
Proposed project is tolerable of existing agricultural use of surrounding farmland	9 to 1 point(s)
Proposed project is fully compatible with existing agricultural use of surrounding farmland	0 points

Factor 12 determines whether conversion of the proposed agricultural site will eventually cause the conversion of neighboring farmland as a result of incompatibility of use of the first with the latter. The more incompatible the proposed conversion is with agriculture, the more protection this site receives from conversion. Therefor-, if the proposed conversion is incompatible with agriculture, the site receives 10 points. If the project is tolerable with agriculture, it receives 9 to 1 points; and if the proposed conversion is compatible with agriculture, it receives 0 points.

CORRIDOR - TYPE SITE ASSESSMENT CRITERIA

The following criteria are to be used for projects that have a linear or corridor - type site configuration connecting two distant points, and crossing several different tracts of land. These include utility lines, highways, railroads, stream improvements, and flood control systems. Federal agencies are to assess the suitability of each corridor-type site or design alternative for protection as farmland along with the land evaluation information.

For Water and Waste Programs, corridor analyses are not applicable for distribution or collection networks. Analyses are applicable for transmission or trunk lines where placement of the lines are flexible.

(1) How much land is in nonurban use within a radius of 1.0 mile form where the project is intended?

(2)	More than 90 percent	(3)	15 points
(4)	90 to 20 percent	(5)	14 to 1 point(s).
(6)	Less than 20 percent	(7)	0 points

(2) How much of the perimeter of the site borders on land in nonurban use?

(3)	More than 90 percent	(4)	10 point(s)
(5)	90 to 20 percent	(6)	9 to 1 points
(7)	less than 20 percent	(8)	0 points

(3) How much of the site has been farmed (managed for a scheduled harvest or timber activity) more than five of the last 10 years?

(4)	More than 90 percent	(5)	20 points
(6)	90 to 20 percent	(7)	19 to 1 point(s)
(8)	Less than 20 percent	(9)	0 points

(4) Is the site subject to state or unit of local government policies or programs to protect farmland or covered by private programs to protect farmland?

Site is protected	20 points
Site is not protected	0 points

(5) Is the farm unit(s) containing the site (before the project) as large as the average - size farming unit in the County? (Average farm sizes in each county are available from the NRCS field offices in each state. Data are from the latest available Census of Agriculture, Acreage of Farm Units in Operation with $1,000 or more in sales.)

As large or larger	10 points
Below average deduct 1 point for each 5 percent below the average, down to 0 points if 50 percent or more below average	9 to 0 points

(6) If the site is chosen for the project, how much of the remaining land on the farm will become non-farmable because of interference with land patterns?

Acreage equal to more than 25 percent of acres directly converted by the project	25 points
Acreage equal to between 25 and 5 percent of the acres directly convened by the project	1 to 24 point(s)
Acreage equal to less than 5 percent of the acres directly converted by the project	0 points

(7) Does the site have available adequate supply of farm support services and markets, i.e., farm suppliers, equipment dealers, processing and storage facilities and farmer's markets?

All required services are available	5 points
Some required services are available	4 to 1 point(s)
No required services are available	0 points

(8) Does the site have substantial and well-maintained on-farm investments such as barns, other storage building, fruit trees and vines, field terraces, drainage, irrigation, waterways, or other soil and water conservation measures?

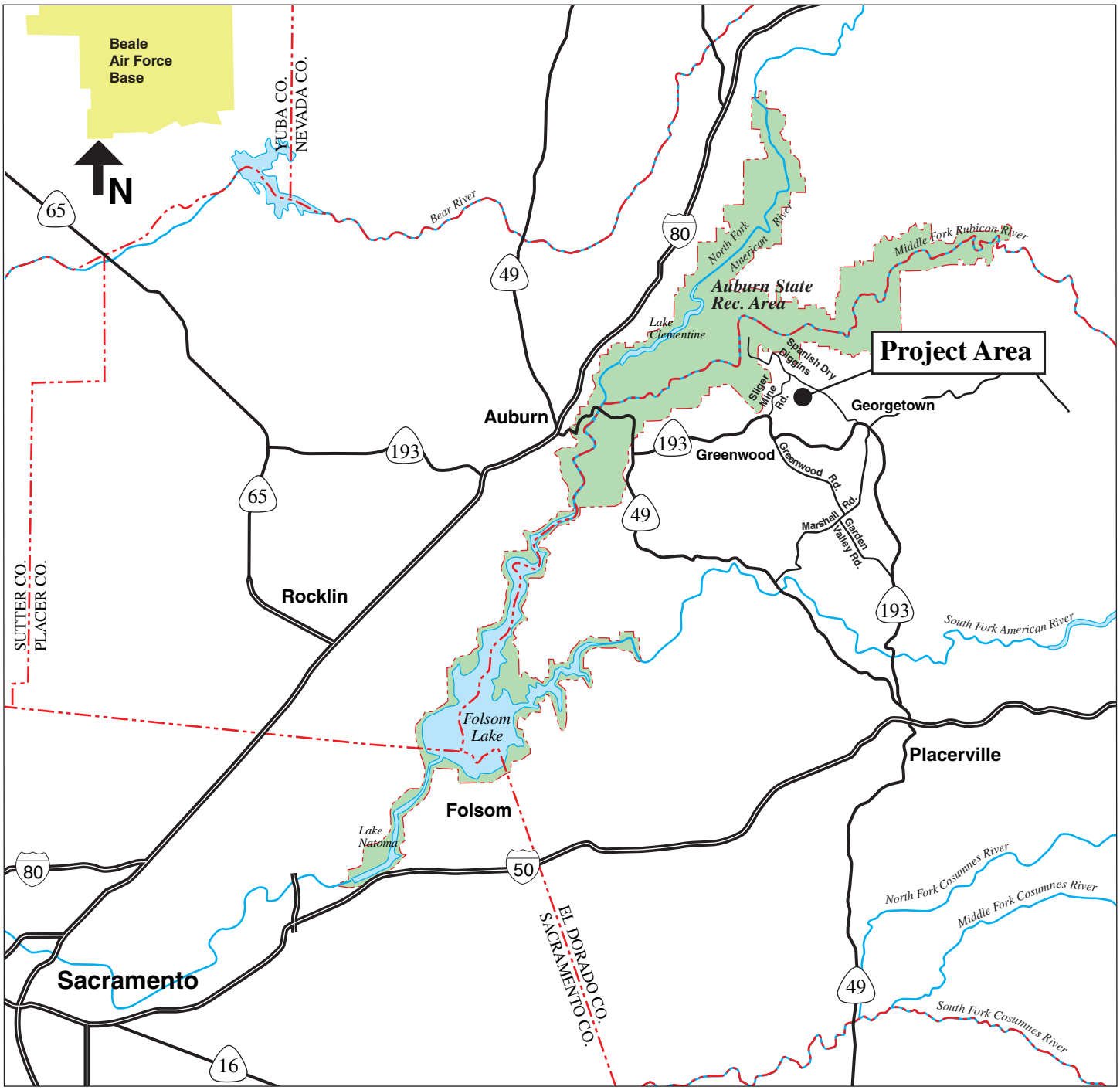
High amount of on-farm investment	20 points
Moderate amount of on-farm investment	19 to 1 point(s)
No on-farm investment	0 points

(9) Would the project at this site, by converting farmland to nonagricultural use, reduce the demand for farm support services so as to jeopardize the continued existence of these support services and thus, the viability of the farms remaining in the area?

Substantial reduction in demand for support services if the site is convened	25 points
Some reduction in demand for support services if the site is convened	1 to 24 point(s)
No significant reduction in demand for support services if the site is converted	0 points

(10) Is the kind and intensity of the proposed use of the site sufficiently incompatible with agriculture that it is likely to contribute to the eventual conversion of surrounding farmland to nonagricultural use?

Proposed project is incompatible to existing agricultural use of surrounding farmland	10 points
Proposed project is tolerable to existing agricultural use of surrounding farmland	9 to 1 point(s)
Proposed project is fully compatible with existing agricultural use of surrounding farmland	0 points

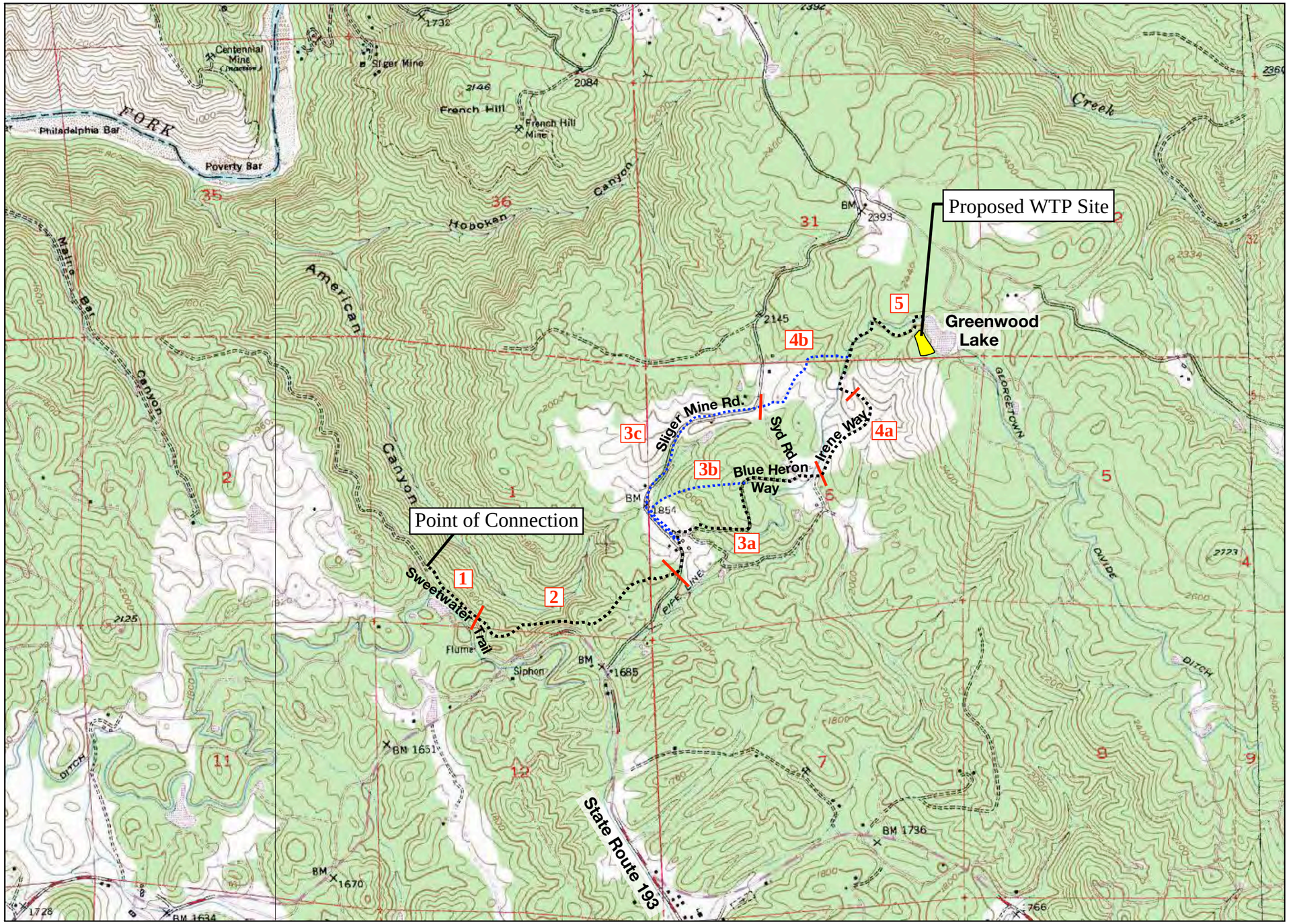


Greenwood Lake Water Treatment Plant and Treated Water Transmission Line EIR/EA

SOURCE: Planning Partners, December 2006

Figure 1

Regional Location



SOURCE: Planning Partners, February 2007
Base Map: USGS 7.5" Greenwood Topographical Quad

Greenwood Lake Water Treatment Plant and Treated Water Transmission Line EIR/EA

Figure 2
Project Location

APPENDIX B

BIOLOGICAL RESOURCES TECHNICAL APPENDIX

Appendix B: BIOLOGICAL RESOURCES

This appendix provides an evaluation of biological resources for the proposed Greenwood Lake Water Treatment Plant (WTP) project (references are within the Reference section of the Environmental Analysis). Because the proposed project pipeline segments pass through sensitive habitats potentially used by special-status species of plants and animals, implementation of the proposed project may adversely affect these habitats and species. Existing and future biological resource conditions were compiled and analyzed based on CEQA and NEPA assessment criteria. This analysis includes a review of applicable regulations, requirements, plans, and policies from the following sources:

- Federal Regulations: Endangered Species Act (FESA); Migratory Bird Treaty Act (MBTA); and Clean Water Act.
- State Regulations: California Endangered Species Act (CESA); California Native Plant Protection Act; California Fish and Game Code Section 1601; and Oak Woodlands Conservation Act.
- General Plans: El Dorado County General Plan

This Biological Resources Report provides a description of the biological resources located on or immediately adjacent to the alignment for the proposed Greenwood Lake WTP project. Biological resources were evaluated based upon site investigations and a review of pertinent regulatory, planning and scientific literature. The nature of the project need, purpose, and description were based on information provided by the GDPUD and KASL Consulting Engineers. Site investigations were conducted by qualified biologists and included reconnaissance-level surveys for special-status species; identification of principal plant and animal species; and riparian and wetland area evaluations.

LITERATURE REVIEW

Planning Partners biologists reviewed available pertinent literature, including county soil survey maps (NRCS 2006); National Wetland Inventory maps (U.S. Fish and Wildlife Service [USFWS], 1989); topographic maps (USGS, 1973); wildlife habitat maps (FRAP 2004); environmental documents prepared for other projects in the County (EDAW 2003, Savings and Greenwood 2002); as well as the WTP and pipeline segments route maps, and aerial photographs prepared for the project.

The California Natural Diversity Database (CNDDB) was queried for records of special-status species within the Greenwood, California USGS 7.5 minute quadrangle map (California

Department of Fish and Game [CDFG], 2006), in which the Greenwood Lake WTP and all of the proposed pipeline alternative alignments are located.

FIELD SURVEYS

Reconnaissance-level field surveys were conducted in the proposed WTP site and along the proposed pipeline alignments to assess the biological resources and to determine the likelihood of occurrence for special-status species or sensitive/regulated habitats in the project's area of influence. Field surveys were conducted in September 2006, December 2006 and February 2007. Wildlife and vegetation surveys were conducted concurrent with habitat mapping. Reconnaissance surveys entailed walking the proposed pipeline alignment alternatives in areas of opportunity through each habitat type and recording animals visually observed or heard calling. Animals were also identified indirectly by the presence of tracks, nests, burrows, and scat[1].

B.1 AFFECTED ENVIRONMENT

B.1.1 REGIONAL LOCATION AND SETTING.

The proposed Greenwood Lake WTP and treated water pipeline project is located in western El Dorado County (see Figures 1 and 2), within the foothills of the Sierra Nevada montane zone. The EDCGP EIR identified and described the major habitat types in the western foothills of the county, using Mayer and Laudenslayer (1988). This region is dominated by montane hardwood-conifer woodland, where dominant tree species include black oak, Douglas fir, ponderosa pine, sugar pine, incense cedar and white fir. Common shrubs in montane hardwood habitat include wood rose, snowberry, manzanita, and poison-oak. The woodland intergrades with annual grassland and mixed chaparral. Principal rivers in western El Dorado County include the Middle Fork of the American River and the South Fork of the American River.

[1] Common names are used throughout the text of this chapter for ease of use. Scientific names corresponding to the common names are found in Tables B-2 and B-3 for plants and animals, respectively.

The climate in El Dorado County area generally has warm, dry summers and mild winters. Average temperatures in the vicinity (represented by long-term records at Auburn and Placerville) range from the low 40s° F in December through February to the low 70s° F in June through September (wrcc@dri.edu). Maximum temperatures exceed 90° F occur nearly every year and minimum temperatures drop below freezing during winter months. The average annual precipitation for the vicinity (represented by long-term records at Auburn and Placerville) is approximately 36 to 38 inches (wrcc@dri.edu). In the lower foothills region surrounding the site, there is little snowfall, but at higher elevations, the amount of snowfall is fairly large. Precipitation seasonality and amount is dependent on both the regional climate and topography, with the largest amount of precipitation between November and March. Elevation in the project area ranges from 1,400 feet to 2,400 feet.

PROJECT LOCATION AND SETTING

All Segments

Soils

Soils in the project area are very rocky loam and very rocky silt loam (NRCS 2006). Neither the project area nor any of the proposed pipeline alignments are underlain by serpentine soils or gabbroic soils, which are known to support some special status plant species in the vicinity.

Vegetation Communities

The proposed Greenwood Lake WTP and pipeline segments are within a mixed montane hardwood-conifer floristic region of California. Natural vegetation in most of the project area is characterized by black oak, ponderosa pine and Jeffrey pine forest with an understory of poison oak/manzanita chaparral. The distribution of habitats in the WTP project area and along the pipeline segments were determined using land-cover data developed as part of a cooperative effort between the United States Forest Service and California Department of Forestry's Fire and Resource Assessment Program (CDF-FRAP 2002). FRAP combined habitat distribution data from numerous sources, including remotely sensed satellite imagery, into a format compatible for use within a geographic information system (GIS). These data were then used to produce a single multisource vegetation layer. Using the dominant vegetation/land-cover data, FRAP converted each data source into the California Wildlife Habitat Relationship System to create a statewide habitat layer. The resulting single GIS data layer provides the most accurate and comprehensive source of habitat information currently available for El Dorado County (FRAP 2004). Habitat types were quantified using the GIS land-cover data developed by FRAP (acreages are estimated in Table B-1). Land cover was also confirmed in field visits by qualified biologists.

Vegetation types that occur in the WTP project area and along the pipeline segments include five natural cover types, and barren and developed areas (see Table B-1). These cover types are discussed below and plant species observed in the field are compiled in Table B-2. Figure B-1 depicts is a cover-type map of the proposed WTP and pipeline segments.

Project Portion	Annual Grassland	Douglas Fir	Ponderosa Pine	Montane Hardwood Woodland	Montane Hardwood Conifer	Developed/ Ag
WTP	1.1				1.2	2.2
Segment 1	0.12	0.04				0.03
Segment 2		1.58				0.9
Segment 3a	0.01		0.07	0.21	0.06	0.3
Segment 3b	0.14		0.33	0.25	0.06	1.35
Segment 3c	0.23			0.06		0.22
Segment 4a	0.15			0.3		
Segment 4b	0.07			0.93	0.21	
Segment 5			0.30	0.43	0.91	0.05
Totals	**1.82**	**1.62**	**0.70**	**2.12**	**2.44**	**5.05**

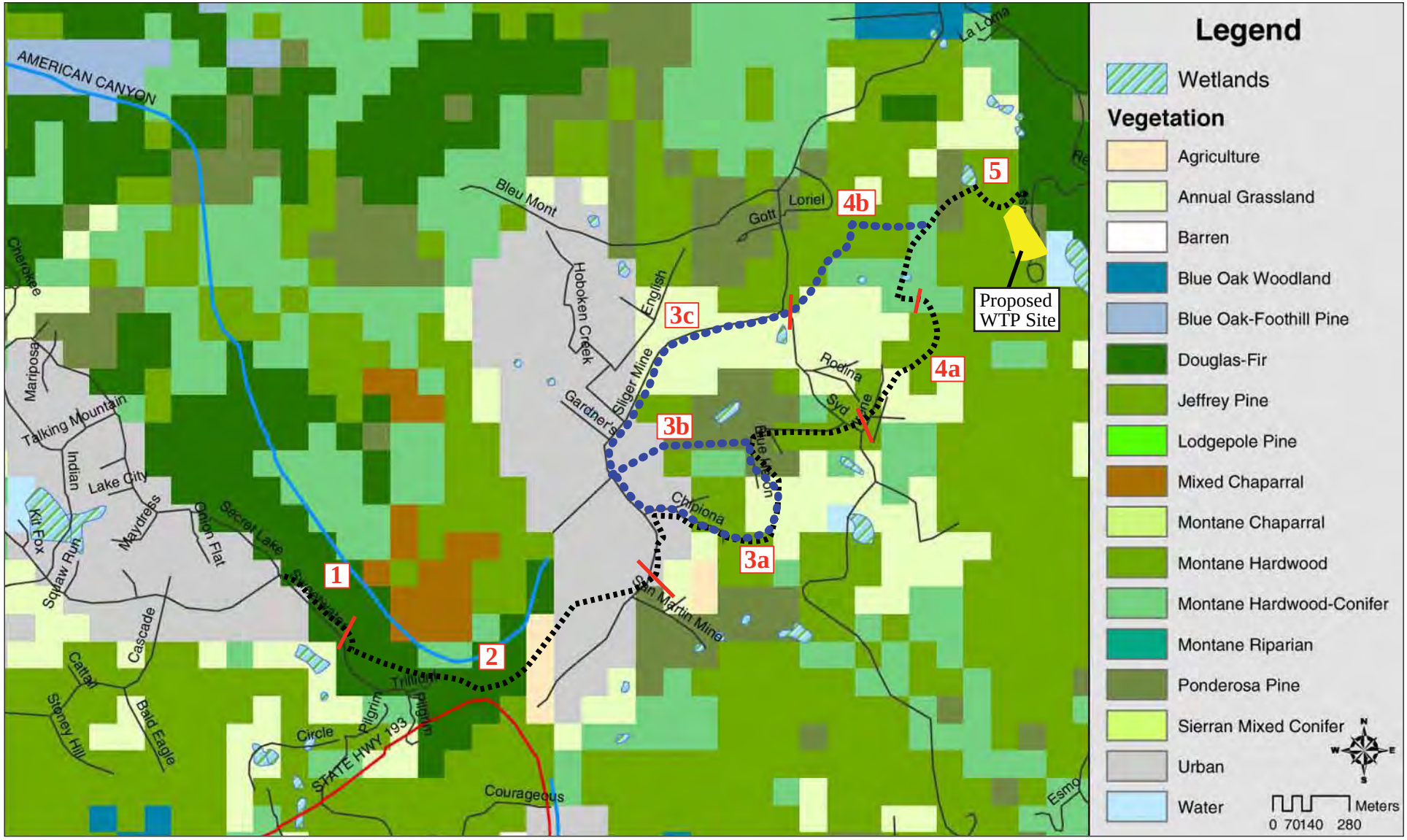
Source: Planning Partners, March 2007

Construction and installation of the treated water main connecting the new Greenwood WTP to the existing Auburn Trails system would take place under one of the following scenarios:

- Scenario 1: Segments 1, 2, 3a, 4a and 5;
- Scenario 2: Segments 1, 2, 3b, 4a, and 5; and
- Scenario 3: Segments 1, 2, 3c, 4b and 5.

The following is a summary of total vegetative cover acreages in each scenario's construction ROW:

- Scenario 1 (Segments 1, 2, 3a, 4a and 5): 0.6 acre annual grassland; 1.6 acres Douglas fir; 0.4 acre ponderosa pine, 0.6 acre montane hardwood woodland, 0.9 acre montane hardwood conifer, and 1.3 acres developed or agricultural land.;
- Scenario 2 (Segments 1, 2, 3b, 4a, and 5): 0.8 acre annual grassland; 1.6 acres Douglas fir; 0.6 acre ponderosa pine, 1.0 acre montane hardwood woodland, 0.9 acre montane hardwood conifer, and 2.3 acres developed or agricultural land.;



SOURCE: CDF FRAP 2004

Greenwood Lake WTP Environmental Assessment

Figure B-1
Land Cover

- Scenario 3 (1, 2, 3c, 4b and 5): 0.9 acre annual grassland; 1.6 acres Douglas fir; 0.3 acre ponderosa pine, 1.4 acres montane hardwood woodland, 1.1 acres montane hardwood conifer, and 1.2 acres developed or agricultural land.

All scenarios include construction of the WTP, which would have an area of effect including 0.75 acres of annual grassland, 0.11 acres of montane-hardwood conifer and 2.25 acres of developed area (existing roadways).

California Annual Grassland Series

This cover type includes non-native annual grasslands, ruderal vegetation, and other disturbed areas. The grasslands found in the proposed WTP project area and along the proposed pipeline segments are equivalent to the Non-native Grassland community described by Holland (1986), and are principally composed of non-native species of grasses and native and non-native forbs. Annual grassland is common at low elevations (i.e., below 2,500 feet elevation) in the western region of El Dorado County (EDAW 2003). This habitat comprises mostly non-native annuals, primarily of Mediterranean origin, but can also include a variety of native herbaceous species. Non-native grasslands have replaced most native perennial grasslands in El Dorado County and throughout most of California. Some of these lands were disturbed from previous uses, such as construction of Greenwood Reservoir, timber harvesting, agricultural operations and grazing. In general, species abundance, diversity, and structural heterogeneity are low in this habitat.

Herbaceous, ruderal vine and shrub species dominate some areas within the portions of the project area mapped as Annual Grassland, including much of the proposed WTP site and along the Georgetown Divide ditch. Ruderal species include Himalayan blackberry and Scotch broom.

In the WTP project area and along the proposed pipeline segments, annual grassland occurs as uninterrupted expanses, along roadways, or as openings within woodlands For Scenario 1 (Segments 1, 2, 3a, 4a and 5), annual grassland covers 0.6 acres (11.6 percent) of the construction right-of-way (ROW). For Scenario 2 (Segments 1, 2, 3b, 4a, and 5), annual grassland covers 0.8 acres (10.7 percent) of the construction right-of-way. For Scenario 3 (1, 2, 3c, 4b and 5), annual grassland covers 0.9 acres (14.4 percent) of the construction right-of-way (see Table B-1). Figure B-2 (Photograph A) is a typical view of grassland habitat along the pipeline segments.

Table B-2 Vascular Plant Species Observed Along the Proposed Project WTP Site

Common Name	Scientific Name	Habit[1]	Cover Type[2]
CUPRESSACEAE (Cypress Family)			
Incense cedar	*Caloderus decurrens*	T	MHC
PINACEAE (Pine Family)			
White fir	*Abies concolor*	T	MHC
Ponderosa pine	*Pinus ponderosa*	T	MHC, MH, PP
Jeffrey pine	*Pinus jeffereyi*	T	MHC, MH
Sugar pine	*Pinus lambertiana*	T	MHC
Foothill pine	*Pinus sabiniana*	T	MHC
Douglas fir	*Psuedotsuga menziesii*	T	MHC, DF
ANACARDIACEAE (Sumac or Cashew Family)			
Poison oak	*Toxicodendron diversilobum*	S	MHC, MH
ASTERACEAE (Sunflower Family)			
Coyote brush	*Baccharis pilularis*	S	MH
Yellow star-thistle	*Centaurea solstitialis*	H	GR
Pineapple weed	*Chamomilla suaveolens*	H	GR,
Bull thistle	*Cirsium vulgare*	H	GR
Bristly ox-tongue	*Picris echioides*	H	GR
Common ragwort	*Senecio vulgaris*	H	GR
Milk thistle	*Silybum marianum*	H	GR
Common sow thistle	*Sonchus oleraceus*	H	GR
Mules ears	*Wyethia helenoides*	H	GR, MH
BETULACEAE (Birch Family)			
White alder	*Alnus rhombifolia*	T	MH
CONVOLVULACEAE (Morning-Glory Family)			
Morning-glory	*Calystegia occidentalis*	H	GR, MH
Bindweed	*Convolvulus arvensis*	H	GR, MH
ERICACEAE (Heath Family)			
Pacific madrone	*Arbutus menziesii*	S	MH
Common manzanita	*Arctostaphylos Manzanita*	S	MH
Pinemat manzanita	*Arctostaphylos nevadensis*	S	MH
FABACEAE (Legume Family)			
Scotch broom	*Cytisus scoparius*	H	GR, MH, DV
Perennial sweet pea	*Lathyrus latifolius*	H	GR, MH
Silver lupine	*Lupinus albifrons*		GR, MH
Miniature lupine	*Lupinus bicolor*	H	GR, MH
Lupine	*Lupinus nanus*	H	GR, MH
Chick lupine	*Lupinus microcarpus*	H	GR, MH
Yellow sweet clover	*Melilotus indica*	H	GR
California bur-clover	*Medicago polymorpha*	H	GR, DV
Rose clover	*Trifolium hirtum*	H	GR, DV
Spring vetch	*Vicia sativa*	H	GR, DV
Winter vetch	*Vicia villosa*	H	GR, DV
FAGACEAE (Oak Family)			
Interior live oak	*Quercus wislizeni*	T	MH
California black oak	*Quercus kelloggii*	T	MHC, MC
Blue oak	*Quercus douglasii*	T	MH

Table B-2 Vascular Plant Species Observed Along the Proposed Project WTP Site and Pipeline Segments

Common Name	Scientific Name	Habit[1]	Cover Type[2]
GERANIACEAE (Geranium Family)			
Storksbill	*Erodium* sp.	H	GR, DV
Geranium	*Geranium sp.*	H	GR, DV
HIPPOCASTANACEAE (Buckeye Family)			
California buckeye	*Aesculus californica*	T	MH
RHAMNACEAE (Buckthorn Family)			
Hoary coffeeberry	*Rhamnus tomentella*	S	MH
ROSACEAE (Rose Family)			
Chamise	*Adenostoma fasciculatum*	S	MH
Apple	*Malus sp.*	T	MH
Toyon	*Hetermeles arbutifolia*	S	MH
Himalayan blackberry	*Rubus discolor*	V	MH
RUBIACEAE (Madder Family)			
Bedstraw	*Galium aparine*	H	GR, DV
SALICACEAE (Willow Family)			
Fremont's cottonwood	*Populus fremontii*	T	MH
Willow	*Salix* sp.	S	MH
Red willow	*Salix laevigata*	T	MH
SIMAROUBACEAE (Quassia Family)			
Tree-of-heaven	*Ailanthus altissima*	T	DV, MH
VITACEAE (Grape Family)			
California wild grape	*Vitus californica*	V	MH, DV
POACEAE (Grass Family)			
Slender wild oat	*Avena barbata*	G	GR, MH
Little quaking grass	*Briza minor*	G	GR
Ripgut grass	*Bromus diandrus*	G	GR, MH
Soft cheat	*Bromus hordeaceus*	G	GR, MH
Orchard grass	*Dactylus glomerata*	G	GR, MH
Blue wild rye	*Elymus glaucus*	G	GR, MH
Farmer's foxtail	*Hordeum murinum ssp. leporinum*	G	GR, MH
Italian ryegrass	*Lolium multiflorum*	G	GR, MH
Annual bluegrass	*Poa annua*	G	GR, MH
Medusa-head	*Taeniatherum caput-medusae*	G	GR, MH

[1]Habit:
H Herbaceous
G Grass
F Fern
S Shrub
V Vine
T Tree

[2]Cover Type:
GR Annual Grassland
DF Douglas fir forest
PP Ponderosa pine forest
MHC Montane hardwood-conifer
MH Montane hardwood (including montane riparian along ditch)
DV Developed

Source: Planning Partners, December 2006

Photograph A:
Annual grassland in clearing
in Segment 4

Photograph B:
Segment 3 in Blue Heron Way

Photograph C:
Narrow clearing along proposed alignment
for Segment 2 through
Montane Hardwood shrub layer.

SOURCE: Planning Partners, April 2007

Greenwood Lake WTP Environmental Assessment

Figure B-2
Habitat Photographs

Coniferous Forest Habitats

Coniferous forest habitats are the dominant vegetation type above 2,500 feet elevation in El Dorado County (EDAW 2003, FRAP 2004). Coniferous forest habitats cover more than half of the county.

Douglas fir is found primarily at middle and higher elevations (2,400 to 6,000 feet) where it frequently replaces ponderosa pine on north-facing slopes. Plant diversity and density in the shrub and herbaceous understory of Douglas fir forest vary considerably depending upon topographic and environmental factors such as elevation, aspect, and age of the stand. In the Greenwood Lake WTP project area and along the proposed pipeline alignments, Douglas fir forest covers approximately 1.6 acre in each of the three construction scenarios (30 percent of the total construction ROW for Scenario 1 (Segments 1, 2, 3a, 4a, 5), 22.5 percent in Scenario 2 (Segments 1, 2, 3b, 4a, 5), and 25.3 percent in Scenario 3 (Segments 1, 2, 3c, 4b, 5). (See Table B-1.)

Ponderosa pine usually occurs at elevations between 2,400 and 7,000 feet elevation. This habitat ranges in composition from open to dense forest, and may exist in pure stands or be associated with other species such as white fir, Douglas-fir, or sugar pine. Ponderosa pine forest covers approximately 0.4 acre (6.9 percent) of the construction right-of-way ROW in Scenario 1 (Segments 1, 2, 3a, 4a, 5), 0.6 acre (8.8 percent) in Scenario 2 (Segments 1, 2, 3b, 4a, 5), and 0.3 acre (4.7 percent) in Scenario 3 (Segments 1, 2, 3c, 4b, 5). (See Table B-1.)

Woodland Habitats

Woodland habitats are located primarily at middle and lower elevations in the western half of El Dorado County (approximately 500 – 4,000 feet).

Montane hardwood-conifer includes vegetation associated with both coniferous and hardwood habitats and is a transitional habitat between the montane hardwood, mixed chaparral, and woodlands of low elevations and the coniferous forests of high elevations. Species composition is generally defined as including a minimum of one-third coniferous trees and one-third broad-leaved trees. Typically, conifers dominate the upper canopy, ranging up to 200 feet in height, and broad-leaved trees form a sub-canopy at 30–100 feet elevation. Common tree species associated within this habitat type include black oak, ponderosa pine, Douglas-fir, white fir, and incense cedar. In the northern Sierra Nevada, montane hardwood-conifer is found between 1,000 and 4,000 feet elevation. Montane hardwood-conifer woodland covers 0.9 acre (16.9 percent) of the construction right ROW for Scenario 1 (Segments 1, 2, 3a, 4a, 5), 0.9 acre (12.6 percent) for

Scenario 2 (Segments 1, 2, 3b, 4a, 5), and 1.1 acre (17.5 percent) of Scenario 3 (Segments 1, 2, 3c, 4b, 5). (See Table B-1.)

Montane hardwood woodland usually occurs at lower elevations than montane hardwood-conifer and is often associated with major river canyons, such as the American River Canyon. Montane hardwood is composed of a mixture of trees that occur on rocky, poorly developed and well drained soils. Community structure ranges from dense to open tree cover with a poorly developed shrub understory. At low elevations, common species include canyon live oak, foothill pine, madrone, and California bay. Black oak and Douglas-fir may occur at higher elevations. Common shrubs in montane hardwood habitat include wood rose, snowberry, manzanita, and poison-oak. Montane hardwood woodland covers 0.6 acre (11.9 percent) of the construction right ROW for Scenario 1 (Segments 1, 2, 3a, 4a, 5), 1.0 acre (13.6 percent) for Scenario 2 (Segments 1, 2, 3b, 4a, 5), and 1.4 acre (21.3 percent) of Scenario 3 (Segments 1, 2, 3c, 4b, 5). (See Table B-1.)

Montane riparian habitat is present along the Georgetown Divide Ditch, within Montane Hardwood woodland. This habitat type is not mapped separately in Figure B-1, but it is a significant habitat type that provides forage and nesting habitat for a variety of riparian associated plant and wildlife species.

Other Habitats

Developed land calculated using FRAP data includes portions of the pipeline segments which are located in or near existing roads, ranches and residences. The soil in these habitats has been modified or paved; air temperature is increased as heat absorbing materials (asphalt, concrete, etc.) are introduced; shading is lost as the native tree canopy is removed; water quality and availability are diminished as impervious surfaces increase and urban pollutants accumulate; and, air quality diminishes as emissions from automobiles, homes, and commercial entities increase (EDAW 2003). Habitat components, such as roosting and nesting sites, escape cover, migration and/or travel corridors, and foraging habitat are lost or altered as a result of these processes. Consequently, the changes to the abiotic and biotic environments result in very low species populations and diversity. These areas favor inhabitation of species that tolerate human presence, and are able to exploit human food resources, and use buildings or other human structure for cover and nesting. Developed land and agricultural land covers 1.3 acre (22.9 percent) of the construction right ROW for Scenario 1 (Segments 1, 2, 3a, 4a, 5), 2.3 ac (31.4 percent) for Scenario 2 (Segments 1, 2, 3b, 4a, 5), and 1.2 ac (17.6 percent) of Scenario 3 (Segments 1, 2, 3c, 4b, 5). (See Table B-1.)

Wildlife

The combination of wooded habitat (conifer forest, hardwood woodland, grasslands) with aquatic habitats (Georgetown Divide Ditch and Greenwood Lake Reservoir) provide essential elements for a wide array of wildlife species, including forage, roost, cover, and migratory/travel corridors. Water, a critical resource for wildlife species, is available in a year-round supply in the ditch. Wildlife observed at the project site represented characteristic species of the region. A discussion of the wildlife value of the cover types on the project area is provided below, and wildlife species that occur in the project area are compiled in Table B-3.

Ponderosa Pine and Douglas Fir forest

Coniferous forest and other high-elevation habitats provide important habitat for many wildlife species, both resident and migratory. Common resident birds found at higher elevations in the county include Clark's nutcracker, mountain chickadee, red-breasted nuthatch, and Williamson's sapsucker. Common migratory birds found in coniferous forest habitats at high elevations include white-crowned sparrow, Hammond's flycatcher, and Lincoln's sparrow. Mammals in the upper montane and subalpine regions include golden-mantled ground squirrel, Belding's ground squirrel, alpine chipmunk, and yellow-bellied marmot.

Montane Hardwood-Conifer and Montane Hardwood

Wildlife diversity is generally high in the lower montane coniferous forest types. Amphibians and reptiles found in lower montane forest and woodlands include Pacific treefrog and rubber boa. Common resident birds in these forests include Stellar's jay and hairy woodpecker. Migratory species that use these forests for breeding during summer months include western tanager, and black-headed grosbeak. Common mammals in lower montane coniferous forests include mule deer and Douglas' squirrel.

Oak and other hardwood habitats at mid-elevations are important for a large percentage of the wildlife species found in El Dorado County (EDAW 2003). Within El Dorado County, much of the influence of urban development is in the oak woodland habitats. The most adverse effect to this habitat as a result of development is a disruption of the contiguity of wildlands, isolating patches of functional habitat from larger patches of contiguous natural vegetation (Saving and Greenwood 2002). Reptiles and amphibians found in oak woodlands include California slender salamander, western fence lizard, and California kingsnake. Common birds in oak woodland include acorn woodpecker, western scrub-jay, and oak titmouse. Mammals that characterize oak woodland habitat include mule deer, western gray squirrel, gray fox and bobcat.

Annual Grassland

Because of the low-growth habit of most plant species in this cover type, it typically provides forage and cover for small mammals, such as meadow voles, deer mice, ground squirrels, and pocket gophers. These species, in turn, provide the prey base that attracts predators such as red-tailed hawk, American kestrel, gopher snake, western rattlesnake, and coyote. Little nest cover is provided; however, taller species of plants provide perch sites for birds. Typical bird species associated with annual grasslands include western meadowlark, Brewer's blackbird, yellow-billed magpie, mourning dove, savannah sparrow, and western kingbird. Other animals common to this habitat include western fence lizard, alligator lizard, house finch, sparrows, wintering raptors, and striped skunk.

Developed Lands

Within rural residential areas and along roadways, habitat components such as roosting and nesting sites, escape cover, migration and/or travel corridors, and foraging habitat are lost or altered as a result of land use conversions. Consequently, the changes to the abiotic and biotic environments result in very low species populations and diversity. Typical species found in developed areas include American kestrel, mourning dove, western scrub-jay, northern mockingbird, American robin, Brewer’s blackbird, house finch, deer mouse, California ground squirrel, western gray squirrel, striped skunk, and Virginia opossum. Dominant introduced and pest species in the developed landscape include rock pigeon, European starling, house sparrow, Norway rat, and house mouse.

Common Name	Scientific Name
Amphibians	
Bullfrog	*Rana catesbeiana*
Reptiles	
IGUANIDAE (Iguanids)	
Western fence lizard	*Sceloporus occidentalis*
SCINCIDAE (Skinks)	
Western skink	*Eumeces skiltonianus*
TEIIDAE (Whiptails and Relatives)	
Western whiptail	*Cnemidophorus tigris*
COLUBRIDAE (Colubrids)	
Ringneck snake	*Diadophis punctatus*
Sharp-tailed snake	*Contia tenuis*
Racer	*Coluber constrictor*
Coachwhip	*Masticophis flagellum*

Table B-3 Wildlife Species Observed or Expected to Occur in the Project Area	
Common Name	**Scientific Name**
California whipsnake	*Masticophis lateralis*
Gopher snake	*Pituophis melanoleucus*
Common kingsnake	*Lampropeltis getulus*
Common garter snake	*Thamnophis sirtalis*
Western terrestrial garter snake	*Thamnophis elegans*
Western aquatic garter snake	*Thamnophis atratus*
Night snake	*Hypsiglena torquata*
VIPERIDAE (Vipers)	
Western rattlesnake	*Crotalus viridis*
Birds	
ARDEIDAE (Herons and Bitterns)	
Green heron	
Black-crowned night-heron	*Nycticorax nycticorax*
CATHARTIDAE (American Vultures)	
Turkey vulture*	*Cathartes aura*
ACCIPITRIDAE (Hawks and Harriers)	
White-tailed kite	*Elanus leucurus*
Cooper's hawk	*Accipiter cooperii*
Red-shouldered hawk	*Buteo lineatus*
Red-tailed hawk	*Buteo jamaicensis*
Ferruginous hawk	*Buteo regalis*
Golden eagle	*Aquila chrysaetos*
FALCONIDAE (Falcons and Caracaras)	
American kestrel	*Falco sparverius*
PHASIANIDAE (Pheasants and Relatives)	
Wild turkey*	*Meleagris gallopavo*
ODONTOPHORIDAE (Quails)	
California quail*	*Cillipepla california*
RALLIDAE (Rails, Gallinules, and Coots)	
American coot	*Fulica Americana*
CHARADRIIDAE (Plovers and Relatives)	
Killdeer	*Charadrius vociferus*
COLUMBIDAE (Pigeons and Doves)	
Rock pigeon	*Columba livia*
Band-tailed pigeon	*Columba fasciata*
Mourning dove	*Zenaida macroura*
CUCULIDAE (Typical Cuckoos)	
Greater roadrunner	*Geococcyx californianus*
TYTONIDAE (Barn Owls)	
Barn owl	*Tyto alba*
STRIGIDAE (Typical Owls)	
Western screech-owl	*Otus kennicottii*
Great horned owl	*Bubo virginianus*

Table B-3 Wildlife Species Observed or Expected to Occur in the Project Area	
Common Name	**Scientific Name**
Northern pygmy-owl	*Glaucidium gnoma*
ALCEDINIDAE (Kingfishers)	
Belted kingfisher	*Ceryle alcyon*
PICIDAE (Woodpeckers and Relatives)	
Acorn woodpecker*	*Melanerpes formicivorous*
Red-breasted sapsucker	*Sphyrapicus rubber*
Nuttall's woodpecker	*Picoides nuttallii*
Downy woodpecker	*Picoides pubescens*
Northern flicker*	*Colaptes auratus*
TYRANNIDAE (Tyrant Flycatchers)	
Black phoebe	*Sayornis nigricans*
Say's phoebe	*Sayornis saya*
Ash-throated flycatcher	*Myiarchus cinerascens*
Western kingbird	*Tyrannus verticalis*
HIRUNDINIDAE (Swallows)	
Tree swallow	*Tachycineta bicolor*
Violet-green swallow*	*Tachycineta thalassina*
Northern rough-winged swallow*	*Stelgidopteryx serripennis*
Cliff swallow	*Hirundo pyrrhonota*
Barn swallow	*Hirundo rustica*
CORVIDAE (Jays, Magpies, and Crows)	
Steller's jay	*Cyanocitta stelleri*
California scrub-jay*	*Aphelocoma californica*
Yellow-billed magpie*	*Pica nuttalli*
American crow	*Corvus brachyrhynchos*
Common raven	*Corvus corax*
PARIDAE (Titmice)	
Oak titmouse	*Baeolophus inornatus*
AEGITHALIDAE (Bushtit)	
Bushtit*	*Psaltriparus minimus*
SITTIDAE (Nuthatches)	
White-breasted nuthatch*	*Sitta carolinensis*
TROGLODYTIDAE (Wrens)	
Bewick's wren	*Thryomanes bewickii*
House wren	*Troglodytes aedon*
TIMALIIDAE (Babblers)	
Wrentit	*Chamaea fasciata*
MIMIDAE (Mockingbirds and Thrashers)	
Northern mockingbird	*Mimus polyglottos*
California thrasher	*Toxostoma redivivum*
LANIIDAE (Shrikes)	
Loggerhead shrike*	*Lanius ludovicianus*
PTILOGONATIDAE (Silky Flycatchers)	
Phainopepla	*Phainopepla nitens*

Table B-3 Wildlife Species Observed or Expected to Occur in the Project Area	
Common Name	**Scientific Name**
STURNIDAE (Starlings)	
European starling*	*Sturnus vulgaris*
VIREONIDAE (Typical Vieros)	
Hutton's vireo	*Vireo huttoni*
PARULIDAE (Warblers)	
Orange-crowned warbler	*Vermivora celata*
Yellow-rumped warbler	*Dendroica coronata*
Black-throated gray warbler	*Dendroica nigrescens*
Yellow warbler	*Dendroica petechia*
Yellow-breasted chat	*Icteria virens*
EMBERIZIDAE (Wood Warblers, Sparrows, Blackbirds, and Relatives)	
Spotted towhee	*Pipilo maculatus*
California towhee	*Pipilo crissalis*
Rufous-crowned sparrow	*Aimophila ruficeps*
Lark sparrow	*Chondestes grammacus*
Song sparrow	*Melospiza melodia*
Lincoln's sparrow	*Melospiza lincolnii*
Golden-crowned sparrow	*Zonotrichia atricapilla*
White-crowned sparrow	*Zontotrichia leucophrys*
Dark-eyed junco	*Junco hyemalis*
ICTERIDAE (Icterids)	
Red-winged blackbird	*Agelaius phoeniceus*
Western meadowlark	*Sturnella neglecta*
Brewer's blackbird	*Euphagus cyanocephalus*
Brown-headed cowbird	*Molothrus ater*
Bullock's oriole	*Icterus bullockii*
FRINGILLIDAE (Finches)	
House finch	*Carpodacus mexicanus*
Lesser goldfinch	*Carduelis psaltria*
American goldfinch	*Carduelis tristis*
PASSERIDAE (Weaver Finches)	
House sparrow	*Passer domesticus*
Mammals	
DIDELPHIDAE (Opossums)	
Virginia opossum	*Didelphis virginiana*
SORCIDAE (Shrews)	
Ornate shrew	*Sorex ornatus*
TALPIDAE (Moles)	
Broad-footed mole	*Scapanus latimanus*
VESPERTILIONIDAE (Vespertilionid Bats)	
Yuma myotis bat	*Myotis yumanensis*
California myotis	*Myotis californicus*
Small-footed myotis	*Myotis ciliolabrum*
Western pipistrelle	*Pipistrellus hesperus*

Table B-3	Wildlife Species Observed or Expected to Occur in the Project Area

Common Name	Scientific Name
Big brown bat	*Eptesicus fuscus*
Red bat	*Lasiurus borealis*
Hoary bat	*Lasiurus cinereus*
Pacific western big-eared bat	*Corynorhinus t. townsendii*
Pallid bat	*Antrozous pallidus*
Brazilian free-tailed bat	*Tadarida brasiliensis*
LEPORIDAE (Rabbits and Hares)	
Brush rabbit	*Sylvilagus bachmani*
Desert cottontail	*Sylvilagus audubonii*
Black-tailed hare	*Lepus californicus*
SCIURIDAE (Chipmunks, Squirrels, and Marmots)	
California ground squirrel	*Spermophilus beecheyi*
Western gray squirrel	*Sciurus griseus*
GEOMYIDAE (Pocket Gophers)	
Botta's pocket gopher	*Thomomys bottae*
HETEROMYIDAE (Pocket Mice and Kangaroo Rats)	
California pocket mouse	*Perognathus californicus*
CRICETIDAE (Deer Mice, Voles, and Relatives)	
Western harvest mouse	*Reithrodontomys megalotis*
Deer mouse	*Peromyscus maniculatus*
Brush mouse	*Peromyscus boylii*
Pinyon mouse	*Peromyscus truei*
Dusky-footed woodrat	*Neotoma fuscipes*
California vole	*Microtus californicus*
MURIDAE (Old World Rats and Mice)	
Norway rat	*Rattus norvegicus*
House mouse	*Mus musculus*
ERETHIZONTIDAE (New World Porcupines)	
Porcupine	*Erethizon dorsatum*
CANIDAE (Foxes, Wolves, and Relatives)	
Coyote*	*Canis latrans*
Gray fox	*Urocyon cinereoargenteus*
PROCYONIDAE (Raccoons and Relatives)	
Ringtail	*Bassariscus astutus*
Raccoon*	*Procyon lotor*
MUSTELIDAE (Weasels, Badgers, and Relatives)	
Long-tailed weasel	*Mustela frenata*
Mink	*Mustela vison*
American badger	*Taxidea taxus*
Western spotted skunk	*Spilogale gracilis*
Striped skunk	*Mephitis mephitis*
FELIDAE (Cats)	
Mountain lion	*Felis concolor*
Bobcat	*Lynx rufus*

Table B-3 Wildlife Species Observed or Expected to Occur in the Project Area	
Common Name	**Scientific Name**
SUIDAE (Pigs)	
Wild pig	*Sus scrofa*
CERVIDAE (Deer, Elk, and Relatives)	
Black-tailed deer*	*Odocoileus hemionus*

*Species or sign observed during field surveys

Source: Planning Partners, September 2006

SPECIAL-STATUS SPECIES

Special-status wildlife and plant species potentially occurring along the pipeline segments were identified through a query of the CNDDB, and a review of pertinent literature (See Section B.1 above). Special-status species are plants and animals that are legally protected under state and federal endangered species acts or other regulations, and species that are considered sufficiently rare by the scientific community to qualify for such listing.

Special-status plants and animals fall into the following categories:

- species listed or proposed for listing as threatened or endangered under the federal ESA (50 CFR 17.12 [listed plants], 50 CFR 17.11 [listed animals];
- species listed or proposed for listing by the State of California as threatened or endangered under the California ESA (14 CCR 670.5);
- species that meet the definitions of “rare” or “endangered” under the California Environmental Quality Act (CEQA) (State CEQA Guidelines, Section 15380);
- plants listed as rare under the California Native Plant Protection Act (California Fish and Game Code, Section 1900 et seq.);
- plants considered by the California Native Plant Society (CNPS) to be “rare, threatened, or endangered in California”;
- plants listed by CNPS as plants about which more information is needed to determine their status and plants of limited distribution;
- animal species of special concern to the California Department of Fish and Game; and
- animals fully protected in California

Special-status plants and animal species that could occur in the project area are listed in Table B-4. Species are included in the table if they were known to occur in the County and if they have known California Natural Diversity Data Base occurrences (California Natural Diversity Data Base 2007) in the project area. Many of the plant species in the table occur on gabbro/serpentine substrate. This substrate was not found in the project area. No special-status plant species were found on the project site. Species with a potential to be affected by the project are discussed after the table.

Common Name Scientific Name	Status[1]	Habitat and Range	Potential to be adversely affected by the project
Plants			
Nissenan manzanita *Arctostaphylos myrtifoli*	1B.2	Closed cone coniferous forest. Metamorphic rocks in chaparral. Blooms Feb-March.	Very low. Appropriate habitat not available within project area. Not detected during surveys.
Brandegee's clarkia *Clarkia biloba ssp. Brandegee*	1B.2	Chaparral, cismontane woodlands, often in roadcuts. Blooms May-June.	Moderate. Suitable habitat available within project area. Not detected during surveys.
Parry's horkelia *Horkelia parryi*	1B.2	Chaparral, cismontane woodland openings especially in Ione formation. Blooms April-June.	None. Appropriate soils not available in project area. Not detected during surveys.
Layne's ragwort *Packera laynae*	FT, R	Ultramafic soil, chaparral, cismontane woodland. Blooms Apr-July.	Very Low. Appropriate soils not available in project area. Not detected during surveys.
Amphibians			
Foothill yellow-legged frog *Rana boylii*	CSC	Shallow streams with quiet pools, partly shaded, riffles with cobble size or larger rocky substrate	Low. Appropriate habitat not located during surveys, but may exist adjacent to Segments 2 and 5.
Reptiles			
Northwestern pond turtle *Emys (=Clemmys) m. marmorata*	CSC	Ponds, wetlands, and irrigation ditches	Moderate. Habitat available adjacent to Segments 2 and 5 and around Greenwood Lake.
California horned lizard *Phrynosoma coronatum frontale*	CSC	Open areas in woodland and chaparral with sandy soils	Very Low. Preferred habitat is not available within project vicinity. Project activity is unlikely to adversely affect species habitat.
Birds			
Cooper's hawk *Accipiter cooperii*	CSC	Nests in tall trees, especially pines. forages in open woodlands	Moderate. Suitable nesting habitat available within forested portions of pipeline alignments.
Vaux's swift *Chaetura vauxi*	CSC	Riparian woodlands. Nests rarely in mid-elevation forests of the Sierra Nevada in redwood, Douglas fir, and occasionally other coniferous forest.	Moderate. Suitable nesting habitat available within forested portions of pipeline alignments.

Table B-4 Special Status Species Potentially Occurring In Project Area			
Common Name **Scientific Name**	**Status[1]**	**Habitat and Range**	**Potential to be adversely affected by the project**
Loggerhead shrike *Lanius ludovicianus*	CSC	Prefers open habitats with scattered shrubs, trees, posts, fences, utility lines or other perches.	Moderate. Suitable nesting habitat in project vicinity will be affected.
Mammals			
Silver-haired bat *Lasionycteris noctivagans*	CSC	Forests, woodlands, and shrublands	Moderate. Tree roosting bat species may be adversely affected by vegetation removal.
[1]Protected Status Codes: FT Federally listed as Threatened R Plants that are designated as rare in California. CT California listed as Threatened CSC California Species of Special Concern FP Fully protected by California		CNPS Codes: Plants rare, threatened or endangered in CA List 1B.2 20-80% occurrences in California threatened	

Source: Planning Partners, April 2007

The following plant species: **Nissenan manzanita** (*Arctostaphylos myrtifoli*); **Parry's horkelia** (*Horkelia parryi*); and **Layne's ragwort** (*Packera laynae*) are rare plant species (1B.2) in California that are not expected to be adversely affected by the project. They were not detected during surveys conducted in the 2006 season. Additionally, specific soil or habitat types that support these species were not detected, and therefore the rare plant species listed above are not expected to occur within or adjacent to the project area.

Brandegee's clarkia (*Clarkia biloba ssp. Brandege*) Rare Plant, 1B.2

Brandegee's clarkia is a dicot in the family Onagraceae with lavender flowers. The species is a summer blooming annual herb that is native to California. It is included by the California Native Plant Society on list 1B.2 (rare, threatened, or endangered in CA and elsewhere) [CNPS 2003]. It has been recorded in El Dorado County on dry sites in the foothills below 500 meters (1,500 feet) elevation.

Foothill Yellow-legged Frog (*Rana boylii*) CSC

The foothill yellow-legged frog (FYLF) is a considered a sensitive species for some federal agencies, including the U. S. Forest Service and the Bureau of Land Management, and is a California Species of Special Concern. The FYLF is an inhabitant of streams and rivers in a variety of habitats including foothill woodland, chaparral, and forest within the Coast, Cascade, and Sierra Nevada ranges. The species ranges from sea level to 6,000 feet msl. The frog is generally found within a few feet of stream banks where it can bask on warm rocks, but escape quickly into the stream for protection. When frightened, it dives to the stream bottom and hides

amid rocks, vegetation, and silt. They are active year round in warm climates, but become inactive or hibernate in colder climates.

Adult FYLF prey on both aquatic and terrestrial invertebrates, with adult insects and snails among preferred prey. Tadpoles graze on algae and diatoms along rocky stream bottoms. Principal predators of adult yellow-legged frogs include garter snakes, while fish readily feed on egg masses. No FYLF or suitable habitat for this species were observed during field surveys in the Greenwood Lake WTP project area or proposed pipeline segments.

Northwestern Pond Turtle (*Clemmys marmorata marmorata*) CSC

The northwestern pond turtle (NWPT) is considered a sensitive species by the US Forest Service and is a California Species of Special Concern that occurs primarily in foothills west of the Cascade-Sierra crest throughout California. The northwestern subspecies ranges north of the San Francisco Bay area and intergrades with the southwestern pond turtle in the southern portion of the Central Valley. NWPT is an aquatic turtle inhabiting streams, marshes, ponds, and irrigation ditches within woodland, grassland, and open forest communities, but require upland sites for nesting and over-wintering. The species inhabits stream as well as pond habitats. Stream habitat must contain large, deep pool areas (six feet) with moderate-to-good plant and debris cover, and rock and cobble substrates for escape retreats. Preferred depth in pond habitat is between three and five feet with mud substrate. Dense inshore vegetation is especially critical for hatchlings where they spend their first few years of life. Turtles from riverine systems overwinter in upland areas, while pond dwellers may remain as permanent residents with only nesting forays performed annually by gravid females. Northwestern pond turtle may have suitable habitat in and around Greenwood Lake.

California horned lizard (*Phrynosoma coronatum frontale*) CSC

The California horned lizard has a spotty distribution from Lake Shasta southward along the edges of the Sacramento Valley into much of the South Coast Ranges, San Joaquin Valley, and Sierra Nevada foothills. The California horned lizard occurs in several habitat types, including areas with an exposed, gravelly-sandy substrate containing scattered shrubs, floodplains and dry lake beds, clearings in riparian woodlands, dry uniform chamise chaparral to annual grassland with scattered perennial seepweed or salt brush. Most soils in the project area are very rocky silt loam (USGS 2006) and therefore the project area is unlikely to provide suitable habitat for the California horned lizard.

Cooper's hawk (*Accipiter cooperii*) CSC

Cooper's hawk is an uncommon, medium-sized accipiter that is a year-long California resident. Cooper's hawk prefers patchy deciduous and mixed forest, and nests in tall trees, especially pines. This hawk preys primarily on small birds and mammals, including starlings, blackbirds, sparrows, finches, chipmunks and squirrels. Cooper's hawks begin breeding as early as March. Most individuals do not breed until they are at least two years old. Cooper's hawks are monogamous and pairs build nests made of sticks and twigs lined with bark, conifer needles and down. Hatchling Cooper's hawks will fledge as early as June and as late as August. Habitat destruction, mainly in lowland riparian areas, has lead to the decline of this species in California since the 1940s (CDFG 2001). Suitable nesting trees and forage are available for Cooper's hawk in much of the project area.

Vaux's swift (*Chaetura vauxi*) CSC

Vaux's swift is a small swift with a gray-brown body that is a summer resident in northern California (Zeiner, et al 1990). The preferred habitat of the Vaux's swift is old growth redwood and Douglas-fir forests. Vaux's swift typically builds its nest on the vertical inner wall of a large (>20 inches dbh), hollow tree or snag, especially tall stubs charred by fire or "topped" trees with hollow trunks. Vaux's swift breeds from early May to mid-August. This bird forages over most terrains and habitats, but shows a preference for foraging over rivers and lakes and shows the highest abundance in a continuous mesic shrub association (Zeiner et al, 1990). Nesting and foraging habitat for Vaux's swift occurs throughout the project vicinity in forested areas.

Loggerhead shrike (*Lanius ludovicianus*)

The loggerhead shrike is a year long resident throughout the foothills and lowlands of California (Zeiner et al. 1990). The loggerhead shrike is known to forage over open ground within areas of short vegetation such as pastures with fence rows, old orchards, mowed roadsides, cemeteries, golf courses, riparian areas, open woodland, agricultural fields, desert washes, desert scrub, grassland, broken chaparral and beach with scattered shrubs (Unitt 1984; Yosef 1996). Individuals like to perch on posts, utility lines and often use the edges of denser habitats (Zeiner, et al. 1990). The highest density of loggerhead shrikes occurs in open-canopied valley foothill hardwood, valley foothill hardwood-conifer, valley foothill riparian, pinyon-juniper, juniper, desert riparian, and Joshua tree habitats; it occurs only rarely in heavily urbanized areas, but is often found in open cropland (Zeiner et al. 1990). Nesting occurs in branches up to fifteen feet (4.5 m) above the ground, frequently in a shrub with thorns or with tangled branching habits (Zeiner et al. 1990). Nesting and foraging habitat for loggerhead shrike occurs throughout the project vicinity.

Silver-haired bat (*Lasionycteris noctivagans*) CSC

Silver-haired bats are among the most common bats in forested areas of America, and are most closely associated with coniferous or mixed coniferous and deciduous forest types, especially in areas of old growth (BCI 2006). They form maternity colonies almost exclusively in tree cavities or small hollows. Unlike many bat species, silver-haired bats also appear to hibernate mainly in forested areas, though they may be making long migrations from their summer forest to a winter forest site. Typical hibernation roosts for this species include small tree hollows, beneath exfoliating bark, in wood piles, and in cliff faces. Occasionally silver-haired bats will hibernate in cave entrances, especially in northern regions of their range. Like big brown bats, the silver-haired bats have been documented to feed on many insects perceived as pest species to humans and/or agriculture and forestry.

Even though they are highly dependent upon old growth forest areas for roosts, silver-haired bats feed predominantly in disturbed areas, sometimes at tree-top level, but often in small clearings and along roadways or water courses. Silver-haired bats feed primarily on small, soft-bodied insects. Silver-haired bats have been known to take flies, midges, leafhoppers, moths, mosquitoes, beetles, crane flies, lacewings, caddisflies, ants, crickets, and occasional spiders. Because silver-haired bats are dependent upon roosts in old growth areas, managing forests for diverse age structure and maintaining forested corridors are important to these bats (BCI 2006). Suitable habitat for silver haired bats is available in the project area.

SENSITIVE AND REGULATED HABITATS

Waters and Wetlands

The WTP project area and the proposed pipeline alignments were examined for evidence of regulated habitats such as waters and wetlands under the regulatory authority of the U.S. Army Corps of Engineers (Corps) under Section 404 of the Clean Water Act, and under the regulatory authority of CDFG pursuant to Section 1600 of the California Fish and Game Code. Although there are small areas where the soil is saturated due to leaking pipes or leaks from the Georgetown Divide Ditch, none of these areas support hydrophytic vegetation. The wet areas are not under Corps jurisdiction. The Georgetown Divide Ditch itself is not a natural watercourse and therefore not under CDFG jurisdiction.

Watersheds

The project area lies along the topographic divide between the Middle Fork American River and the South Fork American River. The western portions of the project (Segments 1, 2, 3, and 4) drain to the north and northwest, down American Canyon and eventually to the Middle Fork

American River. Conversely, Segment 5 and the Greenwood Lake WTP site drain to the south and southwest, into Greenwood Creek and eventually to the South Fork American River. While both the South and Middle Fork American rivers have high elevation headwaters along the Sierra Nevada crest and are dominated by snow-melt runoff, the local watersheds in the project area have maximum headwater elevations less than 3,000 feet Therefore, channels in the local watersheds and project vicinity have rainfall-dominated runoff and streamflow patterns. Like many streams in the foothills, these 'intermittent' streams typically flow only during the wet season, but may range from having year-round flow in wet years, to little or no flow in dry years.

Segment 1

Segment 1 is 800 feet along a gently sloped (~1%) private paved roadway (Sweetwater Trail) near the crest of a ridge that drains directly down a steep slope to American Canyon, a perennial stream. Runoff generally flows in natural swales and roadside ditches. Runoff patterns have been modified by historic ditches across slopes, and earthwork from residential development and roadways. No formal stormwater drainage facilities are located along the paved roadway.

Segment 2

Segment 2 is ~1,300 feet along undeveloped lands, sections of unpaved private road, and a former (abandoned) public roadway parallel to the north side of SR 193 and ~3,000 feet along the existing Kaiser Siphon pipeline. The pipeline would cross steep slopes near the crest of a ridge that drains directly down slope to American Canyon, a perennial stream. The pipeline alignment is oriented to have slopes around 10 percent, although portions of the hillslopes it crosses are even steeper. Runoff generally flows in natural swales and along private roadways, in ditches. No formal stormwater drainage facilities are located within Segment 2.

Segment 3

Segment 3 is along the ridge southeast of American Canyon, which is an intermittent stream in this reach. Natural runoff patterns have been modified by a several public and private roadways, agricultural practices, and residential land use activities over several decades. There are three alignment options under consideration, all within the same local watershed.

Segment 3a is about 4,800 feet long and follows Sliger Mine Road, a moderately sloping (~6.5%) paved public road with roadside ditches for about 750 feet, runs along Chipiona Way, a steep unpaved private road and a steep abandoned private road section (Cunningham parcel), and along other steep (~14.8%) unpaved private roads. The unpaved sections of this segment have steep erodible surface soils that appear vulnerable to rilling and gullying.

Segment 3b is about 4,900 feet long and follows about 1,600 feet of a gently sloping (~1%) portion of Sliger Mine Road, a paved public road with roadside ditches, and traverses a cross-country section of steep slopes (over 20%), and runs along steep unpaved private roads.

Segment 3c is about 4,900 feet long, primarily (~90%) in Sliger Mine Road, a paved public road with roadside ditches and Syd Road, an unpaved private road.

Segment 4

Segment 4 is along the ridge southeast of American Canyon, which is an intermittent stream in this reach. Natural runoff patterns have been modified by a several public and private roadways, agricultural practices, and residential land use activities over several decades. There are two alignment options under consideration, all within the same local watershed.

Segment 4a follows about 1,970 feet of Irene Lane, an unpaved private roadway at a moderate slope (~7.5%).

Segment 4b follows about 400 feet of Syd Road, an unpaved private road and then traverses ~1,900 feet of steep slopes cross-country.

Segment 5

Segment 5 is on the southwest-facing slopes that drain to intermittent headwater streams of Greenwood Creek, which flows along Coloma Canyon and the to the southwest, joining the South Fork American River about 4 miles downstream of Coloma. Runoff from the small ridge top area of the local watershed flows into the Georgetown Divide Ditch, but most locally generated runoff flows in natural swales downslope and along private unpaved roads and trails eventually contributing to Greenwood Creek. Segment 5 about 2,800 feet long over moderate to steeply sloping ground parallel to the existing ditch between Irene Lane and the proposed Greenwood Lake WTP.

WTP Site

The Greenwood Lake WTP site is within the watershed of an unnamed intermittent tributary to Greenwood Creek, which flows to the South Fork American River. Natural swales drain directly downslope, although a minor area of the ridge top flows into Greenwood Lake and/or the Georgetown Divide Ditch. Existing runoff patterns are controlled by the natural topography and minor modifications from the historic ditch and reservoir construction, as well as subsequent public and private road construction.

Movement Corridors and Habitat Linkages

Wildlife movement corridors are generally defined as connections between habitat patches, that allow for physical and genetic exchange between otherwise isolated animal populations. Migration corridors may be local, such as those between foraging and nesting or denning areas, or they may be regional in nature. Habitat linkages provide cover and forage sufficient for temporary habitation by a variety of ground-dwelling animal species. Wildlife migration corridors are essential to the regional fitness of an area as they provide avenues of genetic exchange and allow animals to access alternative territories as fluctuating dispersal pressures dictate.

Vegetation on either side of the Georgetown Divide Ditch along the pipeline segments provides a north-south corridor for the movement of terrestrial and aquatic wildlife species. Because of the low density of human occurrence, the efficacy of this corridor is enhanced. The hardwood woodlands and grasslands, except for a few intervening roads, provide an almost continuous north-south corridor for wildlife movement, again, enhanced by the relatively low levels of traffic and human development.

Invasive Species

Invasive species are reducing the economic productivity and ecological integrity of our nation's lands and waters (CalIPC 2006). The rate of introduction of such species has risen markedly in recent years with costs to society growing commensurately. Invasive species harm noninvasive native species and their habitats, renewable resources, and diminish productive capacity of agricultural lands including forestlands, rangelands, and pasturelands. They may negatively affect a wide variety of human activities and needs (CDFA 2006).

Based on the Pest Ratings of Noxious Weed Species and Noxious Weed Seed list prepared by the California Department of Food and Agriculture (CDFA, 2004) and the Exotic Pest Plants of Greatest Ecological Concern in California (California Invasive Plant Council [Cal-IPC], 1999), the following invasive species were observed along the pipeline segments during biological surveys: Tree of heaven (Ailanthus altissima), Scotch broom (Cytisus scoparius), yellow star-thistle (Centaurea solstitialis), field bindweed (Convolvulus arvensis), Himalayan blackberry (Rubus discolor), and medusa-head (Taeniatherum caput-medusae). Large aggregations of scotch broom and yellow star-thistle occur over much of the annual grassland cover type within the project area, and in the understory of the montane hardwood cover type, particularly along roads and in areas that are grazing lands. Additionally, large aggregations of Himalayan blackberry occur in and adjacent to the WTP project area and Georgetown Divide Ditch. All

other invasive species within the project area are sub-dominant components of the vegetation communities.

Scotch broom invades roadsides, other disturbed areas, pastures, and native grasslands by shading out and killing native grassland plants. It is a prodigious seed producer with extremely hardy seeds that can be transported from place to place in mud stuck to vehicles, shoes and feet of animals (Cal-IPC 2006). Himalayan blackberry grows along roadsides, creek gullies, river flats, fencelines and ROW corridors. Periodic flooding, such as occurs due to leaks along the Georgetown Divide Ditch, can produce long-lived and early blooming communities of blackberry thickets. It colonizes areas initially disturbed then neglected by humans and can dominate range and pasture lands if not controlled (Bossard, Randall and Hoshovsky 2000). Yellow starthistle is spreading in mountain regions of California below 7,500 feet and is primarily a problem in moderately warm, exposed areas on fertile, drier soils, including disturbed sites, grasslands, rangeland, hay fields, pastures, roadsides, and recreational areas. Yellow starthistle seed is spread primarily by human activities, especially by road maintenance equipment and on the undercarriage of vehicles. Dense infestations of yellow starthistle displace native plants and animals, threatening natural ecosystems. Yellow starthistle also significantly depletes soil moisture reserves in annual grasslands in California (Bossard, Randall and Hoshovsky 2000). It can also reduce land value and limit access to recreational areas.

REGULATORY FRAMEWORK

The following information sets forth the relevant local, state, and federal regulations pertaining to biological resources that could be affected by project implementation.

FEDERAL REGULATION

SPECIAL-STATUS SPECIES

The federal Endangered Species Act (FESA), administered by the USFWS and National Oceanic and Atmospheric Administration (NOAA Fisheries), formerly the National Marine Fisheries Service, provides protection to species listed as Threatened (FT) or Endangered (FE). Projects that would result in the take of a federally listed or proposed species are required to consult the USFWS and/or NOAA Fisheries. The objective of consultation is to determine whether the project would jeopardize the continued existence of a listed or proposed species, and to determine what mitigation measures would be required to avoid jeopardy. Consultations are conducted under Sections 7 or 10 of FESA depending on the involvement by the federal government.

The USFWS also administers the federal Migratory Bird Treaty Act of 1918 (16 USC 703-711) and the Bald Eagle and Golden Eagle Protection Act (16 USC 668-688). The focus of the MBTA was to protect migratory birds, including their eggs and nests (16 USC 703). The MBTA prevents the removal of trees, shrubs, and other structures containing active nests of migratory bird species that may result in the loss of eggs or nestlings. Adherence to construction windows either before the initiation of breeding activities or after young birds have fledged is an active step to protect migratory birds and comply with the MBTA. All birds expected to nest in the project area are considered migratory birds, with the exception of European starlings and house sparrows. The Bald Eagle and Golden Eagle Protection Act prohibits the taking or possession of bald and golden eagles, their eggs, or their nests without a permit from the USFWS.

JURISDICTIONAL WATERS AND WETLANDS

The Corps is responsible for the issuance of permits for the placement of dredged or fill material into waters of the United States (waters) pursuant to Section 404 of the Clean Water Act (33 USC 1344). As defined by the Corps at 33 CFR 328.3(a) (3), waters are those that are currently used, or were used in the past, or may be susceptible to use in interstate or foreign commerce, including all waters which are subject to the ebb and flow of the tide; tributaries and impoundments to such waters; all interstate waters including interstate wetlands; and, territorial seas. Under Corps and EPA regulations, wetlands are defined as: "those areas that are inundated or saturated by surface or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas."

INVASIVE SPECIES

On February 3, 1999, President Clinton signed Executive Order (EO) 13112 that directed federal agencies to expand and coordinate their efforts to combat the introduction and spread of plants and animals not native to the United States. The EO prohibits federal agencies from authorizing, funding, or carrying out actions that are likely to cause or promote the introduction or spread of invasive species unless all reasonable measures to minimize risk of harm have been analyzed and considered. The EO established the National Invasive Species Council (NISC) and Invasive Species Advisory Committee (ISAC) to implement the EO. The NISC and ISAC developed a National Invasive Species Management Plan (NISMP) to focus upon terrestrial and aquatic invasive plants, animals, and microbial organisms that cause or may cause significant negative effects and do not provide an equivalent benefit to society.

STATE REGULATION

SPECIAL-STATUS SPECIES

The CDFG administers a number of laws and programs designed to protect the state's fish and wildlife resources. Principal of these is the California Endangered Species Act of 1984 (CESA - Fish and Game Code Section 2050), which regulates the listing and take of state endangered (SE) and threatened species (ST). Under Section 2081 of CESA, CDFG may authorize the take of an Endangered and/or Threatened species, or candidate species by a permit or Memorandum of Understanding (MOU) for scientific, educational, or management purposes.

CDFG maintains lists of Species of Special Concern (CSC), species of limited distribution, declining populations, diminishing habitat, or unusual scientific, recreational, or educational value. These species do not have the same legal protection as listed species, but may be added to official lists in the future. The CSC list is intended by CDFG as a management tool for consideration in future land use decisions.

CDFG administers other state laws designed to protect wildlife and plants. Under Section 3511 of the California Fish and Game Code, CDFG designates species that are afforded "fully protected" (FP) status. Under this protection, designated species can only be taken or possessed with a permit. Section 3503.5 of the California Fish and Game Code protects all birds-of-prey (Falconiformes and Strigiformes), their eggs, and their nests.

CDFG manages the California Native Plant Protection Act of 1977 (Fish and Game Code Section 1900, *et seq*), which was enacted to identify, designate and, protect rare plants. In accordance with CDFG guidelines, California Native Plant Society (CNPS) 1B list plants are considered "rare" under the Act, and are evaluated in California Environmental Quality Act reports.

WETLANDS AND WATERS

Pursuant to Section 1602 of the California Fish and Game Code, CDFG requires a Lake or Streambed Alteration Agreement (SAA) between CDFG and any state or local governmental agency or public utility before the initiation of any construction project that will: 1) divert, obstruct, or change the natural flow or the bed, channel, or bank of any river, stream, or lake; 2) use materials from a streambed; or 3) result in the disposal or deposition of debris, waste, or other material containing crumbled, flaked, or ground pavement where it can pass into any river, stream, or lake.

The California Fish and Game Commission adopted a modification of the USFWS definition of wetlands on March 9, 1987 as its principal means of wetland identification in conjunction with on-site inspections for implementation of the Fish and Game Commission's policy (Rollins, 1987). Unlike the USFWS, the CDFG definition only requires the presence of one wetland indicator for an area to qualify as a wetland. CDFG does not have a wetland regulatory program, but advises other state agencies on wetland issues.

Pursuant to Section 401 of the Clean Water Act, the Corps cannot issue a federal permit under Section 404 until the State of California first issues a water quality certification to ensure that a project will comply with state water quality standards. The authority to issue water quality certifications in the project area is vested with the Central Valley Regional Water Quality Control Board (CVRWQCB).

OAK WOODLAND PROTECTION

California Senate Concurrent Resolution No. 17 (1989) is a Senate resolution concerning the protection of native oak trees and oak woodlands. The resolution, which was concurred upon by the California Assembly, requested that… "all state agencies having land use planning duties and responsibilities…to assess and determine the effects of their land use decisions or actions within any oak woodlands" and that agencies ... "preserve and protect native oak woodlands to the maximum extent feasible…or provide for replacement plantings where designated oak species are removed from oak woodlands".

The Oak Woodlands Conservation Act (Section 1363 of the Fish and Game Code) was enacted in 2001. The program, which is management by the Wildlife Conservation Board, is intended to:

- Support and encourage voluntary, long-term private stewardship and conservation of California oak woodlands by offering landowners financial incentives to protect and promote biologically functional oak woodlands;
- Provide incentives to protect and encourage farming and ranching operations that are operated in a manner that protect and promote healthy oak woodlands;
- Provide incentives for the protection of oak trees providing superior wildlife values on private land, and;
- Encourage planning that is consistent with oak woodlands preservation.

In 2004, Section 21083.4 of the Public Resources Code was enacted, which requires counties to determine if a project within its jurisdiction may result in a conversion of oak woodlands that will have a significant effect on the environment. If a significant effect would result, the county would be required to mitigate by:

- Conserve oak woodland through the use of conservation easements
- Plant an appropriate number of trees, including maintaining plantings and replacing dead or diseased trees
- Maintain oak trees for seven years after planting
- Contribute funds to the Oak Woodlands Conservation Fund administered by the Wildlife Conservation Board
- Other mitigation measures developed by the specific County.

LOCAL AGENCY REGULATION

EL DORADO COUNTY

Watershed Protection

The El Dorado County General Plan (2004) includes the following policy related to water resource protection:

Policy 7.3.1.1: Encourage the use of Best Management Practices, as identified by the Soil Conservation Service, in watershed lands as a means to prevent erosion, siltation and flooding.

Rare, Threatened and Endangered Species

El Dorado County General Plan objective 7.4.1 states that the County shall protect State and Federally recognized rare, threatened, or endangered species and their habitats consistent with Federal and State Laws. The following policies are applicable to the proposed project and this objective:

Policy 7.4.1.1: The County shall continue to provide for the permanent protection of eight sensitive plant species known as the Pine Hill endemics and their habitat through the establishment and management of ecological preserves consistent with County Code Chapter 17.71 and the USFWS's Gabbro Soil Plants for the Central Sierra Nevada Foothills Recovery Plan (USFWS 2002).

Policy 7.4.1.7: The County shall continue to support the Noxious Weed Management Group in its efforts to reduce and eliminate noxious weed infestations to protect native habitats and to reduce fire hazards.

Wildlife Habitat

El Dorado County General Plan objective 7.4.2 states that the County shall identify and protect, where feasible, critical fish and wildlife habitat including deer winter, summer, and fawning ranges; deer migration routs; stream and river riparian habitat; lake shore habitat; fish spawning areas; wetlands; wildlife corridors; and diverse wildlife habitat.

Forest and Oak Woodland Protection

El Dorado County General Plan objective 7.4.4 states that the County shall protect and conserve forest and woodland resources for their wildlife habitat, recreation, water production, domestic livestock grazing, production of a sustainable flow of wood products, and aesthetic values. The following policies are applicable to the proposed project and this objective:

Policy 7.4.4.4: For all new development projects (not including agricultural cultivation and actions pursuant to an approved Fire Safe Plan necessary to protect existing structures, both of which are exempt from this policy) that would result in soil disturbance on parcels that (1) are over an acre and have at least 1 percent total canopy cover or (2) are less than an acre and have at least 10 percent total canopy cover by woodlands habitats as defined in this General Plan and determined from base line aerial photography or by site survey performed by a qualified biologist or licensed arborist, the County shall require one of two mitigation options: (1) the project applicant shall adhere to the tree canopy retention and replacement standards described below; or (2) the project applicant shall contribute to the County's Integrated Natural Resources Management Plan conservation fund described in Policy 7.4.2.8.

Option A

The County shall apply the following tree canopy retention standards:

Percent Existing Canopy Cover	Canopy Cover to be Retained
80–100	60% of existing canopy
60–79	70% of existing canopy
40–59	80% of existing canopy
20–39	85% of existing canopy
10-19	90% of existing canopy
1-9 for parcels > 1 acre	90% of existing canopy

Under Option A, the project applicant shall also replace woodland habitat removed at 1:1 ratio. Impacts on woodland habitat and mitigation requirements shall be addressed in a Biological Resources Study and Important Habitat Mitigation Plan as described in Policy 7.4.2.8. Woodland replacement shall be based on a formula, developed by the County, that accounts for the number of trees and acreage affected.

Option B

The project applicant shall provide sufficient funding to the County's INRMP conservation fund, described in Policy 7.4.2.8, to fully compensate for the impact to oak woodland habitat. To compensate for fragmentation as well as habitat loss, the preservation mitigation ratio shall be 2:1 and based on the total woodland acreage onsite directly impacted by habitat loss and indirectly impacted by habitat fragmentation. The costs associated with acquisition, restoration, and management of the habitat protected shall be included in the mitigation fee. Impacts on woodland habitat and mitigation requirements shall be addressed in a Biological Resources Study and Important Habitat Mitigation Plan as described in Policy 7.4.2.8.

Policy 7.4.4.5: Where existing individual or a group of oak trees are lost within a stand, a corridor of oak trees shall be retained that maintains continuity between all portions of the stand. The retained corridor shall have a tree density that is equal to the density of the stand.

Policy 7.4.5.1: A tree survey, preservation, and replacement plan shall be required to be filed with the County prior to issuance of a grading permit for discretionary permits on all high-density residential, multifamily residential, commercial, and

industrial projects. To ensure that proposed replacement trees survive, a mitigation monitoring plan should be incorporated into discretionary projects when applicable and shall include provisions for necessary replacement of trees.

Policy 7.4.5.2: It shall be the policy of the County to preserve native oaks wherever feasible, through the review of all proposed development activities where such trees are present on either public or private property, while at the same time recognizing individual rights to develop private property in a reasonable manner. To ensure that oak tree loss is reduced to reasonable acceptable levels, the County shall develop and implement an Oak Tree Preservation Ordinance that includes the following components:

A. Oak Tree Removal Permit Process. Except under special exemptions, a tree removal permit shall be required by the County for removal of any native oak tree with a single main trunk of at least 6 inches diameter at breast height (dbh), or a multiple trunk with an aggregate of at least 10 inches dbh. Special exemptions when a tree removal permit is not needed shall include removal of trees less than 36 inches dbh on 1) lands in Williamson Act Contracts, Farmland Security Zone Programs, Timber Production Zones, Agricultural Districts, designated Agricultural Land, and actions pursuant to a Fire Safe plan; 2) all single family residential lots of one acre or less that cannot be further subdivided; 3) when a native oak tree is cut down on the owner's property for the owner's personal use; and 4) when written approval has been received from the County Planning Department. In passing judgment upon tree removal permit applications, the County may impose such reasonable conditions of approval as are necessary to protect the health of existing oak trees, the public and the surrounding property, or sensitive habitats. The County Planning Department may condition any removal of native oaks upon the replacement of trees in inch for inch replacement of removed oaks. The total of replacement trees shall have a combined diameter of the tree(s) removed. Replacement trees may be planted onsite or in other areas to the satisfaction of the County Planning Department. The County may also condition any tree removal permit that would affect sensitive habitat (e.g., valley oak woodland), on preparation of a Biological Resources Study and an Important Habitat Mitigation Program as described in Policy 7.4.1.6. If

an application is denied, the County shall provide written notification, including the reasons for denial, to the applicant.

B. Tree Removal Associated with Discretionary Project. Any person desiring to remove a native oak shall provide the County with the following as part of the project application:

- A written statement by the applicant or an arborist stating the justification for the development activity, identifying how trees in the vicinity of the project or construction site will be protected and stating that all construction activity will follow approved preservation methods;
- A site map plan that identifies all native oaks on the project site; and
- A report by a certified arborist that provides specific information for all native oak trees on the project site.

C. Penalties. Fines will be issued to any person, firm, or corporation that is not exempt from the ordinance who damages or destroys an oak tree without first obtaining an oak tree removal permit. Fines may be as high as three times the current market value of replacement trees as well as the cost of replacement, and/or replacement of up to three times the number of trees required by the ordinance. If oak trees are removed without a tree removal permit, the County Planning Department may choose to deny or defer approval of any application for development of that property for a period of up to 5 years. All monies received for replacement of illegally removed or damaged trees shall be deposited in the County's Integrated Natural Resources Management Plan conservation fund.