

ATTACHMENT 4:

BIOLOGICAL STUDY



BIOLOGICAL RESOURCES REPORT FOR THE GRASS VALLEY WASTEWATER TREATMENT PLANT DENITRIFICATION AND UV DISINFECTION FACILITIES PROJECT

June 2007

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TABLE OF CONTENTS

Introduction 1

Background and Purpose 1

 Proposed Project 1

 Location 1

 Purpose of the Survey 1

Methodology 3

 Review of Existing Data 3

 Field Reconnaissance Survey 3

Habitat Types 3

 Montane Hardwood Conifer 4

 Montane Riparian Habitat 4

 Riverine Habitat 5

Wetlands 5

Wildlife 5

 Mammals 6

 Birds 6

 Reptiles and Amphibians 6

Sensitive Species 6

 Follett's Monardella (*Monardella folletti*) 7

Potential Impacts 11

 Habitat and Wetlands 11

 Special Status Species 11

 Water Quality 11

References 13

LIST OF FIGURES

Figure 1: WWTP Project Location 2

Figure 2: CNDDDB Species in the Project Area 8

Figure 3: CNDDDB Species in the Project Area Detail 9

Figure 4: Soils in the Project Area 10

Figure 5: 100-Year and 500-Year Flood Hazards within the Project Area 12

LIST OF TABLES

Table 1: Species of Special Concern with potential to occur in the project area 7

Introduction

This report describes MHA/RMT's survey of the biological resources at the Grass Valley Wastewater Treatment Plant (WWTP) site where improvements are being proposed by the City of Grass Valley. This report describes the existing conditions and provides an evaluation of the potential impacts to biological resources as a result of the proposed actions.

Background and Purpose

PROPOSED PROJECT

The City of Grass Valley (City) Public Works Department operates a WWTP that provides sewer service to 12,100 residents and 1,700 businesses. The City is proposing to implement improvements to the facility to improve the water quality of its effluent discharge to meet new requirements from the Central Valley Regional Water Quality Control Board (RWQCB).

The current project consists of the construction of improvements to the biological nitrogen removal process to meet nitrogen discharge limits and the addition of ultraviolet (UV) disinfection facilities for removal of fecal coliform to meet new discharge requirements for cyanide and trihalomethane (THMs) at the WWTP. The project will be constructed within the boundaries of the City of Grass Valley's existing WWTP. The proposed project consists of:

- Removal/demolition of existing chlorine gas disinfection equipment;
- Installation of UV disinfection facility in an existing chlorine contact basin;
- Addition of a sodium hypochlorite feed system for the non-potable water system;
- Installation of launder covers on one of the secondary clarifiers;
- Installation of covers on the tertiary filters and other yard structures; and
- Installation of air piping to improve denitrification facilities.

The air piping modifications will provide greater process control during periods of low influent flow to the WWTP to improve the ability to meet existing nitrogen limits. With the removal of the chlorine disinfection facilities and the addition of the UV disinfection, the THM and cyanide concentration limits in the effluent will be met.

LOCATION

The project area is located in the Sierra Foothills of California at approximately 2,415 feet above mean sea level (amsl). The project area is north of Interstate 80 at the intersection of State Route 49 and State Route 20 in the City of Grass Valley. Figure 1 shows the project location.

PURPOSE OF THE SURVEY

The City of Grass Valley is requesting funding for upgrades to the wastewater treatment plant from the State Revolving Funds (SRF) Loan program administered by the State Water Resources Control Board (SWRCB). The SWRCB requires a comprehensive evaluation of all environmental impacts from proposed activities and compliance with environmental review requirements, in conjunction with the funding application process.

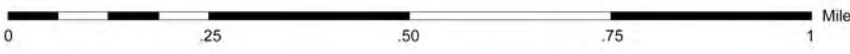
The proposed project (upgrades to the existing wastewater treatment plant) requires evaluation under the California Environmental Quality Act (CEQA). The SWRCB has additional guidelines to supplement the CEQA Guidelines with specific requirements for environmental documents when reviewing applications for wastewater treatment facility loans. The SRF Loan program is partially funded by the US Environmental Protection Agency (EPA) and is, therefore, subject to federal environmental regulations. To comply with applicable federal statutes and authorities, EPA

Figure 1: WWTP Project Location



SOURCE: ESRI 2006, Google Earth Pro 2007, MHA Environmental Consulting 2007

LEGEND



established specific “CEQA-plus” requirements in the Operating Agreement with SWRCB for administering the SRF Loan Program.

One requirement of CEQA-plus includes compliance with Section 7 of the federal Endangered Species Act (ESA). The SWRCB Division of Financial Assistance (Division) has been designated as the non-federal representative under the federal ESA for all wastewater and water reclamation projects in California that involve SRF loans.

The biological surveys and this report have been completed to characterize habitat types in the Project Area, record species occurrences, and assess the potential impacts of the proposed project to biological resources in support of Section 7 consultations and CEQA compliance.

Methodology

REVIEW OF EXISTING DATA

MHA/RMT reviewed the following data prior to the site visit to obtain general information on habitat types and quality, vegetative communities, and potential for special status species occurrences within the project area:

- Recent (2006) Aerial Photos
- Land Use Maps (City of Grass Valley)
- Grass Valley General Plan Update Background Reports (City of Grass Valley 1998)
- Grass Valley Wastewater Treatment Plant Upgrade EIR (EIP 1995)
- California Natural Diversity Database (CNDDDB) 2007
- Other pertinent publications (as listed in the references section of this report)

Review of the above sources provided a preliminary assessment and description of the habitat types within the proposed project area. The proposed project area is located at the base of the Sierra Nevada Mountains. The habitat in the project area provides moderate quality habitat for wildlife.

A search of the California Department of Fish and Game (CDFG) CNDDDB was conducted to identify locations of known occurrences of special status plant and wildlife species in the vicinity of the proposed project. The CNDDDB search identified one occurrence of Follett’s monardella (*Monardella folletti*) approximately one mile from the project area. Follett’s monardella grows on open, rocky, serpentine slopes in lower montane coniferous forests at elevations ranging from about 1,800 to 6,500 feet amsl. It is known to occur in Plumas and Nevada Counties, and is on the California Native Plant Survey (CNPS) list as a 1B species (Plants categorized as Rare, Threatened, or Endangered in California and elsewhere). No special status animal species occurrences were identified by the CNDDDB within one mile of the proposed project area.

FIELD RECONNAISSANCE SURVEY

On May 4, 2007, MHA/RMT Biologist, Ty Brookhart, visited the project area to evaluate the habitat occurring at the proposed project site and to record the vegetative communities, habitat types, and habitat quality in the area. The project area was surveyed on foot. All animal species and their signs encountered were recorded. Bird species were identified by sight and by vocalizations when possible.

Habitat Types

Dominant habitat types, as used and described by the California Wildlife Habitat Relationship (WHR) system (Holland 1986), were recorded and primary species were identified. Habitats in the

project area are all of low or moderate quality and were subject to previous disturbance. The project area has a history of mining activity, and the wastewater treatment plant has been operating on site since 1950 (EIP 1995).

The general setting of the project site is typical of wooded slopes of the Sierra Nevada foothills region. The existing wastewater treatment plant facilities comprise the entire project area. The project area has various buildings, water treatment facilities, lined storage ponds, and paved and unpaved compacted surfaces. Herbaceous grasses and forbs make up the ruderal vegetation found in the unpaved areas of the project area.

The periphery of the wastewater treatment plant is populated by both native and non-native plant species. Three terrestrial habitat types and one aquatic habitat type make up the surrounding vegetation as described by the WHR. The upland slopes consist of Montane Hardwood Conifer habitat. Montane Riparian habitat occurs along Wolf Creek, which runs through the middle of the project area. Riverine habitat describes the aquatic habitat found in Wolf Creek. The intersection of the riverine and riparian habitat supports a very small strip of wetlands. The following is a description of the habitat types occurring in the Project Area.

MONTANE HARDWOOD CONIFER

Montane Hardwood Conifer habitat supports a diverse spectrum of conifer and hardwood tree species often as a closed canopy forest. This habitat type often occurs as a mosaic-like pattern with small pure stands of conifers interspersed with small stands of broad-leaved trees. Ponderosa pine (*Pinus ponderosa*), digger pine (*P. sabiniana*), incense cedar (*Calocedrus decurrens*), and Douglas fir (*Pseudotsuga menziesii*) are the most common conifer species found adjacent to waste water treatment plant. Deciduous and evergreen hardwood species were also observed in the montane hardwood conifer habitat that surrounds the plant.. Five species of oak (*Quercus* spp); black oak (*Q. kelloggii*), blue oak (*Q. douglassii*), valley oak (*Q. lobata*), canyon live oak (*Q. chrysolepis*), and interior live oak (*Q. wislizenii*) were observed. Big leaf maple (*Acer macrophyllum*), Pacific madrone (*Arbutus menziesii*), and black locust (*Robina pseudoacacia*) were also found adjacent to the wastewater treatment plant.

Understory and ground cover are typically sparse in Montane Hardwood Conifer habitat and consist of annual herbaceous plants and shrubs. Deer brush (*Ceanothus integerrimus*), whiteleaf manzanita (*Arctostaphylos viscida*), California rose (*Rosa californica*), and scotch broom (*Cytisus scoparius*), an invasive species, were observed in the project area.

MONTANE RIPARIAN HABITAT

Wolf Creek runs through the project area and a narrow riparian zone can be found on the steep banks of the creek. The riparian corridor in this section of the creek is denuded. Rip-rap lines the banks and the creek is channelized. The creek bed is approximately 15 below the level of the wastewater treatment plant. Several deciduous trees are found on the banks of the creek including alder (*Alnus rhombifolia*), Fremont's cottonwood (*Populus fremontii*), red willow (*Salix leavigata*), black locust, and bigleaf maple. Invasive Himalayan blackberry (*Rubus discolor*) dominates the banks, with a few California wild grape (*Vitis californica*) interspersed in the understory.

Riparian habitats are critical areas for many wildlife species and support relatively high species diversity. Wildlife use riparian areas as migration corridors, for foraging and nesting, and for cover from weather and predators. The riparian habitat area found in the project area is not of particularly high quality for wildlife, as there is no abutting habitat on either side of the creek. The banks are covered with low plant species diversity and rip-rap reduces variability in the bank contours. The habitat likely still supports numerous avian and rodent species, and may act as a migration corridor for larger mammals. Reptiles and amphibians are also likely found in the riparian habitat along Wolf Creek, though none were observed during the site visit.

RIVERINE HABITAT

The aquatic component of Wolf Creek is considered riverine habitat. Riverine habitats are critical for proper ecosystem functioning as they transport water and nutrients and provide a continuous habitat corridor between many terrestrial habitats. They also provide water, which is particularly important in drier habitats such as those typically found in the Sierra Nevada foothills.

Wolf Creek is classified as an intermittent creek by the USGS, although discharge from the waste water treatment plant and water supplied to the creek for irrigation purposes by the Nevada Irrigation District (NID) have transformed it to a perennial waterway. Water flow was approximately 6 cubic feet per second (cfs) during the site visit in May. Wolf Creek typically has an average natural flow of around 1 cubic feet per second during the late spring and summer months. The plant discharges and irrigation water can account for an increase of roughly 3-10 cubic feet per second into the creek, as the plant discharges from 2 to 5 cubic feet per second and the NID may increase flows by up to 5 cubic feet per second (Reuter 1992; Dewante and Stowell 1993).

Wolf Creek's substrate material is primarily small rocks, some small boulders and also gravel and sand. Sediment load in the creek was low during the site visit. The in-stream habitat in Wolf Creek provides suitable conditions for aquatic invertebrates, amphibians, and fish. Invertebrates in the creek consist of stonefly (*Plecoptera*), mayfly (*Ephemeroptera*), and caddisfly (*Trichoptera*) larvae, as well as aquatic snails. Riverine habitat in the area typically supports rainbow trout (*Oncorhynchus mykiss*), brown trout (*Salmo trutta*), and riffle sculpin (*Cottus gulosus*) (Holland 1986). Summer water temperatures are higher than optimum for trout growth and reproduction, averaging from 65-70 degrees Fahrenheit (°F) during the summer months (Dewante and Stowell 1993). Wolf Creek does not exhibit an abundance stream features, such as deep pools, large boulders, or submersed trees and lacks pool-riffle complexes. Conditions at the project site are not ideal for trout and no fish were observed during the site visit, however, fish may be present in the project area.

The effluent from the wastewater treatment plant was analyzed as part of the Grass Valley Wastewater Treatment Plant upgrade. The evaluation did not show any significant difference in toxicity between the effluent and the water in Wolf Creek. Aquatic biomass (algae) in the creek resulting from effluent discharge was also not shown to have a detrimental effect on stream biota. The study indicated algal growth in the creek was limited by a lack of sunlight as a result of the dense canopy (Dewante and Stowell 1993).

Wetlands

Wolf Creek and the narrow strip of habitat on the banks supporting wetland plant species may be considered waters of the United States and may fall under the jurisdiction of U.S. Army Corps of Engineers (Corps). No formal wetland delineations were performed to verify jurisdiction. Wetland communities support aquatic and other hydrophytic vegetation. Wetland sites are typically flooded marshy areas that vary in size and proportion to the particular topography and hydrology of the area. These sites are either seasonally or permanently wet and are dominated by perennial, emergent monocots such as the cattail (*Typha* spp.), sedge (*Carex* spp.), and rush (*Juncus* spp.). These species are found along Wolf Creek.

Wildlife

The wildlife habitat in the project area has been disturbed several times, and is fragmented by paved surfaces and structures within the wastewater treatment plant, as well as roadways and settling ponds. This results in diminished habitat quality and decreases the likelihood and prevalence of wildlife in the project area. The continual routine maintenance and upkeep of the wastewater treatment plant also reduces the potential for many animals to consistently use the

area for foraging, breeding, or permanent cover. However, many large trees in the area provide habitat for birds and arboreal mammals, such as squirrels. The riparian corridor, though not pristine, provides important resources for many animals. This section provides a brief description of wildlife species that were documented or may potentially occur within the project area.

MAMMALS

Raccoons (*Procyon lotor*), coyotes (*Canis latrans*), gray fox (*Urocyon cinereoargenteus*) could periodically use the area. Coyotes and gray fox are less likely to be found in the area because of its proximity to developed and high traffic urban areas. Raccoons are accustomed to populated areas and require water when feeding. Raccoons often prey on frogs when foraging along creeks. The riparian corridor may serve as a valuable migration corridor. Common rodent species possibly occurring in the area include deer mouse (*Peromyscus maniculatis*), California meadow vole (*Microtis californicus*), and tree squirrels such as the western gray squirrel (*Sciurus griseus*) and the eastern fox squirrel (*Sciurus niger*). These populations provide a food source for predatory species such as the coyote, gray fox, and raptor species.

BIRDS

California is located within the Pacific Flyway (the migration route through the western portion of the United States). Various species of waterfowl and other migratory birds routinely pass through the area. Riparian and heavily wooded areas are prime habitat for migrating birds. Common migratory waterfowl that may periodically utilize Wolf Creek include mallard (*Anas platyrhynchos*), cinnamon teal (*Anas cyanoptera*), American wigeon (*Anas americana*), and common merganser (*Mergus merganser*). The creek is not ideal for waterfowl because of its location adjacent to developed areas and high traffic, but the warmer effluent coming from the plant would provide favorable conditions during the winter. Sharp-shinned hawk (*Accipiter striatus*) and Cooper's Hawk (*Accipiter cooperi*) are the two most likely raptors to be found in the area as the trees provide suitable foraging habitat. No raptor nests were observed in the surrounding trees or within the trees growing in the riparian corridor. There are also many passerine and nonpasserine birds that are expected to be found in the project area. Tree swallows (*Tachycineta bicolor*) were observed foraging on the WWTP and were nesting in the eaves of several of the buildings associated with the wastewater treatment facilities.

REPTILES AND AMPHIBIANS

The riparian and riverine habitat of Wolf Creek provides marginal habitat for western pond turtle (*Clemmys marmorata*), California red-legged frog (*Rana aurora draytonii*), and foothill yellow-legged frog (*Rana boylei*). Western pond turtles typically require large pools and sandy banks to lay eggs, of which none exist in the stretch of Wolf Creek running through the project area. Both frog species are usually associated with more pristine and variegated stream habitats, but have a remote chance of being found on site. No reptiles or amphibians were observed on or around the site (near Wolf Creek) and the CNDDDB did not show any occurrences of the three species in the area.

Sensitive Species

The Federal Endangered Species Act (1973) and the California Endangered Species Act (1984) provide legal protection for plant and animal species in danger of becoming extinct. The Federal Endangered Species Act requires the United States Fish and Wildlife Service (USFWS) to provide a findings report on any federally authorized actions that could jeopardize the existence of any federally listed species. The CDFG analyzes projects for possible impacts to species as well as their habitats. The CNPS helps to determine which plant species and habitats should be listed as special status under the California Endangered Species Act. The Migratory Bird Treaty Act prohibits the take, killing, or possession of migratory birds without a license.

Several migratory birds have the potential to be found in the area. A query of the CDFG’s CNDDDB (CDFG 2007) revealed one species of special concern potentially located within the project area. This was the Follett’s monardella. Figures 2 and 3 show the extent of the range indicated by the CNDDDB. Special status amphibian and reptile species also have the potential to be found in the project area. A list of sensitive species and their likelihood of occurrence and habitat requirements is included in Table 1 below.

Table 1 lists sensitive species which may occur in the Project Area.

TABLE 1: Species of Special Concern with potential to occur in the project area			
Species	Status	Habitat Requirement	Potential to Occur
Plants			
Follett’s monardella (<i>Monardella folletti</i>)	FSLC/--/1B	Open coniferous forest with serpentine soils	Low
Amphibians			
Foothill yellow-legged frog (<i>Rana boylei</i>)	FSC/CSC/--	Breeds in shaded stream habitats with rocky, cobble substrate, usually below 6,000 feet in elevation. Absent or infrequent when introduced predators are present.	Low
California red-legged frog (<i>Rana aurora draytonii</i>)	FSC/CSC/--	Breeds in shaded stream habitats with rocky, cobble substrate. Absent or infrequent when introduced predators are present.	Low
Reptiles			
Western Pond Turtle (<i>Clemmys marmorata</i>)	FSC/CSC/--	Ponds, marshes, rivers, streams, and irrigation ditches with aquatic vegetation. Requires basking sites and suitable upland habitat for egg-laying. Nest sites most often characterized as having gentle slopes (<15%) with little vegetation or sandy banks.	Low
<p>Status Codes: Federal: (USFWS) State: (CDFG) FSC = Federal Species of Special Concern CSC = California Species of Special Concern FSLC = Species of Local Concern -- = No listing</p> <p>CNPS: (California Native Plant Society) List 1B = Plants rare, threatened, or endangered in California and elsewhere -- = No listing</p>			

SOURCES: CNDDDB (2007); CNPS (2006); USFWS (2007)

FOLLETT'S MONARDELLA (MONARDELLA FOLLETTI)

Follett's monardella grows on open, rocky, serpentine slopes in lower montane coniferous forests at elevations ranging from about 1,800 to 6,500 feet. It is known from Plumas and Nevada Counties, and is on the CNPS List as a 1B species (Plants categorized as Rare, Threatened, or Endangered in California and elsewhere). Follett’s monardella is highly associated with serpentine soils. No serpentine soils (Figure 4) are present on the project site according to the U.S.

Figure 2: CNDDDB Species in the Project Area

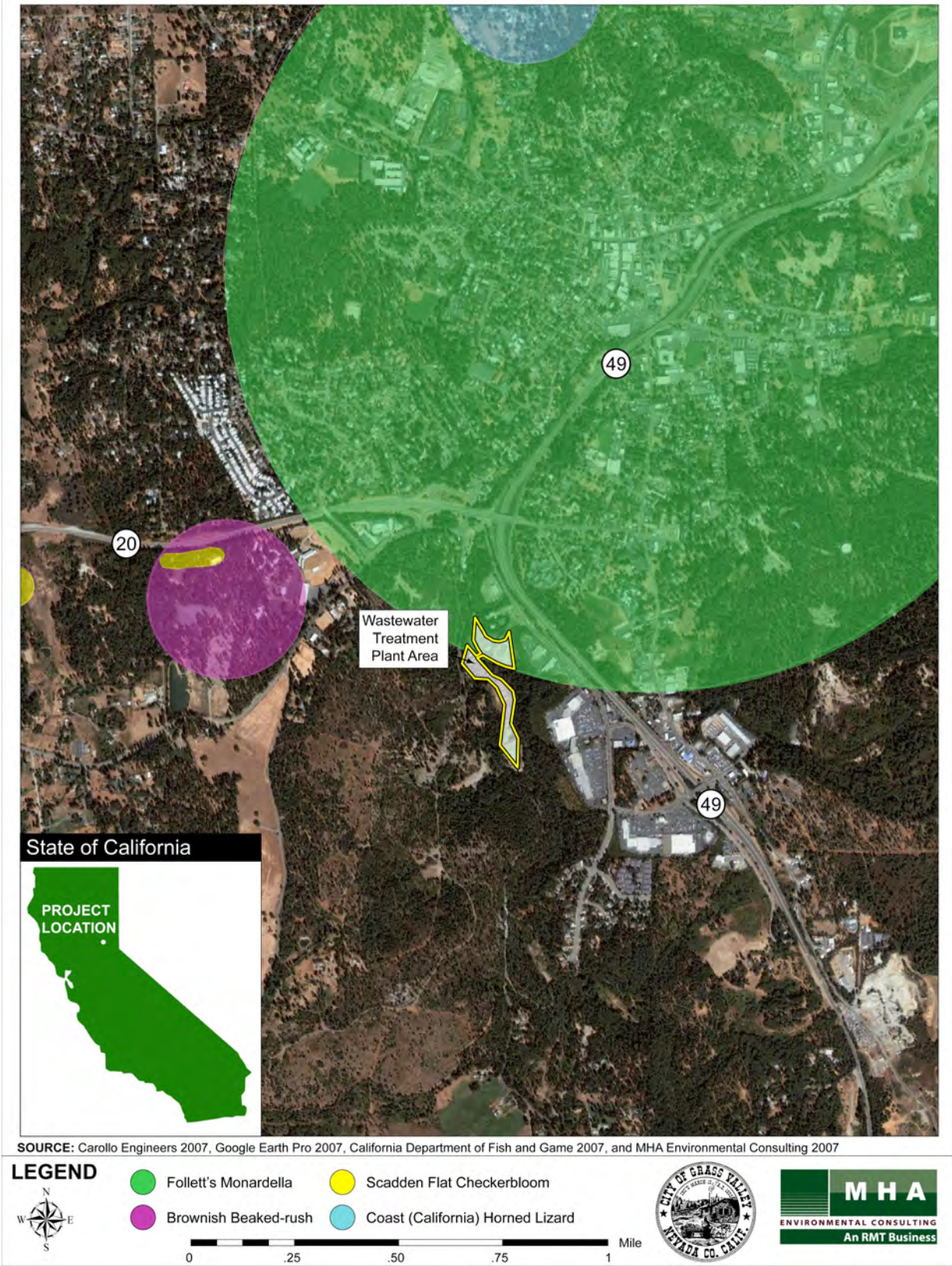
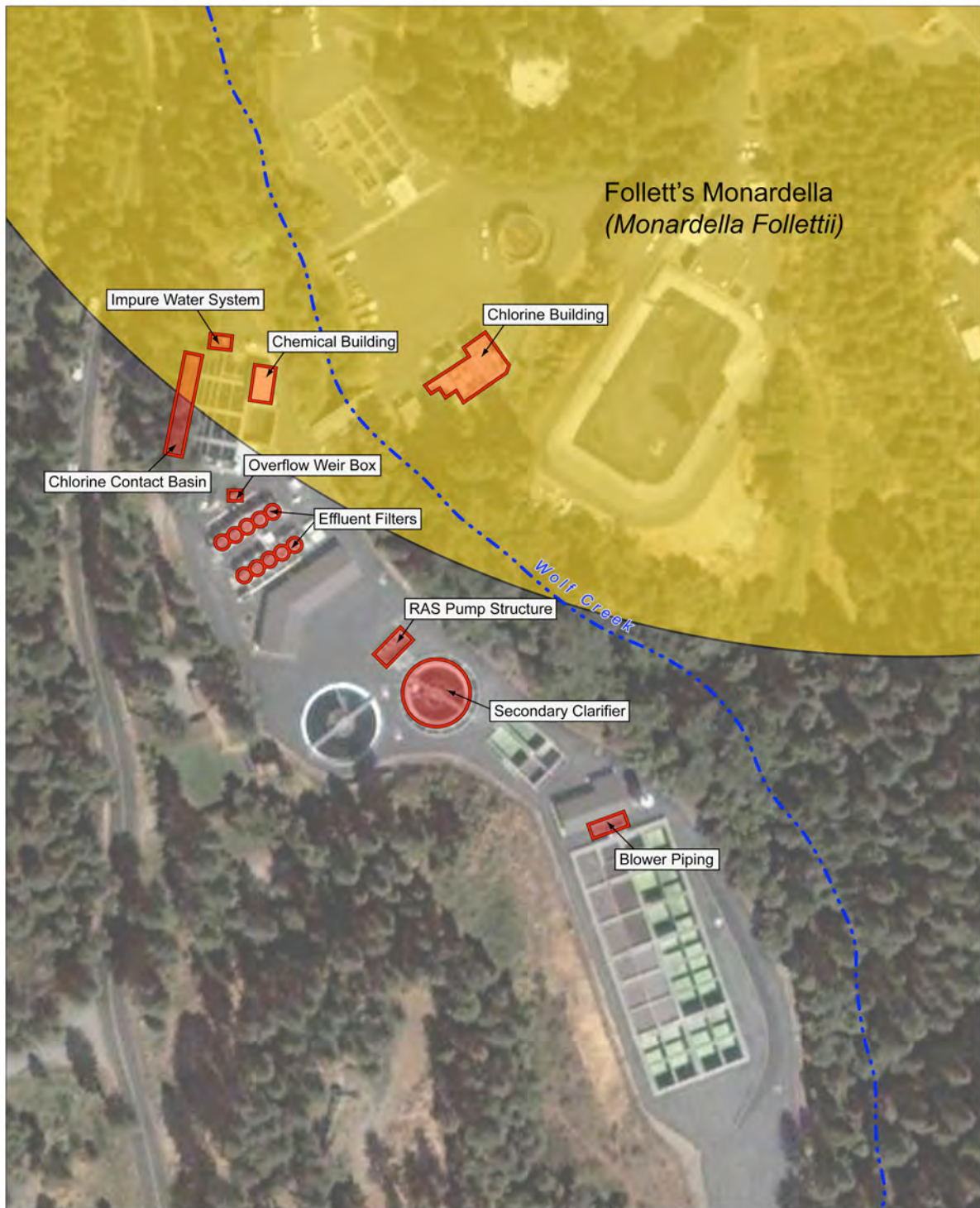


Figure 3: CNDDDB Species in the Project Area Detail



SOURCE: Carollo Engineers 2007, Google Earth Pro 2007, California Department of Fish and Game 2007, and MHA Environmental Consulting 2007

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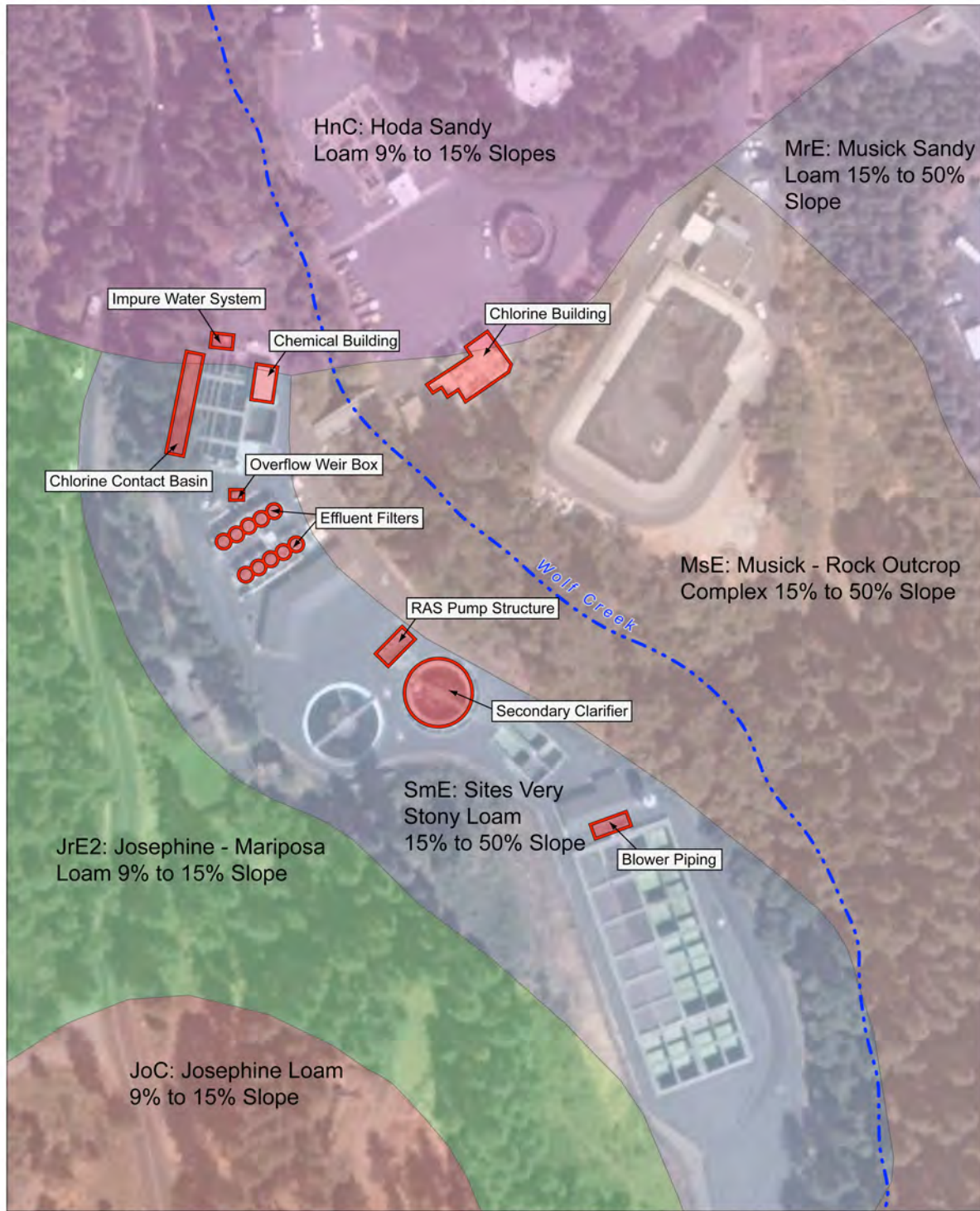
Project Element



Creek



Figure 4: Soils in the Project Area



SOURCE: Carollo Engineers 2007, Google Earth Pro 2007, U.S. Department of Agriculture, NRCS 2007, and MHA Environmental Consulting 2007

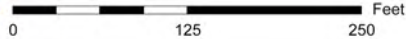
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Project Element



Creek



Department of Agriculture Soil Service (NRCS 2007). The Follet's monardella was not observed on the project site or surrounding areas.

Potential Impacts

HABITAT AND WETLANDS

The activities included as part of the proposed project would occur entirely outside of Wolf Creek on paved and compacted ground within the boundaries of the waste water treatment plant and would not affect wildlife or plant habitats in the area. No wetlands would be affected and all work would occur entirely outside of the 100-year flood plain (see Figure 5). There would be no temporary or long term impact on terrestrial or riverine habitats and wetlands.

SPECIAL STATUS SPECIES

The tree swallow is a migratory bird and protected under the Migratory Bird Treaty Act (MBTA). The MBTA makes it illegal to kill, take, or possess migratory birds without license. Several tree swallows were observed foraging and nesting within the Project Area. To protect tree swallows during project construction the following mitigation measure should be implemented.

Biology-1: Between March 15 and August 15, prior to the demolition and construction of any new facilities, the existing facilities where construction will occur, shall be surveyed by a qualified biologist 30 days in advance of the construction activity. The survey shall be performed to determine if swallow nests are present and in use in the equipment/buildings to be removed or impacted by construction. If nests are in use, construction activity at the facility shall be delayed and a qualified biologist shall continue the surveys until it has been determined that any young have fledged and are no longer using the nest. If construction activities occur outside of the nesting/breeding period, surveys will not be required.

Special status species with potential to occur in the project area would not be affected by construction or operation of the upgrades at the wastewater treatment plant with the implementation of the mitigation measure provided above.

WATER QUALITY

Construction on site could produce waste and other loose materials that could wash into the creek from the plant site. Currently, all engineered drainage points at the plant have straw waddles placed in front of them intended to divert and capture material before entering the creek. Impacts from construction would be less than significant.

The proposed upgrades to the wastewater treatment plant are intended to increase the quality of the effluent discharge by eliminating the use of chlorine. Chlorine is detrimental to natural systems and can be toxic in more concentrated doses. The upgrades would eliminate all chlorine discharge into Wolf Creek and would increase water quality in the creek. Impacts from the upgrades at the plant would be less than significant.

Figure 5: 100-Year and 500-Year Flood Hazards within the Project Area




SOURCE: Carollo Engineers 2007, Google Earth Pro 2007, City of Grass Valley 2004, and MHA Environmental Consulting 2007


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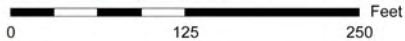


 Project Element

 Creek

 100-Year Flood Hazard Zone

 500-Year Flood Hazard Zone

 Feet



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