BIOLOGICAL CONSTRAINTS ANALYSIS
CITY OF LAKEPORT WATER AND WASTEWATER PROJECTS
LAKE COUNTY, CALIFORNIA

1.0 PROJECT DESCRIPTION

The project site is located in within both the City of Lakeport (City) and Lake County (County) jurisdiction. The site is located exclusively within the Lakeport USGS 7.5-minute quadrangle.

1.1 Water Projects. The City of Lakeport has a four phase project that is needed to secure water quality and continued quantity. These phases have been identified by the City as necessary in protecting the community's water source, and ensuring the health and safety of community residents. Only one of the four phases has the potential to effect biological resources. Below is a description of the extension to loop the water mains located in South Lakeport (W-4).

It is City policy that water mains be looped to ensure system reliability, minimize pipe size needed to adequately serve domestic and fire flow needs, and to minimize the number of people affected by a system shutdown. The City's 2008 Water Master Plan identified the need to extend and loop the mains on Parallel Drive and South Main Street. The extension is necessary to complete the loop that will adequately serve current and future customers in a safe and efficient manner. The main would be extended beyond S. Main Street and continue on Soda Bay Road to the City's Sphere of Influence Boundary, approximately 400-500 feet beyond the point where Soda Bay Road turns to the east. The City's hope is that, for the portion of the loop main project within S. Main Street/Soda Bay Road, construction of the loop main would be coincident with the street widening project to be pursued by the County. To connect the S. Main Street segment to the Parallel Drive segment, the line pass under SR-29 near the S. Main Street interchange by boring and jacking under the freeway. Water pipeline installation was just completed north of the end tie-in location on Parallel Drive while field surveys where being conducted (Figure 1, Site Photographs A-D).

The other three phases that will not affect biological resources include:

- *Land acquisition to secure ownership of two City groundwater wells (W-1).*
- *Installation of a water metering system (W-2).*
- *Replacement of the supervisory control and data acquisition (SCADA) system (W-3).*

1.2 Sewer Projects. The City has identified six independent projects needed to secure the community's sewer efficiency and continued health and sanitation. The City's wastewater system is in disrepair and in need of improvements. The current deteriorating state of the wastewater system led to the City receiving a Notice of Violation (NOV) in 2006 and a Cease and Desist Order (CDO) in 2007 from the California Regional Water Quality Control Board. The NOV and CDO were in response to numerous sewer system overflows, inflow and infiltration, groundwater contamination, and storage capacity violations. To address some of

the issues and violations listed in the NOV and CDO, and to ensure the health and safety of community residents, the City must complete the projects discussed in this report. One of the six projects will not impact biological resources. The project, *replace controls and communications systems (S-1)* will not be discussed any further in this report.

Three of the six sewer projects contain very little impacts to biological resources. These three projects will occur within existing roadways or sewer systems. These projects include:

- *Replace portions of sewer collection system* (S-4). This project is to improve high levels of Inflow and infiltration into the collection system. All work for this project will be conducted within existing wastewater collection pipes or manholes (Figure 1, Site Photographs E and F).
- *Upsize a sewer collection pipe in central area of the City* (S-5). This project involves upgrading an eight-inch sewer pipe to a 12-inch pipe by using a trenchless approach. This project will involve the excavation of two trenches at each end of the pipe within Main Street.
- *Inspect and repair a main line along the tunnel portion of Highway 29* (S-6). This project involves installing a new 30-inch culvert adjacent to an existing 72-inch culvert under the above-grade freeway. Jack and bore method will be used to install the culvert. Pit locations will be within previously disturbed land adjacent to the freeway or existing hardscape. The western pit location has not been determined (Figure 1, Site Photographs G and H).

Two of the six sewer projects have the potential to effect biological resources. These include:

- *Rehabilitate sewer treatment ponds (*S-2*).* This project involves the removal of the ponds' existing concrete walls and the installation of slope protection to reduce the potential risk of groundwater contamination.
- *Replace Clear Lake Avenue pump station and controls* (S-3). This project involves the relocation of the pump station to a new raised manhole station to a new location near the existing location. Trenching will be required for relocation.

2.0 METHODS

A field survey was conducted at the proposed project site on March 22, 2012 to assess biological resources and potential biological constraints. Prior to the field survey, a query of the California Natural Diversity Database (CNDDB, 2012) and Biogeographic Information & Observation System (BIOS) (2012) was conducted to identify occurrences of special-status plant and animal species in the vicinity of the proposed project site. During field surveys, the site was traversed on foot and vehicle to search for potentially jurisdictional waters, special-status species habitat, or other sensitive biological resources. See Figure 1 for Site Photographs.

3.0 REGULATORY

3.1 Wetlands and Waters of the U.S.

Federal Authority. The U.S. Army Corps of Engineers (USACE) is responsible for the issuance of permits for the placement of dredged or fill material into "waters of the United States" (WoUS) pursuant to Section 404 of the Clean Water Act (33 USC 1344). As defined by the USACE at 33 CFR 328.3(a)(3), WoUS 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 that 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 USACE and U.S. Environmental Protection Agency (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.*"

State and Local Authority. Pursuant to Section 1601 of the California Fish and Game Code, the California Department of Fish and Game (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.

Pursuant to Section 401 of the Clean Water Act, the USACE cannot issue a federal permit under Section 404 until the State of California first issues a water quality certification or waiver to ensure that a project will comply with state water quality standards. The authority to issue water quality certifications and waivers in the project area is vested with the North Coast Regional Water Quality Control Board (NCRWQCB).

3.2 Oak Protection.

State Authority. California Senate Concurrent Resolution No. 17 (1989) concerns 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, mitigation would include:

- 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

Local Authority**.** According to Program C 1.1-c of the City of Lakeport General Plan (2009), the Zoning Ordinance requires revegetation plans to include native species; the fencing of sensitive areas and construction activities; and a 3:1 replacement for any tree removed; and undergrowth revegetation. Heritage trees (trees that are at least 36 inches in diameter or any tree having significant historical or cultural importance to the community) shall be replaced at a 5:1 ratio.

3.3 Special-Status Species. For the purpose of this constraints analysis, special-status species were considered to be those plant and animal taxa listed or proposed for listing as threatened or endangered under the federal Endangered Species Act (FESA) and/or the California Endangered Species Act (CESA), state species of concern, and/or candidates for listing, and plant species listed as 1B by the California Native Plant Society (CNPS).

Federal Authority. The FESA, administered by the U.S. Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS), provides protection to species listed as Threatened (FT) or Endangered (FE), or proposed for listing as Threatened (PFT) or Endangered (PFE). The federal government also maintains lists of species that are neither formally listed nor proposed, but could be listed in the future. Federal candidate species (FC) include taxa for which substantial information on biological vulnerability and potential threats exists, and are maintained in order to support the appropriateness of proposing to list the taxa as an endangered or threatened species.

Section 9 of FESA prohibits the "take" of any member of a listed species. Take is defined as, *"...to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct*." Harass is *"...an intentional or negligent act or omission that creates the likelihood of injury to a listed species by annoying it to such an extent as to significantly disrupt normal behavior patterns that include, but are not limited to, breeding,*

feeding, or sheltering". Harm is defined as *"...significant habitat modification or degradation that results in death or injury to listed species by significantly impairing behavioral patterns such as breeding, feeding, or sheltering."*

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.

Under Section 7, the Services are authorized to issue Incidental Take Permits (ITP) for the take of a listed species that results from, but is not the purpose of, carrying out an otherwise lawful activity conducted by the federal agency. The ITP includes measures to minimize the take. Section 7 requires federal agencies to make a finding on all federal actions, including the approval by an agency of a public or private action, such as the issuance of a federal permit (e.g., Section 10/404 of the Clean Water Act), projects conducted on federal lands, or projects receiving federal funding, on the potential to jeopardize the continued existence of any listed or proposed species potentially impacted by the action. Depending on the potential impact on listed species, one of three consultation methods is employed. First, if the lead federal agency determines that no "take" will occur, it can voluntarily notify the Services with a "no effect determination" letter and the Services may or may not respond. Second, an "informal consultation" involves submission of a letter to Services by the lead federal agency indicating that a project is "not likely to adversely affect" a listed species. In turn, the Services issue a concurrence letter to the lead agency. Third, a "formal" consultation is conducted between the lead agency and the Services when a "take" of a listed species will occur. This results in the issuance of a Biological Opinion by the Services to the lead agency. The biological opinion identifies "take" limits and terms and conditions that must be adhered to by the lead agency to be in compliance with FESA. In some instances, the Services will issue jeopardy opinions if it is determined the continued existence of a species would be jeopardized. Such a finding will result in the denial of a project or action.

A Biological Assessment is usually required as part of the Section 7 consultation to provide sufficient information for the Services to fully determine the project's potential to affect threatened or endangered species. The Services must make one of three possible findings for each species potentially affected:

- **No effect**: The proposed action will not affect the listed species or critical habitat
- **Not likely to adversely affect**: Effects of construction on the listed species are expected to be discountable (extremely unlikely to occur), insignificant (minimal impact without take), or beneficial; and
- **Likely to adversely affect:** An adverse effect may occur as a direct or indirect result of the proposed action, and the effect is not discountable, insignificant, or beneficial

Section 10 consultation is conducted when there is no federal involvement in a project except compliance with FESA. If a project or action has no federal nexus and the "take" of a listed

species will occur, the non-federal project proponent must coordinate with and request technical assistance from the Services under Section 10 of the FESA. This requires the non-federal entity to prepare a Habitat Conservation Plan that must be approved by the Services in the form of the issuance of a Section 10(a) ITP. This permit authorizes the incidental "take" of a listed species if the take is incidental to, and not the purpose of, the carrying out of an otherwise lawful activity. The permit identifies mitigation and monitoring requirements that the permittee must adhere to and "take" limits. As with jeopardy opinions mentioned above, the Services will not issue Section 10(a) permits if they determine the continued existence of a species would be jeopardized by a particular project or action. Depending on take/potential take of listed species, the Services may alternately approve a low-effect HCP in the form of an internal Environmental Action Statement.

The USFWS also administers the federal Migratory Bird Treaty Act (MBTA) 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 the "Establishment of a federal prohibition, unless permitted by regulations, to pursue, hunt, take, capture, kill, attempt to take, capture or kill, possess, offer for sale, sell, offer to purchase, purchase, deliver for shipment, ship, cause to be shipped, deliver for transportation, transport, cause to be transported, carry or cause to be carried by any means whatever, receive for shipment, transportation or carriage, or export, at any time, or in any manner, any migratory bird, included in the terms of this Convention for the protection of migratory birds, or any part, nest or egg of any such bird" (16 USC 703). Implementing regulations at 50 CFR 10 list the migratory birds covered under the MBTA.

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.

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.

State Authority. 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 Candidate-Endangered species (SCE) and Candidate-Threatened species (SCT). These candidate species are afforded the same level of protection as listed species. CDFG also designates Species of Special Concern (CSC) that are 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 (CEQA) reports.

4.0 SETTING

4.1 Wetlands and Regulated Habitats. Because of the wide distribution of the projects, roadside ditches are present adjacent to many of the projects. Additionally, Forbes Creek flows adjacent to Projects S-4 and S-6. A tributary to Manning Creek flows underneath Project W-4 in two locations. Currently, the water pipeline in Project W-4 is proposed to be suspended from the existing bridge of the tributary of Manning Creek. A map of adjacent wetland and waterways was developed by Caltrans for the South Main Street and Soda Bay Road Widening and Bike Lanes Project (Caltrans, 2011). The road widening project occurs within the same portion of South Main and Soda Bay Road as Project W-4; therefore, the wetland map is attached as Figure 2 to depict these locations.

Vegetated roadside ditches and wetlands indicated above may be considered WoUS or wetlands regulated by the USACE under Section 404 of the Clean Water Act and the CDFG under Section 1600 of the California Fish and Game Code.

4.2 Vegetation. The project sites occur primarily within commercially developed areas within roadways. Elevation of the project site is approximately 1,350-1,400 feet, mean sea level (msl). The cover types observed includes the following:

Ruderal/Developed Lands. The dominant cover type within the project site is ruderal roadside vegetation along roadsides. This cover type is characterized by ruderal (weedy) vegetation. Vegetation within this cover type consists primarily of non-native annual grasses and non-native herbaceous species including yellow star-thistle (*Centaurea solstitialis*), soft chess (*Bromus hordeaceus*), ripgut brome (*Bromus diandrus*), Bermuda grass (*Cynodon dactylon*), Harding grass (*Phalaris aquatica*), vetch (*Vicia* sp.), and wild mustard (*Brassica* sp.). It may be necessary to remove one oak tree (*Quercus* sp.) to successfully complete Project S-3. Ruderal vegetation is intermingled with ornamental plantings along the roadsides of Project W-4; however, no trees or vegetation will be removed.

Ornamental. This cover type includes areas landscaped with turf grasses, groundcovers, shrubs, and trees. Common species include blue gum *(Eucalyptus globulus*), Monterey pine (*Pinus radiata*), Bishop pine (*Pinus muricata*), and native oaks (*Quercus* sp.). Ornamental planting are located throughout the city and along roadsides.

4.3 Wildlife. Wildlife species observed were typical of an urban setting. Wildlife density and diversity was low. For a list of wildlife species observed along the project site, see Table 1.

Ruderal/Developed Lands. Within commercial areas, 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. These areas favor inhabitation of those species that tolerate human presence, and are able to exploit human food resources, and use buildings or other human structures for cover and nesting. Typical species found in developed areas include a number of native species such as mourning dove (*Zenaida macroura*), western scrub-jay (*Aphelocoma californica*), northern mockingbird (*Mimus polyglottos*), American robin (*Turdus migratorius*), Brewer's blackbird, house finch (*Carpodacus mexicanus*), California ground squirrel (*Spermophilus beecheyi*), striped skunk (*Mephitis mephitis*), and Virginia opossum (*Didelphis virginiana*). Dominant introduced and pest species in the urban landscape include rock pigeon (*Columba livia*), European starling (*Sturnus vulgaris*), house sparrow (*Passer domesticus*), Norway rat (*Rattus norvegicus*), and house mice (*Mus musculus*).

Open Water. The waste water treatment ponds at Project S-2 provided open water habitat for wildlife. Land immediately adjacent to the ponds consists of aggregate rock. The ponds are enclosed by chain-link fencing; however, small gaps between the fencing and the ground were present. Wastewater treatment ponds can provide a place for migrating waterfowl and other birds a place to stop-over during long flights. Many waterfowl species were observed utilizing the ponds during a field survey on March 22, 2012, which included mallard (*Anas platyrhynchos*), ruddy duck (*Oxyura jamaicensis*), and wood duck (*Aix sponsa*). For additional species observed within the ponds see Table 1.

4.4 Special-Status Species. No special-status wildlife or plant species were observed during surveys. Habitat onsite consists of primarily developed land with some ruderal and ornamental vegetation in an urban setting, which does not provide quality habitat for special-status wildlife or plant species of the region (See Figure 2 for Site photos). Further, except for Project S-6 (sewer pond project), all sewer and water projects are to take place within existing roadways or developed areas. Therefore, it is unlikely that special-status species occur on the project site due to lack of potential habitat. For a map of Special Status Species in the vicinity of the project sites (Lakeport) see Figures 3 and 4.

4.4.1 Special-Status Plants. Rare plant surveys were not conducted for this report. A CNDDB query was conducted and other environmental reports were consulted (Caltrans, 2011) were reviewed. Serpentine soil is present adjacent to South Main Street where Project W-4 occurs. Atypical soil types, such as serpentine, can contain rare plants that are adapted to growing within only that specific soil composition. According to Caltrans (2011), three species were observed during two focused plant surveys for the project within the serpentine soil adjacent to South Main Street. These species include: bent-flowered fiddleneck (*Amsinkia lunaris*), dwarf soaproot (*Chlorogalum pomeridianum* var. *minus*),

and Colusa layia (*Layia sepentrionalis*). These three species, and additional species that could occur within the vicinity of the project site, are described below.

Bent-flowered fiddleneck (*Amsinckia lunaris*) is a CNPS List 1B species. This species is associated with cismontane woodland and valley and foothill grassland habitats. It is an annual herbaceous species that blooms from March to June, and occurs at an elevation of 0 to 1,700 feet, msl (CNPS, 2001). There are two occurrences of this species within the Lakeport quadrangle (CNDDB, 2012).

Colusa layia (*Layia septentrionalis*) is a CNPS List 1B species. This species is associated with chaparral, cismontane woodland, and valley and foothill grassland habitat often on sandy or serpentine soils. It is an annual herbaceous species that blooms from April to May, and occurs at an elevation of 325 to 3,600 feet, msl (CNPS, 2001). There are three occurrences of this species within the Lakeport quadrangle (CNDDB, 2012).

Dwarf soaproot (*Chlorogalum pomeridianum* var. *minus*) is a CNPS list 1B species. This species is associated with chaparral habitat on serpentine soil. It is a perennial herb that blooms May through August, and occurs at an elevation between 1,000 and 3,280 feet, msl (CNPS, 2001). Although this species was documented by Caltrans (2011), there are no occurrences of this species within the Lakeport quadrangle (CNDDB, 2012).

Grandular western flax (*Hesperolinon adenophyllum*) is a CNPS list 1B species. This species is associated with chaparral, cismontane woodland, and valley and foothill grassland habitat often on serpentine soils. It is an annual herbaceous species that blooms from May to August, and occurs at an elevation of 490 to 4,315 feet, msl (CNPS, 2001). There are three occurrences of this species within the Lakeport quadrangle (CNDDB, 2012).

Serpentine cryptantha (*Cryptantha dissita)* is a CNPS list 1B species. This species is associated with chaparral habitat on serpentine soil. It is an annual herbaceous species that blooms from April to June, and occurs at an elevation of 1,295 to 1,900 feet, msl (CNPS, 2001). There are four occurrences of this species within the Lakeport quadrangle, all over 20 years ago (CNDDB, 2012).

4.4.2 Special-Status Wildlife. The following is a description of the sensitive wildlife species that have the potential to exist within or adjacent to the project area. These species were identified by a CNDDB query, BIOS, Caltrans (2011), and surveys conducted for this project.

Clear Lake Hitch (*Lavinia exilicauda chi)*. The Clear Lake hitch is a California Species of Special Concern. This fish species occurs in Clear Lake and nearby water bodies such as Thurston Lake and Lampson Pond. Clear Lake hitch spend most of the year in the lake except for spring spawning, which occurs in Clear Lake, mainly Kelsey, Seigler Canyon, Adobe, Middle, Scotts, Cole and Manning creeks. Adult hitch are typically found in the limentic zone of Clear Lake where juveniles spend most of their time in shallow nearshore waters (Moyle et al. 1995). Spawning hitch migrate into low gradient streams where they spawn in the lower reaches, mostly in gravel-bottomed sections that dry up during the summer. Spawning typically begins in mid-February and continues through May or early June. Eggs are typically deposited at the stream edges

in newly deposited sediment where they hatch in five to ten days. Larval hitch spend a week or more in their larval stream before migrating downstream into Clear Lake (Moyle et al. 1995). However, a tributary of Manning Creek flows underneath Project W-4, and Forbes Creek is adjacent to Project S-4 and S-6. Potential Clear Lake hitch spawning could take place within these watercourses. The only occurrences of Clear Lake hitch indentified within CNDDB for the Lakeport quadrangle occurs in Clear Lake.

Northern Pacific pond turtle (*Actinemys marmorata marmorata*) (NPPT) is a California Species of Special Concern. The NPPT occurs primarily in foothills west of the Cascade-Sierra crest throughout California (Bury, 1986). The north Pacific subspecies ranges north of the San Francisco Bay area and intergrades with the Southern Pacific pond turtle in the southern portion of the Central Valley (Holland, 1993). NPPT are semi-aquatic, inhabiting streams, marshes, ponds, and irrigation ditches within woodland, grassland, and open forest communities, but require upland sites for nesting and over-wintering. This 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 (Todd, 1993; Bury, 1993). Preferred depth in pond habitat is between three to five feet with mud substrate. Dense inshore vegetation is especially critical for hatchlings where they spend the first few years of life. Turtles from riverine systems over-winter in upland areas, while pond dwellers may remain as permanent residents with only nesting forays performed annually by gravid females (Rathbun et al., 1992). There are no reported occurrences of this species within the Lakeport quadrangle. However, according to Pradomeza (2012), turtles have been observed within the sewer ponds in Project S-2. These turtles were not identified to species. No turtles were observed during field surveys.

Tricolored blackbird (*Agelaius tricolor*) (TCBB) is a California Species of Special Concern and a USFWS Bird of Conservation Concern. The TCBB is a nomadic resident of the Sacramento and San Joaquin valleys and lower foothills of the Sierra Nevada and Coast ranges. This species typically nests near freshwater in dense cattails and bulrush, but can also nest in thickets of willow, blackberry, wild rose, and tall herbs (Zeiner et al., 1990a). Estimates for colony size can range from 15 to 47,000 birds. Flooded lands, pond margins, grass fields, and agricultural fields constitute typical foraging habitat. There are two recorded occurrences of TCBB in the Lakeport quadrangle; however, the occurrences were from 1936 and 1972 (CNDDB, 2012). A large patch of Himalaya blackberry was observed near W-4 on Parallel Drive and Lind Road, which could provide habitat for TCBB.

Loggerhead shrike (*Lanius ludovicianus*) is a California Species of Special Concern and a USFWS Bird of Conservation Concern. The loggerhead shrike inhabits semi-open country throughout most of the lower areas of the state. It occurs along woodland edges and in grassland with scattered trees, shrubs, or other hunting perches (Zeiner et al., 1990a). This species was not observed during field surveys; however, the project site could provide breeding habitat in adjacent trees.

Nesting Raptors**.** Several species of raptors have the potential to nest within trees adjacent to Projects W-4, S-2, S-3, S-4, S-5, and S-6. Species such as Cooper's hawk (*Accipiter cooperii*), osprey (*Pandion haliaetus*), golden eagle (*Aquila chrysaetos*), and sharp-shinned hawk (*Accipiter striatus*) are CDFG watchlist species. Additionally,

the white-tailed kite (*Elanus leucurus*) and golden eagle are California fully protected species.

5.0 SUMMARY AND RECOMMENDATIONS

A reconnaissance-level survey for sensitive biological resources within the proposed project site was conducted and vegetative cover types observed were recorded. Potential wetlands and WoUS protected under Section 404 of the Clean Water Act and 1600 of the California Fish and Game (CF&G) Code were observed, but were not delineated. There are trees, including oaks, within and adjacent to the proposed project areas, but it is unknown at this time, if any oak removal will be required for the projects. In addition, trees within or adjacent to Projects W-4, S-2, S-3, S-4, S-5, and S-6 could provide potential nesting habitat for raptors and other nesting birds protected by the Migratory Bird Treaty Act (MBTA) and the CDFG Codes.

5.1 Waters of the U.S. and or Wetlands. According to available project information, there will be no impacts to roadside ditches, wetlands, or watercourses. If impacts to a roadside ditches, Forbes Creek, or tributaries to Manning Creek are anticipated, a preliminary jurisdictional delineation is recommended to determine whether the area is subject to jurisdiction of the USACE under Section 404 of the Clean Water Act. If project impact areas are revised, a wetland delineation may be necessary for other portions of the project site as well, such as the western pit jack and bore pit location for Project S-6. Additionally, Standard best management practices will be followed to prevent sediment from entering roadside ditches and adjacent watercourses.

5.2 Native Tree Removal. The removal of one tree may be necessary to complete Project S-3. If any native tree will need removal, the Lakeport General Plan requirement of a 3:1 replacement for any native tree removed will be followed or a 5:1 for the removal of heritage trees.

5.3 Special-Status Species

Rare Plants. Because of the presence of serpentine soils along Project W-4, rare plant surveys should be conducted prior to vegetation removal along roadsides or staging areas. If rare plant species are observed, construction shall halt and CDFG will be contacted for guidance.

North Pacific Pond Turtle Relocation. No more than one week prior to the start of construction, a survey of the sewer ponds within Project S-2 will be conducted to identify presence of turtles. If NPPTs are observed, an onsite biological monitor will be present when the ponds are dewatered. The onsite biological monitor will relocate the turtles to the nearest accessible perennial water body based on coordination and approval of CDFG.

Birds Protected by the MBTA and CDFG. Tree removal and/or ground-clearing activities could impact listed bird species and bird species protected under the MBTA and CDFG code. 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.

Trees located within and adjacent to the project site provide potential nesting habitat for birds protected by MBTA. Removal of trees and/or construction activities conducted in the vicinity of potential nest trees in the adjacent riparian area, or ground-clearing activities could potentially impact tree and ground-nesting bird species that are protected under the MBTA and CD&G 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".

The following measures are recommended to minimize or avoid project impacts to species protected by the MBTA:

1. Schedule tree removal and ground-clearing activities prior to the initiation of nesting activity (March 1) or after fledging (August 31).

2. If this is infeasible, conduct pre-construction surveys between March 1 and August 31 in potential nesting habitat to identify nest sites. If an active raptor nest is observed within 350 feet of the project site, establish a 350-foot buffer around the nest tree, and consult CDFG for recommendations. Prohibit construction activities in the buffer zone until the young have fledged. If any other birds protected by MBTA are found nesting within the project site or immediately adjacent to, consult USFWS for protection measures. Alternatively, USFWS could be contacted for recommendations to minimize potential impacts. Construction activities or disturbance within the buffer zone will be prohibited until the young have fledged or USFWS has made alternate recommendations.

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Pradomeza, Carlos. 2012. Sanitation Department Supervisor-City of Lakeport. Conversation took place on March 22, 2012 regarding the presence of turtles at the Sewer ponds in Project S-2. Carlos stated turtles have been present at the ponds but is not aware of the exact species.

TABLES

TABLE 1
WILDLIFE SPECIES OBSERVED AT CITY OF LAKEPORT WATER AND WASTEWATER PROJECTS

FAMILY Common Name	Scientific Name	Protected Status[1]	All Projects	Site S-2 Only
AMPHIBIANS				
RANIDAE (True Frogs)				
Bullfrog	*Lithobates catesbeianus*		X	
REPTILES				
IGUANIDAE (Iguanids)				
Western fence lizard	*Sceloporus occidentalis*		X	X
BIRDS				
ARDEIDAE (Herons and Bitterns)				
Great blue heron	*Ardea herodias*	M	X	
Great egret	*Ardea alba*	M		
ANATIDAE (Swans, Geese, and Ducks)				
American widgeon	*Anas americana*	M		X
Scaup	*Aythya* Sp	M		X
Green-winged Teal	*Anas crecca*	M		X
Bufflehead	*Bucephala albeola*	M		X
Wood Duck	*Aix sponsa*	M		
Mallard	*Anas platyrhynchos*	M		X
Ruddy duck	*Oxyura jamaicensis*	M		X
CATHARTIDAE (American Vultures)				
Turkey vulture	*Cathartes aura*	M	X	
ACCIPITRIDAE (Hawks and Harriers)				
Osprey	*Pandion haliaetus*	M	X	
Red-shouldered hawk	*Buteo lineatus*	M	X	
Red-tailed hawk	*Buteo jamaicensis*	M	X	
ODONTOPHORIDAE (Quails)				
California quail	*Cillipepla californica*		X	
CHARADRIIDAE (Plovers and Relatives)				
Killdeer	*Charadrius vociferus*	M	X	X
COLUMBIDAE (Pigeons and Doves)				
Rock Pigeon	*Columba livia*		X	
Mourning dove	*Zenaida macroura*	M	X	
LARIDAE (Gulls and Terns)				
Gull Species	*Larus* sp	M	X	X
TROCHILIDAE (Hummingbirds)				
Anna's hummingbird	*Calypte anna*	M	X	
PICIDAE (Woodpeckers and Relatives)				
Northern flicker	*Colaptes auratus*	M	X	
TYRANNIDAE (Tyrant Flycatchers)				
Black phoebe	*Sayornis nigricans*	M	X	X
CORVIDAE (Jays, Magpies, and Crows)				
American crow	*Corvus brachyrhynchos*	M	X	X
California scrub-jay	*Aphelocoma californica*	M	X	
PARIDAE (Titmice)				
Oak titmouse	*Baeolophus inornatus*	M	X	
AEGITHALIDAE (Bushtit)				
Bushtit	*Psaltriparus minimus*	M	X	
TURDIDAE (Thrushes)				
American robin	*Turdus migratorius*	M	X	
MIMIDAE (Mockingbirds and Thrashers)				
Northern mockingbird	*Mimus polyglottos*	M	X	

TABLE 1
WILDLIFE SPECIES OBSERVED AT CITY OF LAKEPORT WATER AND WASTEWATER PROJECTS

STURNIDAE (Starlings)				
European starling	*Sturnus vulgaris*		X	X
EMBERIZIDAE (Sparrows and Relatives)				
Spotted towhee	*Pipilo maculatus*	M	X	
White-crowned sparrow	*Zonotrichia leucophrys*	M	X	
ICTERIDAE (Icterids)				
Red-winged blackbird	*Agelaius phoeniceus*	M	X	X
Brewer's blackbird	*Euphagus cyanocephalus*	M	X	X
FRINGILLIDAE (Finches)				
House finch	*Carpodacus mexicanus*	M	X	
Lesser goldfinch	*Carduelis psaltria*	M	X	
PASSERIDAE (Old World Sparrows)				
House Sparrow	*Passer domesticus*		X	

Status[1]
M = Protected under the federal Migratory Bird Treaty Act (MBTA)

FIGURES

Photograph A. View of Project W-4 tie-in location. Crew just finished installing water main to tie-in location. Note freshly laid asphalt.	
Photograph B. View of intersection of Highway 29 and Parallel Drive. Jack and Bore location is proposed for the disturbed area in center of photo (Project W-4).	

Photograph C. View of tributary of Manning Creek that crosses underneath South Main Street (Project W-4).	
Photograph D. View of the roadside ditch along South Main Street (Project W-4).	

Photograph E. View of the manhole that needs replacing (Project S-4).	
Photograph F. View of the Forbes Creek near Project S-4 activities.	

Photograph G. View of parking lot, site of eastern bore location for Project S-6.	
Photograph H. View of the Forbes Creek near Project S-6 activities.	

Photograph I. View of sewer ponds (Project S-2).	
Photograph J. View existing below ground sewer pump station that will be relocated (Project S-3).	

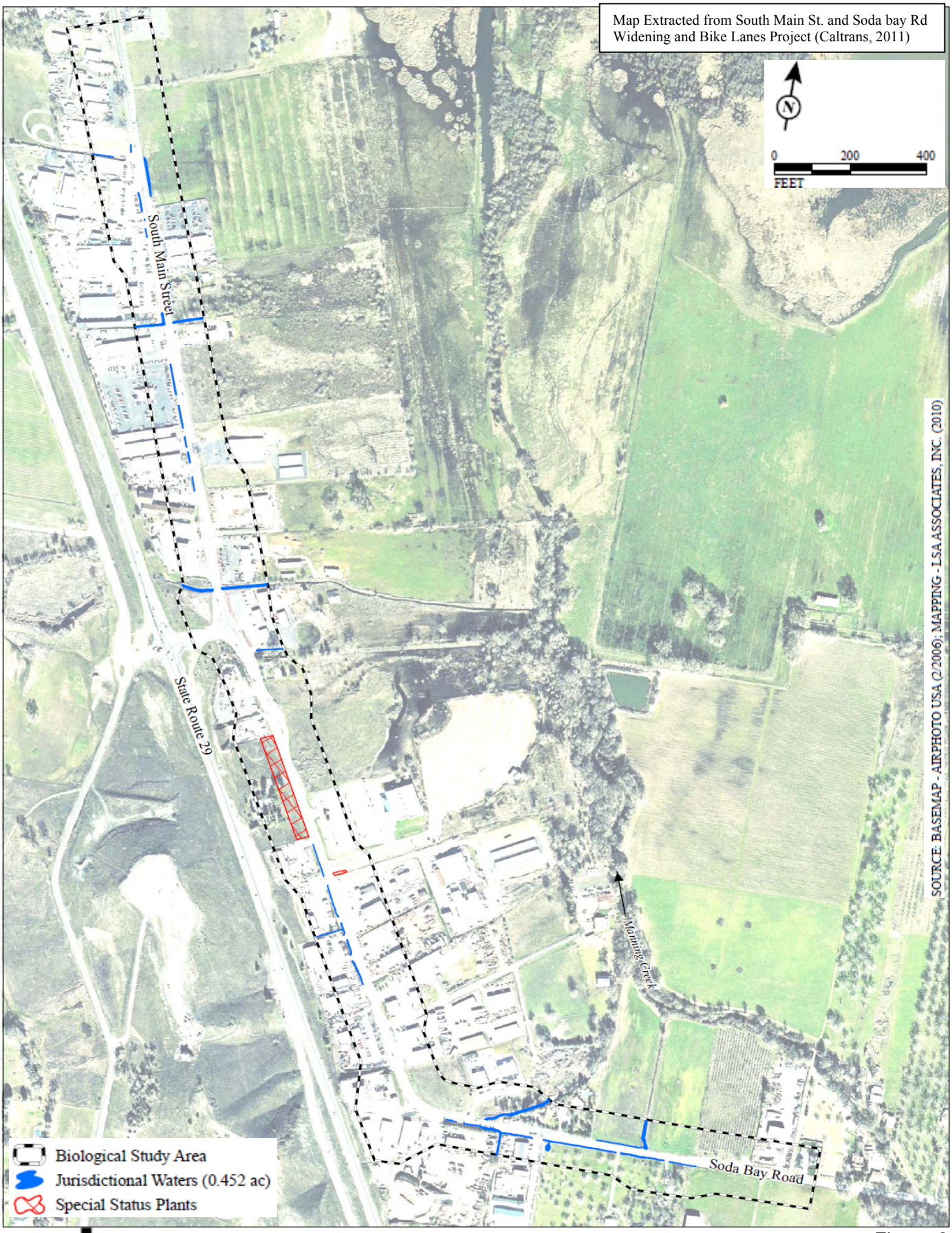

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Figure 2
Wetland and Waters Map
City of Lakeport Water and Wastewater Projects

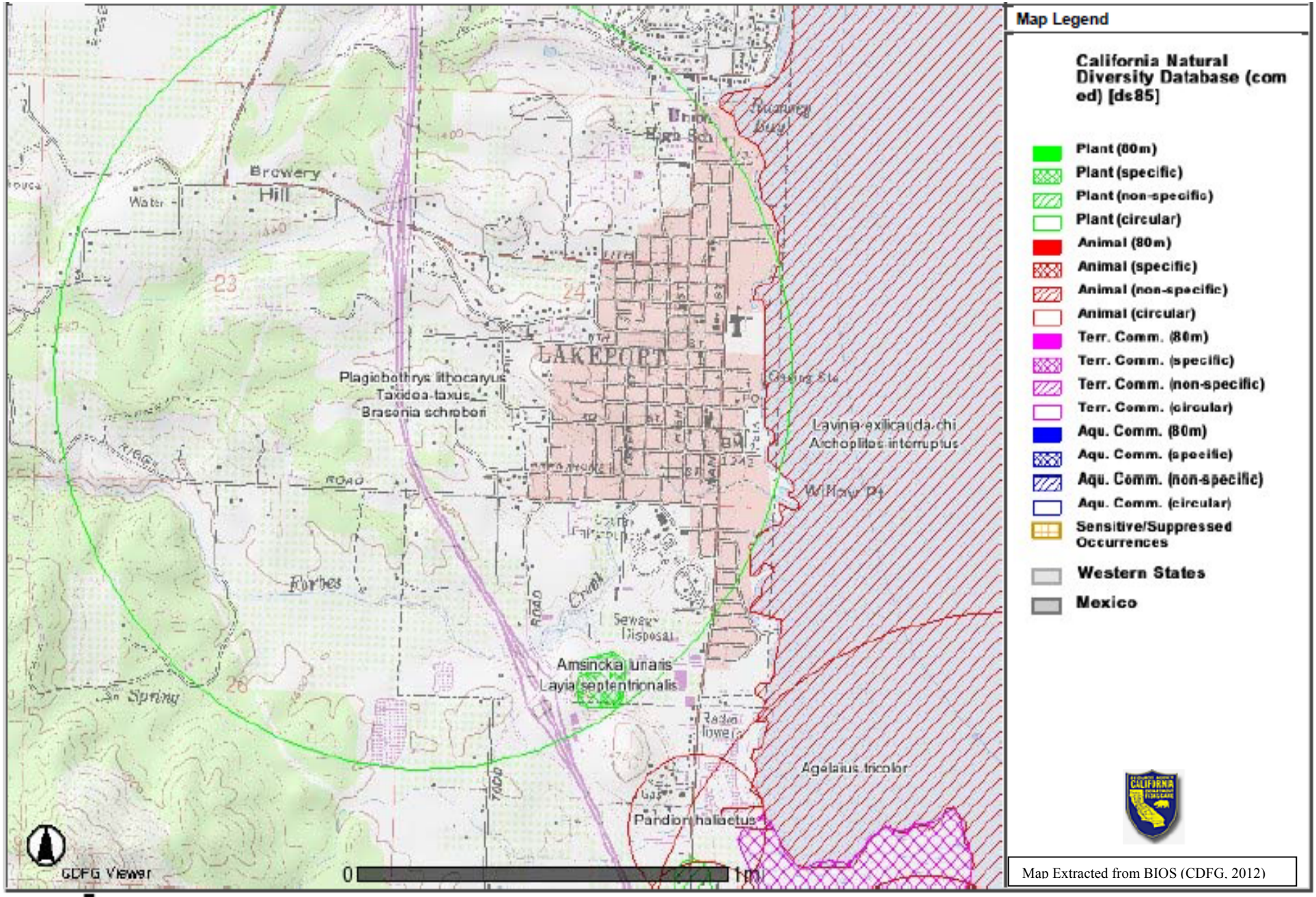

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Figure 3
Special-Status Species Map-Northern Region
City of Lakeport Water and Wastewater Projects

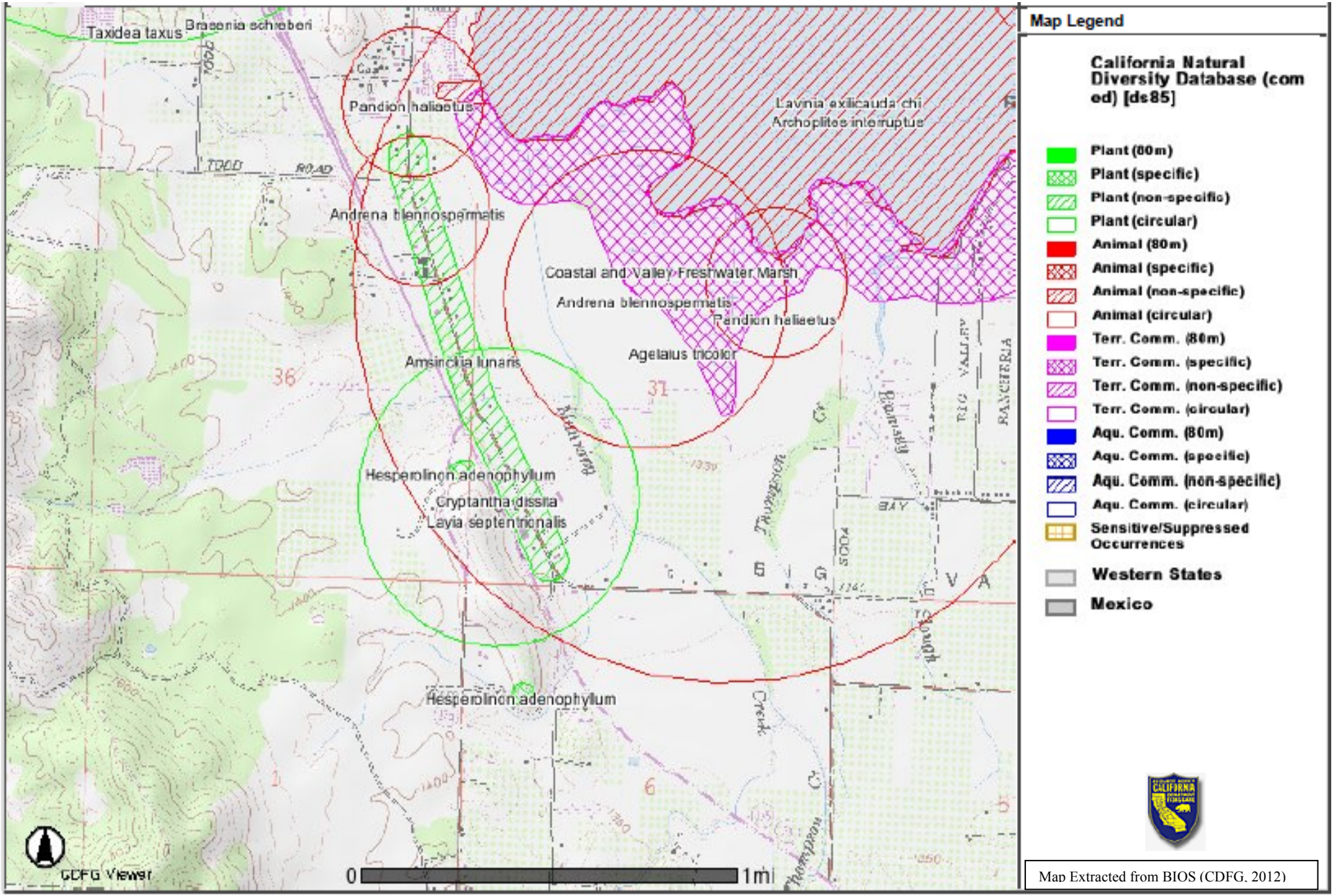

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Figure 4
Special-Status Species Map-Southern Region
City of Lakeport Water and Wastewater Projects

Air Quality Technical Appendix

Contents

Emissions Summary

The emission summary table shown below shows pounds per day (ppd) and tons per year (tpy) emissions for each project component: light-duty on-road vehicles, heavy-duty on-road vehicles, and off-road construction equipment. The emission estimates for each of these three emission categories are based on the equipment listed in the Water System Improvements Construction Equipment table and in the Wastewater System Improvements Construction Equipment table, found in the next section.

Table 1 - Air Emissions Summary

		ROG	NOx	CO	SO2	PM10	PM2.5	CO2
W-2 LITE-DUTY	ppd	0.029	0.078	0.721	0.000	0.013	0.009	40.651
W-2 HEAVY-DUTY	ppd	0.000	0.000	0.000	0.000	0.000	0.000	0.000
W-2 Off Road	ppd	0.000	0.000	0.000	0.000	0.000	0.000	0.000
W-2 Total	ppd	0.029	0.078	0.721	0.000	0.013	0.009	40.651
W-2 LITE-DUTY	tpy	0.001	0.004	0.032	0.000	0.003	0.000	1.829
W-2 HEAVY-DUTY	tpy	0.000	0.000	0.000	0.000	0.000	0.000	0.000
W-2 Off Road	tpy	0.000	0.000	0.000	0.000	0.000	0.000	0.000
W-2 Total	tpy	0.001	0.004	0.032	0.000	0.003	0.000	1.829
W-3 LITE-DUTY	ppd	0.029	0.078	0.721	0.000	0.013	0.009	40.651
W-3 HEAVY-DUTY	ppd	0.000	0.000	0.000	0.000	0.000	0.000	0.000
W-3 Off Road	ppd	0.000	0.000	0.000	0.000	0.000	0.000	0.000
W-3 Total	ppd	0.029	0.078	0.721	0.000	0.013	0.009	40.651
W-3 LITE-DUTY	tpy	0.000	0.001	0.011	0.000	0.001	0.000	0.610
W-3 HEAVY-DUTY	tpy	0.000	0.000	0.000	0.000	0.000	0.000	0.000
W-3 Off Road	tpy	0.000	0.000	0.000	0.000	0.000	0.000	0.000
W-3 Total	tpy	0.000	0.001	0.011	0.000	0.001	0.000	0.610
W-4 LITE-DUTY	ppd	0.058	0.156	1.442	0.001	0.026	0.018	81.301
W-4 HEAVY-DUTY	ppd	0.328	7.275	1.522	0.027	0.235	0.016	765.581
W-4 Off Road	ppd	2.306	17.447	11.348	0.002	1.081	0.989	2056.886
W-4 Total	ppd	2.692	24.879	14.312	0.030	1.341	1.023	2903.769

		ROG	NOx	CO	SO2	PM10	PM2.5	CO2
W-4 LITE-DUTY	tpy	0.001	0.002	0.022	0.000	0.002	0.000	1.260
W-4 HEAVY-DUTY	tpy	0.005	0.113	0.024	0.000	0.004	0.000	11.867
W-4 Off Road	tpy	0.036	0.270	0.176	0.000	0.017	0.015	31.882
W-4 Total	tpy	0.042	0.386	0.222	0.000	0.022	0.016	45.008
S-1 LITE-DUTY	ppd	0.029	0.078	0.721	0.000	0.013	0.009	40.651
S-1 HEAVY-DUTY	ppd	0.000	0.000	0.000	0.000	0.000	0.000	0.000
S-1 Off Road	ppd	0.000	0.000	0.000	0.000	0.000	0.000	0.000
S-1 Total	ppd	0.029	0.078	0.721	0.000	0.013	0.009	40.651
S-1 LITE-DUTY	tpy	0.000	0.001	0.011	0.000	0.001	0.000	0.610
S-1 HEAVY-DUTY	tpy	0.000	0.000	0.000	0.000	0.000	0.000	0.000
S-1 Off Road	tpy	0.000	0.000	0.000	0.000	0.000	0.000	0.000
S-1 Total	tpy	0.000	0.001	0.011	0.000	0.001	0.000	0.610
S-2 LITE-DUTY	ppd	0.058	0.156	1.442	0.001	0.026	0.018	81.301
S-2 HEAVY-DUTY	ppd	2.294	50.928	10.656	0.190	1.644	0.111	5359.069
S-2 Off Road	ppd	1.680	11.667	8.768	0.001	0.862	0.790	1348.478
S-2 Total	ppd	4.033	62.752	20.865	0.192	2.532	0.919	6788.848
S-2 LITE-DUTY	tpy	0.001	0.003	0.029	0.000	0.002	0.000	1.626
S-2 HEAVY-DUTY	tpy	0.023	0.509	0.107	0.002	0.016	0.001	53.591
S-2 Off Road	tpy	0.025	0.174	0.128	0.000	0.013	0.012	19.764
S-2 Total	tpy	0.049	0.686	0.263	0.002	0.031	0.013	74.981
S-3 LITE-DUTY	ppd	0.029	0.078	0.721	0.000	0.013	0.009	40.651
S-3 HEAVY-DUTY	ppd	0.041	0.909	0.190	0.003	0.029	0.002	95.698
S-3 Off Road	ppd	1.023	5.015	5.128	0.001	5.166	1.336	662.251
S-3 Total	ppd	1.094	6.003	6.039	0.005	5.208	1.347	798.599
S-3 LITE-DUTY	tpy	0.000	0.001	0.007	0.000	0.001	0.000	0.407
S-3 HEAVY-DUTY	tpy	0.000	0.001	0.000	0.000	0.000	0.000	0.096
S-3 Off Road	tpy	0.0028	0.0147	0.0139	0.0000	0.0140	0.0038	1.8140
S-3 Total	tpy	0.003	0.016	0.021	0.000	0.015	0.004	2.316

		ROG	NOx	CO	SO2	PM10	PM2.5	CO2
S-4 LITE-DUTY	ppd	0.058	0.156	1.442	0.001	0.026	0.018	81.301
S-4 HEAVY-DUTY	ppd	0.205	4.547	0.951	0.017	0.147	0.010	478.488
S-4 Off Road	ppd	0.828	5.117	4.997	0.001	1.970	0.670	708.193
S-4 Total	ppd	1.091	9.821	7.390	0.019	2.142	0.698	1267.983
S-4 LITE-DUTY	tpy	0.002	0.005	0.050	0.000	0.004	0.001	2.846
S-4 HEAVY-DUTY	tpy	0.007	0.159	0.033	0.001	0.005	0.000	16.747
S-4 Off Road	tpy	0.029	0.179	0.175	0.000	0.069	0.023	24.787
S-4 Total	tpy	0.038	0.344	0.259	0.001	0.078	0.024	44.379
S-5 LITE-DUTY	ppd	0.058	0.156	1.442	0.001	0.026	0.018	81.301
S-5 HEAVY-DUTY	ppd	0.205	4.547	0.951	0.017	0.147	0.010	478.488
S-5 Off Road	ppd	0.591	3.648	3.542	0.001	1.910	0.617	482.482
S-5 Total	ppd	0.855	8.352	5.935	0.019	2.083	0.645	1042.272
S-5 LITE-DUTY	tpy	0.000	0.001	0.011	0.000	0.001	0.000	0.610
S-5 HEAVY-DUTY	tpy	0.002	0.034	0.007	0.000	0.001	0.000	3.589
S-5 Off Road	tpy	0.004	0.027	0.027	0.000	0.014	0.005	3.619
S-5 Total	tpy	0.006	0.063	0.045	0.000	0.016	0.005	7.817
S-6 LITE-DUTY	ppd	0.029	0.078	0.721	0.000	0.013	0.009	40.651
S-6 HEAVY-DUTY	ppd	0.205	4.547	0.951	0.017	0.147	0.010	478.488
S-6 Off Road	ppd	0.594	3.808	3.037	0.000	0.327	0.299	437.417
S-6 Total	ppd	0.828	8.433	4.709	0.018	0.486	0.318	956.556
S-6 LITE-DUTY	tpy	0.000	0.001	0.007	0.000	0.001	0.000	0.407
S-6 HEAVY-DUTY	tpy	0.001	0.020	0.004	0.000	0.001	0.000	2.153
S-6 Off Road	tpy	0.006	0.037	0.029	0.000	0.003	0.003	4.152
S-6 Total	tpy	0.007	0.058	0.040	0.000	0.004	0.003	6.712

		ROG	NOx	CO	SO2	PM10	PM2.5	CO2
Total Type 1	ppd	0.1	0.2	2.2	0.0	0.0	0.0	122
Total Type 1	tpy	0.0	0.0	0.1	0.0	0.0	0.0	3
Total Type 2	ppd	7.9	95.4	44.9	0.3	12.5	3.9	10,854
Total Type 2	tpy	0.1	1.2	0.6	0.0	0.1	0.0	136
Total Type 3	ppd	2.7	24.9	14.3	0.0	1.3	1.0	2,904
Total Type 3	tpy	0.0	0.4	0.2	0.0	0.0	0.0	45
Total Types 1, 2, & 3	ppd	10.7	120.5	61.4	0.3	13.8	5.0	13,880
Total Types 1, 2, & 3	tpy	0.1	1.6	0.9	0.0	0.2	0.1	184

	CO2 (metric tons/year)
Total Type 1	2.8
Total Type 2	123.6
Total Type 3	40.8
Total Types 1, 2, & 3	167.2

Water System Improvements Construction Equipment

Table 2. Water System Improvements Construction Equipment

City of Lakeport
Water System Improvements Project
Construction Equipment Activities Summary

Equipment	Horsepower	Task							
		W-1: Land acquisition for City wells		W-2: Replacement of water meters		W-3: Replacement of SCADA system		W-4: Water main loop in South Lakeport	
		Duration (Days)	Hours per Day	Duration (Days)	Hours per Day	Duration (Days)	Hours per Day	Duration (Days)	Hours per Day
140G Motor Grader	180								
PC400 LC-6 Excavator	306								
PC200 Excavator	143							31	8
966E Loader	216								
Komatsu WA-320-6 Loader	165								
570MXT Loader	75							31	8
D6H Dozer w/ winch	165								
433 Vibratory Compactor	107								
Bobcat Loader	46							31	8
RT630 Crane	210								
Nat. 47' (10T) Crane Truck	170								
Water Truck - 2000 gal.	210							31	8

Equipment	Horsepower	Task							
		W-1: Land acquisition for City wells		W-2: Replacement of water meters		W-3: Replacement of SCADA system		W-4: Water main loop in South Lakeport	
		Duration (Days)	Hours per Day	Duration (Days)	Hours per Day	Duration (Days)	Hours per Day	Duration (Days)	Hours per Day
185 IR Compressor	55								
375 Compressor	110								
420 Backhoe	80							31	8
4x4 Pick-up 3/4 Ton	200			90	8	30	8	31	16
Compactors (Walk behind)	10							31	8
2" Submersible Pump	5							31	8
20 CY Truck & Transfer [1]	210							31	16
10 CY Concrete Trucks	185								

Notes:
1. Two truck & transfers running per day.

Wastewater System Improvements Construction Equipment

Table 3. Wastewater System Improvements Construction Equipment

City of Lakeport
Wastewater System Improvements Project
Construction Equipment Activities Summary

Equipment	Horsepower	Task											
		S-1: SCADA Replacement		S-2: Repair Treatment Ponds & Haul Sludge		S-3: Replace Clear Lake Avenue Pump Station		S-4: I&I Improvements		S-5: Replace Main Street Sewer		S-6: Hwy 29 Directional Drill 30-Inch Casing x 16-Inch Force Main	
		Duration (Days)	Hours per Day	Duration (Days)	Hours per Day	Duration (Days)	Hours per Day	Duration (Days)	Hours per Day	Duration (Days)	Hours per Day	Duration (Days)	Hours per Day
140G Motor Grader	180												
PC400 LC-6 Excavator	306												
PC200 Excavator	143			30	8								
966E Loader	216												
Komatsu WA-320-6 Loader	165												
570MXT Loader	75			20	4								

Equipment	Horsepower	Task											
		S-1: SCADA Replacement		S-2: Repair Treatment Ponds & Haul Sludge		S-3: Replace Clear Lake Avenue Pump Station		S-4: I&I Improvements		S-5: Replace Main Street Sewer		S-6: Hwy 29 Directional Drill 30-Inch Casing x 16-Inch Force Main	
		Duration (Days)	Hours per Day	Duration (Days)	Hours per Day	Duration (Days)	Hours per Day	Duration (Days)	Hours per Day	Duration (Days)	Hours per Day	Duration (Days)	Hours per Day
D6H Dozer w/ winch	165												
433 Vibratory Compactor	107					2	8	70	4				
Bobcat Loader	46					4	8	70	8	15	8	20	2
RT630 Crane	210												
Nat. 47' (10T) Crane Truck	170												
Water Truck - 2000 gal.	210					2	8	70	8	15	8	5	2
185 IR Compressor	55												
375 Compressor	110			20	8								
420 Backhoe	80					10	4	70	8	15	8	20	2
4x4 Pick-up 3/4 Ton	200	30	8	40	16	20	8	70	16	15	16	20	8

Equipment	Horsepower	Task											
		S-1: SCADA Replacement		S-2: Repair Treatment Ponds & Haul Sludge		S-3: Replace Clear Lake Avenue Pump Station		S-4: I&I Improvements		S-5: Replace Main Street Sewer		S-6: Hwy 29 Directional Drill 30-Inch Casing x 16-Inch Force Main	
		Duration (Days)	Hours per Day	Duration (Days)	Hours per Day	Duration (Days)	Hours per Day	Duration (Days)	Hours per Day	Duration (Days)	Hours per Day	Duration (Days)	Hours per Day
Compactors (Walk behind)	10							70	4	15	8	8	8
2" Submersible Pump	5					3	4	70	4	15	2		
20 CY Truck & Transfer [1]	210			20	50			70	8	15	8	10	8
Sludge Dewatering Equipment 100 Kw Generator[2]	65			40	8								
10 CY Concrete Trucks	185			20	32								

Notes:

1. Two pickups, five truck & transfers, & four concrete trucks running per day.

2. Sludge haul takes 2.5 hours to travel 125 miles one way to disposal site near Sacramento.

On-Road Light Duty Emissions

On-road light duty emissions are based on EMFAC2011 emission factors for light duty vehicles. Daily emissions are based on the average miles per day assumed for each component, while tons per year are based on the days/year that each component would be under construction.

EMFAC 2011 Emission Factors for Light Duty Vehicles

EMFAC 2011

2012 Estimated Annual Emission Rates

EMFAC 2011 Vehicle Categories

Lake COUNTY

Lake County AIR BASIN

Lake County APCD

Area	CalYr	Season	Veh	Fuel	ROG_RUNEX (gms/mile)	CO_RUNEX (gms/mile)	NOX_RUNEX (gms/mile)	CO2_RUNEX(Pavley I+LCFS) (gms/mile)	PM10_RUNEX (gms/mile)	PM10_PMTW (gms/mile)	PM10_PMBW (gms/mile)	PM2_5_RUNEX (gms/mile)	PM2_5_PMTW (gms/mile)	PM2_5_PMBW (gms/mile)	SOX_RUNEX (gms/mile)
Lake (LC)	2012	Annual	LDT1	GAS	0.26531	6.544442	0.709962	369.1081	0.006455	0.008	0.036749815	0.005826	0.002	0.01575	0.00405

Light Duty Emission Estimates

Miles/day	days			ROG	NOx	CO	SOx	PM10	PM2.5	CO2
50	90	W-2	pounds/day	0.029	0.078	0.721	0.000	0.013	0.009	40.651
			tons/year	0.001	0.004	0.032	0.000	0.003	0.000	1.829
50	30	W-3	pounds/day	0.029	0.078	0.721	0.000	0.013	0.009	40.651
			tons/year	0.000	0.001	0.011	0.000	0.001	0.000	0.610
100	31	W-4	pounds/day	0.058	0.156	1.442	0.001	0.026	0.018	81.301
			tons/year	0.001	0.002	0.022	0.000	0.002	0.000	1.260
	30	S-1	pounds/day	0.029	0.078	0.721	0.000	0.013	0.009	40.651
			tons/year	0.000	0.001	0.011	0.000	0.001	0.000	0.610
100	40	S-2	pounds/day	0.058	0.156	1.442	0.001	0.026	0.018	81.301
			tons/year	0.001	0.003	0.029	0.000	0.002	0.000	1.626
50	20	S-3	pounds/day	0.029	0.078	0.721	0.000	0.013	0.009	40.651
			tons/year	0.000	0.001	0.007	0.000	0.001	0.000	0.407
100	70	S-4	pounds/day	0.058	0.156	1.442	0.001	0.026	0.018	81.301
			tons/year	0.002	0.005	0.050	0.000	0.004	0.001	2.846
100	15	S-5	pounds/day	0.058	0.156	1.442	0.001	0.026	0.018	81.301
			tons/year	0.000	0.001	0.011	0.000	0.001	0.000	0.610
50	20	S-6	pounds/day	0.029	0.078	0.721	0.000	0.013	0.009	40.651
			tons/year	0.000	0.001	0.007	0.000	0.001	0.000	0.407

On-Road Heavy Duty Emissions

On-road heavy duty emissions are based on EMFAC2011 emission factors for heavy duty vehicles. Daily emissions are based on the average miles per day assumed for each truck type, while tons per year are based on the days/year that each component would be under construction.

EMFAC 2011 Emission Factors for Heavy Duty Vehicles

EMFAC 2011
2012 Estimated Annual Emission Rates

EMFAC 2011 Vehicle Categories

Lake COUNTY

Lake County AIR BASIN

Lake County APCD

Area	Cal Yr	Season	Veh	Fuel	ROG_RUNEX (gms/mile)	CO_RUNEX (gms/mile)	NOX_RUNEX (gms/mile)	CO2_RUNEX(Pavley I+LCFS) (gms/mile)	PM10_RUNEX (gms/mile)	PM10_PMTW (gms/mile)	PM10_PMBW (gms/mile)	PM2_5_RUNEX (gms/mile)	PM2_5_PMTW (gms/mile)	PM2_5_PMBW (gms/mile)	SOX_RUNEX (gms/mile)
Lake (LC)	2012	Annual	T7 single construction	DSL	0.74	3.46	16.52	1737.87	0.53	0.04	0.06	0.49	0.01	0.03	0.02

Heavy Duty Diesel Emission Estimates

	miles/day	days			ROG	NOx	CO	SOx	PM10	PM2.5	CO2
20 cy truck & transfer	200	31	W-4	pounds/day	0.328	7.275	1.522	0.027	0.235	0.016	765.581
				tons/year	0.005	0.113	0.024	0.000	0.004	0.000	11.867
20 cy truck & transfer	1000	20	S-2	pounds/day	1.639	36.377	7.611	0.136	1.175	0.079	3827.906
				tons/year	0.016	0.364	0.076	0.001	0.012	0.001	38.279
10 cy concrete truck	400	20	S-2	pounds/day	0.655	14.551	3.045	0.054	0.470	0.032	1531.162
				tons/year	0.007	0.146	0.030	0.001	0.005	0.000	15.312
Totals			S-2	ppd	2.294	50.928	10.656	0.190	1.644	0.111	5359.069
				tpy	0.023	0.509	0.107	0.002	0.016	0.001	53.591
20 cy truck & transfer	0	0	S-3	pounds/day	0.000	0.000	0.000	0.000	0.000	0.000	0.000
				tons/year	0.000	0.000	0.000	0.000	0.000	0.000	0.000
water truck	25	2	S-3	pounds/day	0.041	0.909	0.190	0.003	0.029	0.002	95.698
				tons/year	0.000	0.001	0.000	0.000	0.000	0.000	0.096
				ppd	0.041	0.909	0.190	0.003	0.029	0.002	95.698
Totals			S-3	tpy	0.000	0.001	0.000	0.000	0.000	0.000	0.096
20 cy truck & transfer	100	70	S-4	pounds/day	0.164	3.638	0.761	0.014	0.117	0.008	382.791
				tons/year	0.006	0.127	0.027	0.000	0.004	0.000	13.398
water truck	25	70	S-4	pounds/day	0.041	0.909	0.190	0.003	0.029	0.002	95.698
				tons/year	0.001	0.032	0.007	0.000	0.001	0.000	3.349
Totals			S-4	ppd	0.205	4.547	0.951	0.017	0.147	0.010	478.488
				tpy	0.007	0.159	0.033	0.001	0.005	0.000	16.747

	miles/day	days			ROG	NOx	CO	SOx	PM10	PM2.5	CO2
20 cy truck & transfer	100	15	S-5	pounds/day	0.164	3.638	0.761	0.014	0.117	0.008	382.791
				tons/year	0.001	0.027	0.006	0.000	0.001	0.000	2.871
water truck	25	15	S-5	pounds/day	0.041	0.909	0.190	0.003	0.029	0.002	95.698
				tons/year	0.000	0.007	0.001	0.000	0.000	0.000	0.718
Totals			S-5	ppd	0.205	4.547	0.951	0.017	0.147	0.010	478.488
				tpy	0.002	0.034	0.007	0.000	0.001	0.000	3.589

20 cy truck & transfer	100	10	S-6	pounds/day	0.164	3.638	0.761	0.014	0.117	0.008	382.791
				tons/year	0.001	0.018	0.004	0.000	0.001	0.000	1.914
water truck	25	5	S-6	pounds/day	0.041	0.909	0.190	0.003	0.029	0.002	95.698
				tons/year	0.000	0.002	0.000	0.000	0.000	0.000	0.239
Totals			S-6	ppd	0.205	4.547	0.951	0.017	0.147	0.010	478.488
				tpy	0.001	0.020	0.004	0.000	0.001	0.000	2.153

Off-Road Emissions

URBEMIS Modeling Results

4/10/2012 04:14:50 PM

Urbemis 2007 Version 9.2.4

Detail Report for Summer Construction Unmitigated Emissions (Pounds/Day)

File Name: C:\Users\Tim_Rimpo\AppData\Roaming\Urbemis\Version9a\Projects\Lakeport Construction.urb924

Project Name: Lakeport WWTP and Water

Project Location: California State-wide

On-Road Vehicle Emissions Based on: Version : Emfac2007 V2.3 Nov 1 2006

Off-Road Vehicle Emissions Based on: OFFROAD2007

CONSTRUCTION EMISSION ESTIMATES (Summer Pounds Per Day, Unmitigated)

	ROG	NOx	CO	SO2	PM10 Dust	PM10 Exhaust	PM10 Total	PM2.5 Dust	PM2.5 Exhaust	PM2.5 Total	CO2
Time Slice 7/2/2012-7/3/2012 Active Days: 2	7.02	46.70	36.82	0.01	8.03	3.28	11.32	1.68	3.02	4.70	5,695.71
Building 07/02/2012-07/12/2012	0.03	0.16	0.26	0.00	0.00	0.01	0.01	0.00	0.01	0.01	36.96
Building Off Road Diesel	0.02	0.13	0.11	0.00	0.00	0.01	0.01	0.00	0.00	0.00	18.53
Building Vendor Trips	0.00	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.70
Building Worker Trips	0.00	0.01	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.72
Building 07/02/2012-07/30/2012	0.57	3.65	2.77	0.00	0.00	0.32	0.32	0.00	0.29	0.29	400.46
Building Off Road Diesel	0.56	3.63	2.63	0.00	0.00	0.32	0.32	0.00	0.29	0.29	382.04
Building Vendor Trips	0.00	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.70
Building Worker Trips	0.00	0.01	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.72
Fine Grading 07/02/2012-07/03/2012	0.23	1.46	1.44	0.00	1.60	0.06	1.66	0.33	0.05	0.39	223.86
Fine Grading Dust	0.00	0.00	0.00	0.00	1.60	0.00	1.60	0.33	0.00	0.33	0.00
Fine Grading Off Road Diesel	0.23	1.44	1.21	0.00	0.00	0.06	0.06	0.00	0.05	0.05	198.30

Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.01	0.01	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.56
Fine Grading 07/02/2012-07/06/2012	0.47	1.53	1.99	0.00	1.60	0.13	1.73	0.34	0.12	0.45	200.59
Fine Grading Dust	0.00	0.00	0.00	0.00	1.60	0.00	1.60	0.33	0.00	0.33	0.00
Fine Grading Off Road Diesel	0.45	1.51	1.52	0.00	0.00	0.12	0.12	0.00	0.11	0.11	149.48
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.01	0.03	0.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	51.11
Fine Grading 07/02/2012-07/16/2012	0.32	2.03	1.69	0.00	1.60	0.18	1.78	0.33	0.16	0.50	237.80
Fine Grading Dust	0.00	0.00	0.00	0.00	1.60	0.00	1.60	0.33	0.00	0.33	0.00
Fine Grading Off Road Diesel	0.31	2.01	1.46	0.00	0.00	0.18	0.18	0.00	0.16	0.16	212.24
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.01	0.01	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.56
Mass Grading 07/02/2012-07/23/2012	0.59	3.65	3.54	0.00	1.60	0.31	1.91	0.34	0.28	0.62	482.48
Mass Grading Dust	0.00	0.00	0.00	0.00	1.60	0.00	1.60	0.33	0.00	0.33	0.00
Mass Grading Off Road Diesel	0.56	3.60	2.60	0.00	0.00	0.30	0.30	0.00	0.28	0.28	380.26
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.03	0.05	0.94	0.00	0.00	0.00	0.01	0.00	0.00	0.00	102.23
Mass Grading 07/02/2012-10/08/2012	0.83	5.12	5.00	0.00	1.61	0.36	1.97	0.34	0.33	0.67	708.19
Mass Grading Dust	0.00	0.00	0.00	0.00	1.60	0.00	1.60	0.33	0.00	0.33	0.00
Mass Grading Off Road Diesel	0.79	5.05	3.82	0.00	0.00	0.36	0.36	0.00	0.33	0.33	580.41
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.04	0.06	1.18	0.00	0.01	0.00	0.01	0.00	0.00	0.01	127.78
Trenching 07/02/2012-07/30/2012	0.59	3.98	3.26	0.00	0.00	0.34	0.34	0.00	0.31	0.31	474.93
Trenching Off Road Diesel	0.58	3.95	2.79	0.00	0.00	0.34	0.34	0.00	0.31	0.31	423.81
Trenching Worker Trips	0.01	0.03	0.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	51.11
Trenching 07/02/2012-08/13/2012	0.54	4.01	3.01	0.00	0.00	0.23	0.23	0.00	0.21	0.21	491.23

Trenching Off Road Diesel	0.53	3.99	2.77	0.00	0.00	0.23	0.23	0.00	0.21	0.21	465.68
Trenching Worker Trips	0.01	0.01	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.56
Trenching 07/02/2012-08/14/2012	2.31	17.45	11.35	0.00	0.01	1.07	1.08	0.00	0.99	0.99	2,056.89
Trenching Off Road Diesel	2.25	17.36	9.70	0.00	0.00	1.07	1.07	0.00	0.98	0.98	1,877.99
Trenching Worker Trips	0.05	0.09	1.65	0.00	0.01	0.00	0.01	0.00	0.00	0.01	178.89
Trenching 07/02/2012-08/27/2012	0.55	3.68	2.50	0.00	0.00	0.29	0.29	0.00	0.27	0.27	382.32
Trenching Off Road Diesel	0.54	3.67	2.26	0.00	0.00	0.29	0.29	0.00	0.27	0.27	356.76
Trenching Worker Trips	0.01	0.01	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.56
Time Slice 7/4/2012-7/6/2012 Active Days: 3	6.79	45.25	35.38	0.01	6.43	3.23	9.66	1.35	2.97	4.31	5,471.85
Building 07/02/2012-07/12/2012	0.03	0.16	0.26	0.00	0.00	0.01	0.01	0.00	0.01	0.01	36.96
Building Off Road Diesel	0.02	0.13	0.11	0.00	0.00	0.01	0.01	0.00	0.00	0.00	18.53
Building Vendor Trips	0.00	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.70
Building Worker Trips	0.00	0.01	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.72
Building 07/02/2012-07/30/2012	0.57	3.65	2.77	0.00	0.00	0.32	0.32	0.00	0.29	0.29	400.46
Building Off Road Diesel	0.56	3.63	2.63	0.00	0.00	0.32	0.32	0.00	0.29	0.29	382.04
Building Vendor Trips	0.00	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.70
Building Worker Trips	0.00	0.01	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.72
Fine Grading 07/02/2012-07/06/2012	0.47	1.53	1.99	0.00	1.60	0.13	1.73	0.34	0.12	0.45	200.59
Fine Grading Dust	0.00	0.00	0.00	0.00	1.60	0.00	1.60	0.33	0.00	0.33	0.00
Fine Grading Off Road Diesel	0.45	1.51	1.52	0.00	0.00	0.12	0.12	0.00	0.11	0.11	149.48
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.01	0.03	0.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	51.11
Fine Grading 07/02/2012-07/16/2012	0.32	2.03	1.69	0.00	1.60	0.18	1.78	0.33	0.16	0.50	237.80
Fine Grading Dust	0.00	0.00	0.00	0.00	1.60	0.00	1.60	0.33	0.00	0.33	0.00
Fine Grading Off Road Diesel	0.31	2.01	1.46	0.00	0.00	0.18	0.18	0.00	0.16	0.16	212.24
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Fine Grading Worker Trips	0.01	0.01	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.56
Mass Grading 07/02/2012-07/23/2012	0.59	3.65	3.54	0.00	1.60	0.31	1.91	0.34	0.28	0.62	482.48
Mass Grading Dust	0.00	0.00	0.00	0.00	1.60	0.00	1.60	0.33	0.00	0.33	0.00
Mass Grading Off Road Diesel	0.56	3.60	2.60	0.00	0.00	0.30	0.30	0.00	0.28	0.28	380.26
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.03	0.05	0.94	0.00	0.00	0.00	0.01	0.00	0.00	0.00	102.23
Mass Grading 07/02/2012-10/08/2012	0.83	5.12	5.00	0.00	1.61	0.36	1.97	0.34	0.33	0.67	708.19
Mass Grading Dust	0.00	0.00	0.00	0.00	1.60	0.00	1.60	0.33	0.00	0.33	0.00
Mass Grading Off Road Diesel	0.79	5.05	3.82	0.00	0.00	0.36	0.36	0.00	0.33	0.33	580.41
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.04	0.06	1.18	0.00	0.01	0.00	0.01	0.00	0.00	0.01	127.78
Trenching 07/02/2012-07/30/2012	0.59	3.98	3.26	0.00	0.00	0.34	0.34	0.00	0.31	0.31	474.93
Trenching Off Road Diesel	0.58	3.95	2.79	0.00	0.00	0.34	0.34	0.00	0.31	0.31	423.81
Trenching Worker Trips	0.01	0.03	0.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	51.11
Trenching 07/02/2012-08/13/2012	0.54	4.01	3.01	0.00	0.00	0.23	0.23	0.00	0.21	0.21	491.23
Trenching Off Road Diesel	0.53	3.99	2.77	0.00	0.00	0.23	0.23	0.00	0.21	0.21	465.68
Trenching Worker Trips	0.01	0.01	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.56
Trenching 07/02/2012-08/14/2012	2.31	17.45	11.35	0.00	0.01	1.07	1.08	0.00	0.99	0.99	2,056.89
Trenching Off Road Diesel	2.25	17.36	9.70	0.00	0.00	1.07	1.07	0.00	0.98	0.98	1,877.99
Trenching Worker Trips	0.05	0.09	1.65	0.00	0.01	0.00	0.01	0.00	0.00	0.01	178.89
Trenching 07/02/2012-08/27/2012	0.55	3.68	2.50	0.00	0.00	0.29	0.29	0.00	0.27	0.27	382.32
Trenching Off Road Diesel	0.54	3.67	2.26	0.00	0.00	0.29	0.29	0.00	0.27	0.27	356.76
Trenching Worker Trips	0.01	0.01	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.56
Time Slice 7/9/2012-7/12/2012 Active Days: 4	6.32	43.72	33.39	0.01	4.83	3.10	7.93	1.01	2.85	3.86	5,271.25
Building 07/02/2012-07/12/2012	0.03	0.16	0.26	0.00	0.00	0.01	0.01	0.00	0.01	0.01	36.96

Building Off Road Diesel	0.02	0.13	0.11	0.00	0.00	0.01	0.01	0.00	0.00	0.00	18.53
Building Vendor Trips	0.00	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.70
Building Worker Trips	0.00	0.01	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.72
Building 07/02/2012-07/30/2012	0.57	3.65	2.77	0.00	0.00	0.32	0.32	0.00	0.29	0.29	400.46
Building Off Road Diesel	0.56	3.63	2.63	0.00	0.00	0.32	0.32	0.00	0.29	0.29	382.04
Building Vendor Trips	0.00	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.70
Building Worker Trips	0.00	0.01	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.72
Fine Grading 07/02/2012-07/16/2012	0.32	2.03	1.69	0.00	1.60	0.18	1.78	0.33	0.16	0.50	237.80
Fine Grading Dust	0.00	0.00	0.00	0.00	1.60	0.00	1.60	0.33	0.00	0.33	0.00
Fine Grading Off Road Diesel	0.31	2.01	1.46	0.00	0.00	0.18	0.18	0.00	0.16	0.16	212.24
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.01	0.01	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.56
Mass Grading 07/02/2012-07/23/2012	0.59	3.65	3.54	0.00	1.60	0.31	1.91	0.34	0.28	0.62	482.48
Mass Grading Dust	0.00	0.00	0.00	0.00	1.60	0.00	1.60	0.33	0.00	0.33	0.00
Mass Grading Off Road Diesel	0.56	3.60	2.60	0.00	0.00	0.30	0.30	0.00	0.28	0.28	380.26
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.03	0.05	0.94	0.00	0.00	0.00	0.01	0.00	0.00	0.00	102.23
Mass Grading 07/02/2012-10/08/2012	0.83	5.12	5.00	0.00	1.61	0.36	1.97	0.34	0.33	0.67	708.19
Mass Grading Dust	0.00	0.00	0.00	0.00	1.60	0.00	1.60	0.33	0.00	0.33	0.00
Mass Grading Off Road Diesel	0.79	5.05	3.82	0.00	0.00	0.36	0.36	0.00	0.33	0.33	580.41
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.04	0.06	1.18	0.00	0.01	0.00	0.01	0.00	0.00	0.01	127.78
Trenching 07/02/2012-07/30/2012	0.59	3.98	3.26	0.00	0.00	0.34	0.34	0.00	0.31	0.31	474.93
Trenching Off Road Diesel	0.58	3.95	2.79	0.00	0.00	0.34	0.34	0.00	0.31	0.31	423.81
Trenching Worker Trips	0.01	0.03	0.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	51.11
Trenching 07/02/2012-08/13/2012	0.54	4.01	3.01	0.00	0.00	0.23	0.23	0.00	0.21	0.21	491.23
Trenching Off Road Diesel	0.53	3.99	2.77	0.00	0.00	0.23	0.23	0.00	0.21	0.21	465.68

Trenching Worker Trips	0.01	0.01	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.56
Trenching 07/02/2012-08/14/2012	2.31	17.45	11.35	0.00	0.01	1.07	1.08	0.00	0.99	0.99	2,056.89
Trenching Off Road Diesel	2.25	17.36	9.70	0.00	0.00	1.07	1.07	0.00	0.98	0.98	1,877.99
Trenching Worker Trips	0.05	0.09	1.65	0.00	0.01	0.00	0.01	0.00	0.00	0.01	178.89
Trenching 07/02/2012-08/27/2012	0.55	3.68	2.50	0.00	0.00	0.29	0.29	0.00	0.27	0.27	382.32
Trenching Off Road Diesel	0.54	3.67	2.26	0.00	0.00	0.29	0.29	0.00	0.27	0.27	356.76
Trenching Worker Trips	0.01	0.01	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.56
Time Slice 7/13/2012-7/16/2012 Active Days: 2	6.29	43.56	33.12	0.01	4.83	3.09	7.92	1.01	2.84	3.86	5,234.30
Building 07/02/2012-07/30/2012	0.57	3.65	2.77	0.00	0.00	0.32	0.32	0.00	0.29	0.29	400.46
Building Off Road Diesel	0.56	3.63	2.63	0.00	0.00	0.32	0.32	0.00	0.29	0.29	382.04
Building Vendor Trips	0.00	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.70
Building Worker Trips	0.00	0.01	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.72
Fine Grading 07/02/2012-07/16/2012	0.32	2.03	1.69	0.00	1.60	0.18	1.78	0.33	0.16	0.50	237.80
Fine Grading Dust	0.00	0.00	0.00	0.00	1.60	0.00	1.60	0.33	0.00	0.33	0.00
Fine Grading Off Road Diesel	0.31	2.01	1.46	0.00	0.00	0.18	0.18	0.00	0.16	0.16	212.24
Fine Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Fine Grading Worker Trips	0.01	0.01	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.56
Mass Grading 07/02/2012-07/23/2012	0.59	3.65	3.54	0.00	1.60	0.31	1.91	0.34	0.28	0.62	482.48
Mass Grading Dust	0.00	0.00	0.00	0.00	1.60	0.00	1.60	0.33	0.00	0.33	0.00
Mass Grading Off Road Diesel	0.56	3.60	2.60	0.00	0.00	0.30	0.30	0.00	0.28	0.28	380.26
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.03	0.05	0.94	0.00	0.00	0.00	0.01	0.00	0.00	0.00	102.23
Mass Grading 07/02/2012-10/08/2012	0.83	5.12	5.00	0.00	1.61	0.36	1.97	0.34	0.33	0.67	708.19
Mass Grading Dust	0.00	0.00	0.00	0.00	1.60	0.00	1.60	0.33	0.00	0.33	0.00
Mass Grading Off Road Diesel	0.79	5.05	3.82	0.00	0.00	0.36	0.36	0.00	0.33	0.33	580.41
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

Mass Grading Worker Trips	0.04	0.06	1.18	0.00	0.01	0.00	0.01	0.00	0.00	0.01	127.78
Trenching 07/02/2012-07/30/2012	0.59	3.98	3.26	0.00	0.00	0.34	0.34	0.00	0.31	0.31	474.93
Trenching Off Road Diesel	0.58	3.95	2.79	0.00	0.00	0.34	0.34	0.00	0.31	0.31	423.81
Trenching Worker Trips	0.01	0.03	0.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	51.11
Trenching 07/02/2012-08/13/2012	0.54	4.01	3.01	0.00	0.00	0.23	0.23	0.00	0.21	0.21	491.23
Trenching Off Road Diesel	0.53	3.99	2.77	0.00	0.00	0.23	0.23	0.00	0.21	0.21	465.68
Trenching Worker Trips	0.01	0.01	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.56
Trenching 07/02/2012-08/14/2012	2.31	17.45	11.35	0.00	0.01	1.07	1.08	0.00	0.99	0.99	2,056.89
Trenching Off Road Diesel	2.25	17.36	9.70	0.00	0.00	1.07	1.07	0.00	0.98	0.98	1,877.99
Trenching Worker Trips	0.05	0.09	1.65	0.00	0.01	0.00	0.01	0.00	0.00	0.01	178.89
Trenching 07/02/2012-08/27/2012	0.55	3.68	2.50	0.00	0.00	0.29	0.29	0.00	0.27	0.27	382.32
Trenching Off Road Diesel	0.54	3.67	2.26	0.00	0.00	0.29	0.29	0.00	0.27	0.27	356.76
Trenching Worker Trips	0.01	0.01	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.56
Time Slice 7/17/2012-7/23/2012 Active Days: 5	5.97	41.53	31.43	0.01	3.23	2.92	6.14	0.68	2.68	3.36	4,996.50
Building 07/02/2012-07/30/2012	0.57	3.65	2.77	0.00	0.00	0.32	0.32	0.00	0.29	0.29	400.46
Building Off Road Diesel	0.56	3.63	2.63	0.00	0.00	0.32	0.32	0.00	0.29	0.29	382.04
Building Vendor Trips	0.00	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.70
Building Worker Trips	0.00	0.01	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.72
Mass Grading 07/02/2012-07/23/2012	0.59	3.65	3.54	0.00	1.60	0.31	1.91	0.34	0.28	0.62	482.48
Mass Grading Dust	0.00	0.00	0.00	0.00	1.60	0.00	1.60	0.33	0.00	0.33	0.00
Mass Grading Off Road Diesel	0.56	3.60	2.60	0.00	0.00	0.30	0.30	0.00	0.28	0.28	380.26
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.03	0.05	0.94	0.00	0.00	0.00	0.01	0.00	0.00	0.00	102.23
Mass Grading 07/02/2012-10/08/2012	0.83	5.12	5.00	0.00	1.61	0.36	1.97	0.34	0.33	0.67	708.19
Mass Grading Dust	0.00	0.00	0.00	0.00	1.60	0.00	1.60	0.33	0.00	0.33	0.00
Mass Grading Off	0.79	5.05	3.82	0.00	0.00	0.36	0.36	0.00	0.33	0.33	580.41

Road Diesel											
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.04	0.06	1.18	0.00	0.01	0.00	0.01	0.00	0.00	0.01	127.78
Trenching 07/02/2012-07/30/2012	0.59	3.98	3.26	0.00	0.00	0.34	0.34	0.00	0.31	0.31	474.93
Trenching Off Road Diesel	0.58	3.95	2.79	0.00	0.00	0.34	0.34	0.00	0.31	0.31	423.81
Trenching Worker Trips	0.01	0.03	0.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	51.11
Trenching 07/02/2012-08/13/2012	0.54	4.01	3.01	0.00	0.00	0.23	0.23	0.00	0.21	0.21	491.23
Trenching Off Road Diesel	0.53	3.99	2.77	0.00	0.00	0.23	0.23	0.00	0.21	0.21	465.68
Trenching Worker Trips	0.01	0.01	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.56
Trenching 07/02/2012-08/14/2012	2.31	17.45	11.35	0.00	0.01	1.07	1.08	0.00	0.99	0.99	2,056.89
Trenching Off Road Diesel	2.25	17.36	9.70	0.00	0.00	1.07	1.07	0.00	0.98	0.98	1,877.99
Trenching Worker Trips	0.05	0.09	1.65	0.00	0.01	0.00	0.01	0.00	0.00	0.01	178.89
Trenching 07/02/2012-08/27/2012	0.55	3.68	2.50	0.00	0.00	0.29	0.29	0.00	0.27	0.27	382.32
Trenching Off Road Diesel	0.54	3.67	2.26	0.00	0.00	0.29	0.29	0.00	0.27	0.27	356.76
Trenching Worker Trips	0.01	0.01	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.56
Time Slice 7/24/2012-7/30/2012 Active Days: 5	5.38	37.88	27.89	0.00	1.62	2.61	4.23	0.34	2.40	2.74	4,514.02
Building 07/02/2012-07/30/2012	0.57	3.65	2.77	0.00	0.00	0.32	0.32	0.00	0.29	0.29	400.46
Building Off Road Diesel	0.56	3.63	2.63	0.00	0.00	0.32	0.32	0.00	0.29	0.29	382.04
Building Vendor Trips	0.00	0.02	0.01	0.00	0.00	0.00	0.00	0.00	0.00	0.00	3.70
Building Worker Trips	0.00	0.01	0.14	0.00	0.00	0.00	0.00	0.00	0.00	0.00	14.72
Mass Grading 07/02/2012-10/08/2012	0.83	5.12	5.00	0.00	1.61	0.36	1.97	0.34	0.33	0.67	708.19
Mass Grading Dust	0.00	0.00	0.00	0.00	1.60	0.00	1.60	0.33	0.00	0.33	0.00
Mass Grading Off Road Diesel	0.79	5.05	3.82	0.00	0.00	0.36	0.36	0.00	0.33	0.33	580.41
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.04	0.06	1.18	0.00	0.01	0.00	0.01	0.00	0.00	0.01	127.78
Trenching 07/02/2012-	0.59	3.98	3.26	0.00	0.00	0.34	0.34	0.00	0.31	0.31	474.93

07/30/2012											
Trenching Off Road Diesel	0.58	3.95	2.79	0.00	0.00	0.34	0.34	0.00	0.31	0.31	423.81
Trenching Worker Trips	0.01	0.03	0.47	0.00	0.00	0.00	0.00	0.00	0.00	0.00	51.11
Trenching 07/02/2012-08/13/2012	0.54	4.01	3.01	0.00	0.00	0.23	0.23	0.00	0.21	0.21	491.23
Trenching Off Road Diesel	0.53	3.99	2.77	0.00	0.00	0.23	0.23	0.00	0.21	0.21	465.68
Trenching Worker Trips	0.01	0.01	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.56
Trenching 07/02/2012-08/14/2012	2.31	17.45	11.35	0.00	0.01	1.07	1.08	0.00	0.99	0.99	2,056.89
Trenching Off Road Diesel	2.25	17.36	9.70	0.00	0.00	1.07	1.07	0.00	0.98	0.98	1,877.99
Trenching Worker Trips	0.05	0.09	1.65	0.00	0.01	0.00	0.01	0.00	0.00	0.01	178.89
Trenching 07/02/2012-08/27/2012	0.55	3.68	2.50	0.00	0.00	0.29	0.29	0.00	0.27	0.27	382.32
Trenching Off Road Diesel	0.54	3.67	2.26	0.00	0.00	0.29	0.29	0.00	0.27	0.27	356.76
Trenching Worker Trips	0.01	0.01	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.56
Time Slice 7/31/2012-8/13/2012 Active Days: 10	4.22	30.25	21.85	0.00	1.62	1.95	3.57	0.34	1.80	2.14	3,638.63
Mass Grading 07/02/2012-10/08/2012	0.83	5.12	5.00	0.00	1.61	0.36	1.97	0.34	0.33	0.67	708.19
Mass Grading Dust	0.00	0.00	0.00	0.00	1.60	0.00	1.60	0.33	0.00	0.33	0.00
Mass Grading Off Road Diesel	0.79	5.05	3.82	0.00	0.00	0.36	0.36	0.00	0.33	0.33	580.41
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.04	0.06	1.18	0.00	0.01	0.00	0.01	0.00	0.00	0.01	127.78
Trenching 07/02/2012-08/13/2012	0.54	4.01	3.01	0.00	0.00	0.23	0.23	0.00	0.21	0.21	491.23
Trenching Off Road Diesel	0.53	3.99	2.77	0.00	0.00	0.23	0.23	0.00	0.21	0.21	465.68
Trenching Worker Trips	0.01	0.01	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.56
Trenching 07/02/2012-08/14/2012	2.31	17.45	11.35	0.00	0.01	1.07	1.08	0.00	0.99	0.99	2,056.89
Trenching Off Road Diesel	2.25	17.36	9.70	0.00	0.00	1.07	1.07	0.00	0.98	0.98	1,877.99
Trenching Worker Trips	0.05	0.09	1.65	0.00	0.01	0.00	0.01	0.00	0.00	0.01	178.89
Trenching 07/02/2012-08/27/2012	0.55	3.68	2.50	0.00	0.00	0.29	0.29	0.00	0.27	0.27	382.32

Trenching Off Road Diesel	0.54	3.67	2.26	0.00	0.00	0.29	0.29	0.00	0.27	0.27	356.76
Trenching Worker Trips	0.01	0.01	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.56
Time Slice 8/14/2012-8/14/2012 Active Days: 1	3.68	26.25	18.84	0.00	1.62	1.72	3.34	0.34	1.59	1.93	3,147.40
Mass Grading 07/02/2012-10/08/2012	0.83	5.12	5.00	0.00	1.61	0.36	1.97	0.34	0.33	0.67	708.19
Mass Grading Dust	0.00	0.00	0.00	0.00	1.60	0.00	1.60	0.33	0.00	0.33	0.00
Mass Grading Off Road Diesel	0.79	5.05	3.82	0.00	0.00	0.36	0.36	0.00	0.33	0.33	580.41
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.04	0.06	1.18	0.00	0.01	0.00	0.01	0.00	0.00	0.01	127.78
Trenching 07/02/2012-08/14/2012	2.31	17.45	11.35	0.00	0.01	1.07	1.08	0.00	0.99	0.99	2,056.89
Trenching Off Road Diesel	2.25	17.36	9.70	0.00	0.00	1.07	1.07	0.00	0.98	0.98	1,877.99
Trenching Worker Trips	0.05	0.09	1.65	0.00	0.01	0.00	0.01	0.00	0.00	0.01	178.89
Trenching 07/02/2012-08/27/2012	0.55	3.68	2.50	0.00	0.00	0.29	0.29	0.00	0.27	0.27	382.32
Trenching Off Road Diesel	0.54	3.67	2.26	0.00	0.00	0.29	0.29	0.00	0.27	0.27	356.76
Trenching Worker Trips	0.01	0.01	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.56
Time Slice 8/15/2012-8/27/2012 Active Days: 9	1.38	8.80	7.50	0.00	1.61	0.65	2.26	0.34	0.60	0.94	1,090.51
Mass Grading 07/02/2012-10/08/2012	0.83	5.12	5.00	0.00	1.61	0.36	1.97	0.34	0.33	0.67	708.19
Mass Grading Dust	0.00	0.00	0.00	0.00	1.60	0.00	1.60	0.33	0.00	0.33	0.00
Mass Grading Off Road Diesel	0.79	5.05	3.82	0.00	0.00	0.36	0.36	0.00	0.33	0.33	580.41
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.04	0.06	1.18	0.00	0.01	0.00	0.01	0.00	0.00	0.01	127.78
Trenching 07/02/2012-08/27/2012	0.55	3.68	2.50	0.00	0.00	0.29	0.29	0.00	0.27	0.27	382.32
Trenching Off Road Diesel	0.54	3.67	2.26	0.00	0.00	0.29	0.29	0.00	0.27	0.27	356.76
Trenching Worker Trips	0.01	0.01	0.24	0.00	0.00	0.00	0.00	0.00	0.00	0.00	25.56
Time Slice 8/28/2012-10/8/2012 Active Days: 30	0.83	5.12	5.00	0.00	1.61	0.36	1.97	0.34	0.33	0.67	708.19

Mass Grading 07/02/2012-10/08/2012	0.83	5.12	5.00	0.00	1.61	0.36	1.97	0.34	0.33	0.67	708.19
Mass Grading Dust	0.00	0.00	0.00	0.00	1.60	0.00	1.60	0.33	0.00	0.33	0.00
Mass Grading Off Road Diesel	0.79	5.05	3.82	0.00	0.00	0.36	0.36	0.00	0.33	0.33	580.41
Mass Grading On Road Diesel	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mass Grading Worker Trips	0.04	0.06	1.18	0.00	0.01	0.00	0.01	0.00	0.00	0.01	127.78

Phase Assumptions

Phase: Fine Grading 7/2/2012 - 7/3/2012 - S-3 Replace Pump Station 2 days

Total Acres Disturbed: 0.33

Maximum Daily Acreage Disturbed: 0.08

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off-Road Equipment:

1 Plate Compactors (107 hp) operating at a 0.43 load factor for 8 hours per day

Phase: Fine Grading 7/2/2012 - 7/6/2012 - S-3 Replace Pump Station 4 days

Total Acres Disturbed: 0.33

Maximum Daily Acreage Disturbed: 0.08

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0

Off-Road Equipment:

1 Pumps (5 hp) operating at a 0.74 load factor for 8 hours per day

1 Tractors/Loaders/Backhoes (46 hp) operating at a 0.55 load factor for 7 hours per day

Phase: Fine Grading 7/2/2012 - 7/16/2012 - S-3 Replace Pump Station 10 days

Total Acres Disturbed: 0.33

Maximum Daily Acreage Disturbed: 0.08

Fugitive Dust Level of Detail: Default

20 lbs per acre-day

On Road Truck Travel (VMT): 0
Off-Road Equipment:
1 Tractors/Loaders/Backhoes (80 hp) operating at a 0.55 load factor for 7 hours per day

Phase: Mass Grading 7/2/2012 - 10/8/2012 - S-4 I&I Improvements
Total Acres Disturbed: 0.33
Maximum Daily Acreage Disturbed: 0.08
Fugitive Dust Level of Detail: Default
20 lbs per acre-day
On Road Truck Travel (VMT): 0
Off-Road Equipment:
2 Plate Compactors (59 hp) operating at a 0.43 load factor for 8 hours per day
1 Pumps (5 hp) operating at a 0.74 load factor for 8 hours per day
2 Tractors/Loaders/Backhoes (63 hp) operating at a 0.55 load factor for 7 hours per day

Phase: Mass Grading 7/2/2012 - 7/23/2012 - S-5 Replace Main Street Sewer
Total Acres Disturbed: 0.33
Maximum Daily Acreage Disturbed: 0.08
Fugitive Dust Level of Detail: Default
20 lbs per acre-day
On Road Truck Travel (VMT): 0
Off-Road Equipment:
1 Plate Compactors (10 hp) operating at a 0.43 load factor for 8 hours per day
1 Pumps (5 hp) operating at a 0.74 load factor for 8 hours per day
2 Tractors/Loaders/Backhoes (63 hp) operating at a 0.55 load factor for 7 hours per day

Phase: Trenching 7/2/2012 - 8/14/2012 - W-4 Water Main Loop in S. Lakeport
Off-Road Equipment:
1 Excavators (143 hp) operating at a 0.57 load factor for 8 hours per day
1 Other General Industrial Equipment (238 hp) operating at a 0.51 load factor for 8 hours per day
1 Plate Compactors (10 hp) operating at a 0.43 load factor for 8 hours per day
1 Pumps (5 hp) operating at a 0.74 load factor for 8 hours per day

3 Tractors/Loaders/Backhoes (82 hp) operating at a 0.55 load factor for 8 hours per day

Phase: Trenching 7/2/2012 - 7/30/2012 - S-2 Repair Treatment Ponds 20 days
Off-Road Equipment:
1 Other Equipment (110 hp) operating at a 0.62 load factor for 8 hours per day
1 Tractors/Loaders/Backhoes (75 hp) operating at a 0.55 load factor for 0 hours per day

Phase: Trenching 7/2/2012 - 8/13/2012 - S-2 Repair Treatment Ponds 30 days
Off-Road Equipment:
1 Excavators (143 hp) operating at a 0.57 load factor for 8 hours per day

Phase: Trenching 7/2/2012 - 8/27/2012 - S-2 Repair Treatment Ponds 40 days
Off-Road Equipment:
1 Generator Sets (65 hp) operating at a 0.74 load factor for 8 hours per day

Phase: Building Construction 7/2/2012 - 7/12/2012 - S-6 Drilling 8 days
Off-Road Equipment:
1 Plate Compactors (10 hp) operating at a 0.43 load factor for 8 hours per day

Phase: Building Construction 7/2/2012 - 7/30/2012 - S-6 Drilling 20 days
Off-Road Equipment:
2 Tractors/Loaders/Backhoes (63 hp) operating at a 0.55 load factor for 8 hours per day

Off-Road Emissions Summary

	days		ROG	NOx	CO	SO2	PM10	PM2.5	CO2
W-4	31	ppd	2.306	17.447	11.348	0.002	1.081	0.989	2,056.886
		tpy	0.036	0.270	0.176	0.000	0.017	0.015	31.882
S-2	20	ppd	0.592	3.979	3.260	0.000	0.340	0.312	474.926
	30	ppd	0.539	4.006	3.008	0.000	0.232	0.212	491.233
	40	ppd	0.550	3.683	2.499	0.000	0.290	0.266	382.318
	total	ppd	1.680	11.667	8.768	0.001	0.862	0.790	1,348.478
		tpy	0.025	0.174	0.128	0.000	0.013	0.012	19.764
S-3	2	ppd	0.234	1.456	1.444	0.000	1.659	0.387	223.857
	4	ppd	0.469	1.532	1.990	0.000	1.729	0.451	200.595
	10	ppd	0.319	2.027	1.695	0.000	1.778	0.497	237.798
	total	ppd	1.023	5.015	5.128	0.001	5.166	1.336	662.251
		tpy	0.003	0.015	0.014	0.000	0.014	0.004	1.814
S-4	70	ppd	0.828	5.117	4.997	0.001	1.970	0.670	708.193
		tpy	0.029	0.179	0.175	0.000	0.069	0.023	24.787
S-5	15	ppd	0.591	3.648	3.542	0.001	1.910	0.617	482.482
		tpy	0.004	0.027	0.027	0.000	0.014	0.005	3.619
S-6	8	ppd	0.027	0.158	0.262	0.000	0.007	0.006	36.957
	20	ppd	0.567	3.650	2.775	0.000	0.319	0.293	400.460
	total	ppd	0.594	3.808	3.037	0.000	0.327	0.299	437.417
		tpy	0.006	0.037	0.029	0.000	0.003	0.003	4.152

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CULTURAL RESOURCES INVESTIGATIONS

PRELIMINARY REPORT:

City of Lakeport
Proposed RD-Funded Water and Wastewater Projects,
Lake County, California

April 2, 2012

THIS DOCUMENT CONTAINS SENSITIVE INFORMATION REGARDING CULTURAL RESOURCES. CONTACT CITY OF LAKEPORT FOR COMPLETE COPY.

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Project 2012-01

Keywords:

Cultural resources investigations; Lakeport 7.5' USGS Quadrangle;
potential impact to nine prehistoric archaeological resources;
Management Recommendations include monitoring during construction activities

CULTURAL RESOURCES INVESTIGATIONS