DRAFT TECHNICAL MEMORANDUM

SUPPLEMENT TO THE SUTTER ENERGY CENTER (97-AFC-02) BIOLOGICAL RESOURCES MITIGATION IMPLEMENTATION AND MONITORING PLAN FOR THE GRIMES PIPELINE PROJECT SUTTER COUNTY, CALIFORNIA

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ICF INTERNATIONAL

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Contents

Tables and Figures

Acronyms and Abbreviations

CPN	CPN Pipeline Company
CCFC	Calpine Construction Finance Company, L.P.
CNPS	California Native Plant Society
CPM	Compliance Project Manager
DFG	California Department of Fish and Game
MBTA	Migratory Bird Treaty Act
MM	master meter
OHWM	ordinary high water mark
PG&E's	Pacific Gas & Electric's
SEC	Sutter Energy Center
USFWS	U.S. Fish and Wildlife Service
VELB	Valley elderberry longhorn beetle

Technical Memorandum Supplement to the Sutter Energy Center (97-AFC-02) Biological Resources Mitigation Implementation and Monitoring Plan for the Grimes Pipeline Project

Introduction and Overview of Project

Background

Calpine Construction Finance Company, L.P. (CCFC) and CPN Pipeline Company (Calpine), both wholly owned subsidiaries of Calpine Corporation, have proposed an amendment to allow the Sutter Energy Center (SEC) to be served by a new 2.8-mile 6-inch natural gas pipeline (herein referred to as the "Grimes Pipeline Project" or the "Project"). Currently, SEC receives natural gas from Pacific Gas & Electric's (PG&E's) natural gas transmission system via the 20-inch Sutter Pipeline, which connects to the SEC and is owned and operated by CPN Pipeline Company. The Grimes Pipeline Project, which will flow gas from north to south, will interconnect to the existing Sutter Pipeline west of the SEC site on Girdner Road just west of Hageman Road at the new Grimes Station (Figure 1).

The Grimes Pipeline Project will allow the SEC to directly access local natural gas from the Grimes natural gas field in the Sacramento Basin to the north and west of the Project site. Once constructed, the proposed pipeline will be capable of transporting approximately 10 million standard cubic feet per day of natural gas from Venoco Inc.'s and other gas producers' existing gas wells north of the community of Grimes. However, it is important to note that the quantity of natural gas delivered to the SEC will not be increased over existing deliveries. Instead, the Grimes Pipeline adds fuel supply diversity to the SEC.

To facilitate deliveries from the local gas field suppliers, the Grimes Pipeline Project will include a new gas metering station with related facilities near its southern terminus to be called "Grimes Station." Grimes Station will be located on approximately 0.22 acre on Girdner Road just west of Hageman Road, approximately 450 feet from the Grimes Pipeline's first point of interconnection with the existing 20-inch Sutter pipeline that serves SEC. Upstream of Grimes Station, natural gas meters will also be installed at Venoco Inc.'s existing Eastside and 32-33-3 master meter (MM) gas field sites (Figure 2).

Overview of the Grimes Pipeline Project

Calpine has secured easement agreements for both temporary and permanent right-of-way (ROW) easements from landowners. The entire project area (estimated at approximately 29 acres) encompasses the land needed to construct the Grimes Pipeline Project components, temporary construction staging areas, and temporary pipeline bore work areas.

Once constructed, the 2.8-mile natural gas pipeline and Grimes Station will be owned and operated by Calpine. Venoco will continue to operate its existing Eastside Master Meter (MM) and 32-33-3 Master Meter sites. The lands occupied by the project facilities are under easements from the

property owners through easement agreements. The easements will remain in effect until Calpine chooses to surrender them back to the landowners.

The project area is in agricultural lands consisting predominantly of rice fields with widely scattered rural residences and agricultural operations. The southwestern part of the project area in 2010 was used for corn and beans, and there is a small fig orchard in the southeastern corner. The project area has been farmed for many decades and now supports very little undisturbed natural habitat. The area is used for recreational waterfowl and deer hunting during the fall and winter months.

The Grimes Pipeline Project comprises the following components.

- A 0.22-acre gas metering facility (Grimes Station).
- A 2.8-mile, 6-inch natural gas pipeline.
- Natural gas meters at Venoco Inc.'s existing Eastside and 32-33-3 MM sites.
- Below ground hot tap and valve at the existing Sutter Energy Center 20-inch natural gas pipeline connection.

Each of the major project components is described below and is shown in Figure 1.

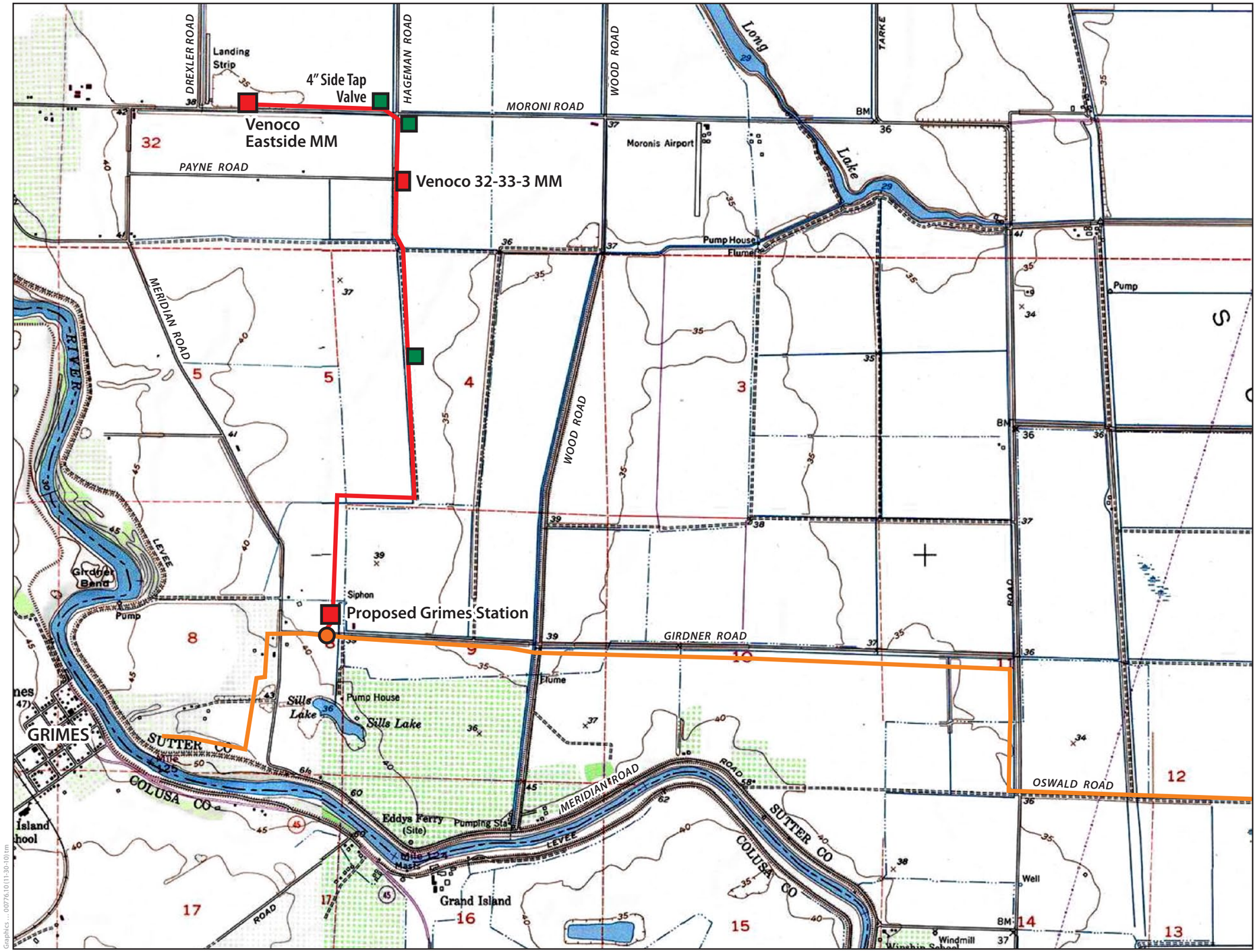
Grimes Station

The Grimes Station is on Girdner Road just west of Hageman Road. The site is currently an agricultural field planted with row crops.

The final Grimes Station facility will occupy a 0.22 acre site. The facility layout comprises the following components.

- A natural gas MM to measure the flow into the Sutter Pipeline.
- A horizontal filter-separator to ensure that high-quality gas is received. The filter will be approximately 9 feet long, 2 feet in diameter, and 5 feet above ground level.
- A pig receiver to conduct in-line inspections and perform maintenance activities on the gas pipeline.
- A flow control valve to control flow through the pipeline and shut down if necessary during an emergency or other conditions.
- An aboveground 100-barrel drain tank to collect any liquids that might be present in the natural gas and removed in the filter-separator. This tank will be an atmospheric tank with a vent on top. The tank will be fully contained within a secondary steel tank to prevent uncontrolled runoff. The tank will be 8 feet tall and 10 feet in diameter.
- Communication equipment (powered by solar panels) for Calpine to remotely monitor conditions at the site and operate control valves, if necessary.
- Provisions for a future gas scrubber to assist in liquid removal if necessary. The scrubber dimensions will be 10 feet long, 3 feet in diameter, and 5 feet above ground level.

The gravel pad will accommodate the facilities as well as equipment and vehicle access and turnouts. The site will be protected by a 6-foot-tall chain-link fence with three barbed wire arms and will be graveled for operations and maintenance purposes.



Legend

- Proposed 6-inch Natural Gas Pipeline
- Existing 20-inch Sutter Energy Center Gas Pipeline
- Below Ground Hot Tap and Valve
- Proposed Construction Laydown Area
- Venoco's Existing Master Meter Sites and Proposed Grimes Station Site

N

1,000 0 1,000 2,000 3,000 4,000

feet

Scale = 1:24,000

Base Map:
National Geographic TOPO
Gilsizer Slough, CA (1973), Tilsdale Weir, CA (1973)

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Figure 1
Grimes Pipeline Project Location

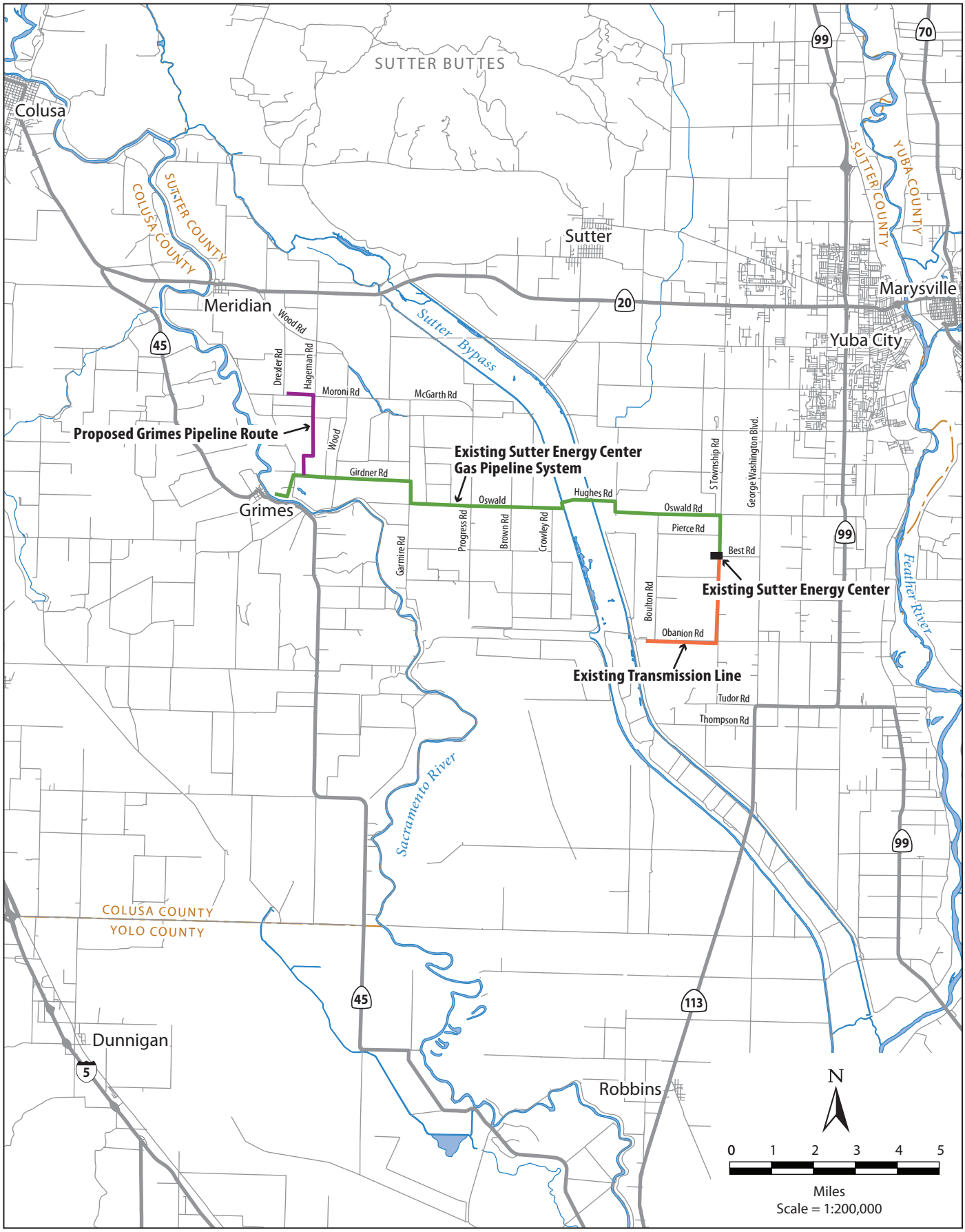

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Figure 2
Grimes Pipeline Project Vicinity

Two man gates and a vehicle gate will be installed at the site entrance from Girdner Road. Overhead lighting or other utilities are not necessary and therefore will not be installed as part of the proposed project. In addition, no generators or pumps (i.e., gasoline- or diesel-powered stationary equipment) are necessary and none will be installed as part of the proposed project.

The aboveground facilities will be painted with non-glare, earth-tone colors (wheat or olive green) to blend with the surrounding vegetation/landscape.

An approximate 30-foot-long culvert will be placed within the seasonal agricultural drainage ditch along Girdner Road to allow vehicle access to the Grimes Station.

Natural Gas Pipeline

Calpine will construct a 2.8 mile, 6-inch pipeline to transfer gas from Venoco's and other gas producers' existing gas wells to the proposed Grimes Station. The proposed pipeline crosses through agricultural fields (primarily cultivated rice fields) and under two Sutter County public roads (Wilbur and Hageman Roads near their intersection). It also crosses 11 drainages. Nine drainages would be avoided by tunneling and two would be affected by open trench construction . In addition to this pipeline, a 450-foot-long, 6-inch gas pipeline will be constructed between the Grimes Station and the Sutter pipeline tap.

The proposed pipeline alignment as shown in Figure 1 and Figure 2 was chosen because it meets the project objectives: determining the most direct route between the existing Venoco metering sites and the Sutter pipeline, meeting landowners' needs and restrictions, and minimizing impacts on sensitive resources by avoiding natural habitats.

Meter Sites

Calpine will install two meters, one at Venoco Inc.'s existing Eastside MM site and the other at the 32-33-3 MM site. These meters will serve as the custody transfer points for the natural gas. Calpine will install the meters on the existing Venoco Inc. meter site pads and has determined that no pad extensions will be required.

Work associated with these meter sites will not result in any discharge of fill material into waters of the United States.

Purpose of the Supplement to the BRMIMP

The purpose of this supplement to the Sutter Energy Center BRMIMP is to identify potential sensitive biological resources that may occur in the Grimes Pipeline Project area and summarize the mitigation measures and permit conditions that will be implemented to avoid and minimize impacts to sensitive biological resources during construction and operation of the Grimes Pipeline Project.

Designated Biologist

Calpine will designate a qualified biologist to implement the mitigation measures outlined in this amendment. The designated biologist and/or an approved representative biological monitor under the supervision of the designated biologist will supervise construction activities in sensitive habitat areas, assist the construction engineer in preparing construction zone limits, present the Worker

Environmental Awareness Training program, and advise Calpine on how to best avoid adverse impacts to biological resources. The designated biologist will implement the mitigation measures through the construction phase. The designated biologist will be on site during construction in giant garter snake habitat and in areas with active Swainson's hawk nests, if found. The designated biologist will advise Calpine and the CEC concerning biological issues and will prepare Monthly Compliance Reports for submittal to the CEC Compliance Project Manager (CPM).

The designated biologist is responsible for implementing the BRMIMP and providing direct assistance to the Applicant in avoiding impacts to natural resources. The designated biologist for the Grimes Pipeline Project is:

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Qualifications:

Degree: Master of Arts in Biology, Bachelor of Science in Zoology
Field biology experience: 23 years
See Appendix A for the qualifications of the Designated Biologist, including resume.

Sensitive Biological Resources within the Grimes Pipeline Project Area

Efforts to identify sensitive biological resources within the Grimes Pipeline Project area included prefield review of database records from the U.S. Fish and Wildlife Service (USFWS), California Department of Fish and Game (DFG), California Native Plant Society (CNPS); the Application for Certification, BRMIMP, and USFWS's Biological Opinion for the Sutter Power Plant Project; communications with resource agency staff; and field surveys for wildlife, raptor, botanical, and wetland resources. Based on these efforts, the following sensitive habitats and special status species were identified as having a potential to occur within the Project area:

Sensitive Habitats

- Fremont cottonwood riparian woodland,
- emergent wetland,
- drainages, and
- rice fields (habitat for giant garter snake).

Special Status Species

- giant garter snake (*Thamnophis couchi gigas*),
- Swainson's hawk (*Buteo swainsonii*),
- valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*),

- tricolored blackbird (*Agelaius tricolor*), and
- western pond turtle (*Achinemys [Emys] marmorata*).

The Project area also supports potential nesting habitat for a variety of special-status and common nesting raptors, including a golden eagles that could stray from the foothills to forage. However, none were located during the 2011 raptor surveys.

Based on fall 2010 and spring 2011 botanical surveys, no special status plants occur in the project area.

Fremont Cottonwood Riparian Woodland

Fremont cottonwood riparian woodland is the only riparian community in the study area and occurs along a seasonal drainage at the southern end of the Project area. The community is dominated by Fremont cottonwood (*Populus fremontii* ssp. *fremontii*), valley oak (*Quercus lobata*), and black willow (*Salix gooddingii*). Common associate species are umbrella sedge (*Cyperus eragrostis*), Bermuda grass (*Cynodon dactylon*), Dallis grass (*Paspalum dilatatum*), and Himalayan blackberry (*Rubus armeniacus*, formerly *R. discolor*). Despite widespread disturbances resulting from urbanization, agricultural conversion, and grazing, riparian habitats remain important wildlife resources. Scarce both regionally and statewide, riparian habitats are used by a large variety of wildlife species. This habitat supports abundant aquatic and terrestrial invertebrates that are prey for amphibians and reptiles such as common garter snakes (*Thamnophis sirtalis*), western skinks (*Eumeces sklitonianus*), and ringneck snakes (*Diadophis punctatus*), and for insectivorous birds such as warblers, northern flickers (*Colpates auratus*), downy woodpeckers (*Picoides pubescens*), and flycatchers. Small mammals found in riparian habitats include shrews, voles, bats, and mice. Raptors that prey on these small mammals and nest in large riparian trees include great-horned owls, red-tailed hawks, American kestrels and on rare occasions, Swainson's hawk or golden eagles. Cavity dependant species such as woodpeckers, bats, squirrels, and raccoons (*Procyon lotor*) require mature stands of trees. Striped skunks (*Mephitis mephitis*), red foxes (*Vulpes vulpes*), gray foxes (*Urocyon cinereoargentatus*), and badgers forage in riparian habitats and use them for cover and travel. Black-tailed deer, which are of particular importance to Native Americans, may forage or seek cover in riparian areas, agricultural fields or orchards. Valley elderberry longhorn beetle (VELB) (*Desmocerus californicus dimorphus*) (federally listed as threatened) and Swainson's hawk are both known to occur in riparian habitat along the Sacramento River, west of the Project area. Patches of Himalayan blackberry along drainages in the Project area provide suitable nesting habitat for colonies of tricolored blackbird (*Agelaius tricolor*) (species of special concern) (DeHaven et al. 1975). One elderberry shrub was located in the riparian corridor during 2010 surveys.

Emergent Wetland

Like riparian communities, emergent wetlands are primarily associated with drainages that cross through the Project area. The acreage of emergent wetlands is included in the acreage for drainages because these wetlands occur below the ordinary high water mark of these features.

In the study area, emergent wetlands are dominated by cattail (*Typha* sp.) and common tule (*Scirpus acutus* var. *occidentalis*). Common associate species are umbrella sedge (*Cyperus eragrostis*), Bermuda grass (*Cynodon dactylon*), and Dallis grass (*Paspalum dilatatum*).

Emergent wetlands are among the most productive wildlife habitats in California, providing food, cover, and water for more than 160 species of birds and numerous mammals, reptiles, and

amphibians occupying the open water and adjacent grassland habitats (Mayer and Laudenslayer 1988). Vegetation growing along the edges of water bodies also provides nesting habitat for several bird species (e.g., waterfowl, red-winged blackbird [*Agelaius phoenicius*], American bittern [*Botaurus lentiginosus*], marsh wren [*Cistothorus palustris*], song sparrow [*Melospiza melodia*]).

Giant garter snakes forage in emergent wetlands. Tricolored blackbirds may nest in seasonal wetlands with stands of cattail or bulrush that are large enough to support a nesting colony (typically more than 50 pairs). Preferred foraging habitats include rice, alfalfa, irrigated pasture and annual grasslands (Beedy and Hamilton 1999).

Drainages

For the purpose of this document, the term *drainage* includes natural and artificially created features with a well-defined bed and bank and flowing water at some time of the year. In the Project area, these drainages include irrigation ditches and canals. Unless they are actively maintained, these drainages typically support emergent wetlands. Drainages with wetland vegetation below the ordinary high water mark (OHWM) are referred to as "wetland drainages" and are typically dominated by emergent wetland vegetation. Drainages that lack wetland vegetation below the OHWM are referred to as "other waters drainages".

The wildlife values of the drainages that occur in the Project area range from high to low. Most of the drainages have high to moderate wildlife value because streamside vegetation provides cover and foraging habitat. Amphibians, including Pacific tree frog and the non-native bullfrog, were observed in drainages during field surveys, and striped skunk, raccoon, and coyote may use drainages for foraging. Giant garter snakes occur in irrigation ditches and canals and adjacent uplands. Northwestern pond turtle (*Actinemys marmorata*) may use areas where there are pools with some vegetative cover such as willows or emergent vegetation and exposed branches or rocks to use as basking sites.

Irrigation and roadside ditches that are actively maintained by the landowner and have low wildlife value because they are narrow; lack vegetative cover; and are adjacent to development, paved roads, and agricultural roads. Additionally, feral and domestic cats, automobile traffic, and agricultural practices reduce wildlife use in these areas.

The potential for drainages in the Project area to support high quality habitat for fish is relatively low. Most of the drainages have relatively poor water quality because of the heavy pesticide and herbicide use in the area.

Giant Garter Snake

The giant garter snake is state- and federally listed as threatened (58 FR 54053–54065, October 20, 1993). The species inhabits marshes; sloughs; ponds; small lakes; and low-gradient waterways such as small streams, irrigation and drainage canals, and rice fields. Giant garter snakes feed on small fish, tadpoles, and frogs (Fitch 1940; Hansen 1988). The giant garter snake requires the habitat components listed below.

- Adequate water during the active season (early spring through mid-fall) to provide food and cover.
- Emergent wetland vegetation such as cattails (*Typha* spp.) and bulrushes (*Scirpus* spp.) to provide escape cover and foraging habitat.

- Grassy banks for basking.
- Higher elevation uplands for cover and refuge from winter floods during the dormant season (i.e., November to mid-March) (Hansen and Brode 1980; Hansen 1988; 58 FR 54053–54065, October 20, 1993).

Based on guidance from USFWS (Ben Watson), including the Service's Biological Opinion, and DFG (Jenny Marr) for other projects in the region, it was determined that rice fields, drainages, and other water bodies in the action area could provide potential aquatic habitat for giant garter snakes. It was also determined that the rice berms and adjacent earthen roads and fallow vegetated, agricultural fields (not unvegetated disked fields) within 200 feet of these waters could provide potential upland habitat for giant garter snakes.

Based on the presence of known occurrences of giant garter snake in the Project region, it was determined that there is a high potential for this species to occur in the Project area (USFWS Biological Opinion [File # 81420-2011-F-0298-1]).

Swainson's Hawk

Swainson's hawk is listed as threatened by DFG, is a USFWS bird species of conservation concern, and is protected under the Migratory Bird Treaty Act (MBTA) and California Fish and Game Code Section 3503.5. The MBTA and Section 3503.5 prohibit the "take" of migratory birds, nests, and young. In the Central Valley, this hawk typically nests in oak or cottonwood trees in or near riparian habitats; in oak groves; in roadside trees; and in lone trees. Swainson's hawks prefer nesting sites that provide sweeping views of nearby foraging grounds consisting of grasslands, irrigated pasture, alfalfa, hay, and row and grain crops. Swainson's hawks are migratory, wintering from Mexico to Argentina and breeding in California and elsewhere in the western United States. They generally arrive in the Central Valley in mid-March and begin courtship and nest construction immediately upon arrival at the breeding sites. The young fledge in early July, and most Swainson's hawks leave their breeding territories by late August or early September.

Swainson's hawks are known to nest and forage in the Project area. There are several documented nest sites along the Sacramento River corridor. Row crops provide potential foraging habitat in the study area. Rice and fallow fields are not considered potential foraging habitat. Based on the presence of known nest sites, there is a high potential for these hawks to nest in the Project area. However, no nesting Swainson's hawks have been observed during the March, April, and May 2011 surveys conducted for this species.

Valley Elderberry Longhorn Beetle

Valley elderberry longhorn beetle is federally listed as threatened (FR 45:52803) and is closely associated with blue elderberry, an obligate host for beetle larvae. Potential habitat for VELB is considered to be all plants with stem diameters greater than or equal to 1.0 inch at the base. Elderberry shrubs with diagnostic exit holes on the stems have hosted beetle larvae in the recent past (typically, the last 3–5 years depending on stem size and growth) and are considered occupied habitat.

During the field surveys, the locations of two potential elderberry shrubs were mapped and examined for evidence of VELB occupation. One shrub is located in the riparian drainage within 100 feet of the gas pipeline construction corridor and Grimes Station pad. The other shrub is located within the biological study area but is more than 100 feet from the construction area. No exit holes

were observed in either shrub. However, it was assumed that the elderberry shrubs could provide potential habitat for VELB.

Tricolored Blackbird

Tricolored blackbird is a USFWS bird species of conservation concern and is protected under the federal MBTA (16 U.S.C. 703B711); it is also a state species of special concern. Tricolored blackbird colonies have been documented in the Project region, but are not known to occur in the Project area (California Natural Diversity Database 2010). There is a moderate potential for this species to nest in blackberry thickets along drainages at the southern end of the proposed gas pipeline corridor.

Western Pond Turtle

The western pond turtle (pond turtle) is a state species of special concern. Pond turtles inhabit aquatic habitats such as ponds, marshes, or streams with rocky or muddy bottoms and vegetative cover. They occasionally leave the water to bask, and females leave the water from May through July to lay eggs as far as 0.25 mile from water.

Perennial irrigation ditches and drainages in the Project area provide potential breeding and movement corridors for pond turtles. Although potential habitat is present, it is regularly disturbed for agricultural operations. Therefore, there is a low potential for pond turtles to occur in the Project area based on the disturbed conditions and lack of pond turtle records in the Project region.

Other Special-Status and Non-Special-Status Migratory Birds and Raptors

Several non-special-status migratory birds (including waterfowl) and raptors could nest in and adjacent to the study area, based on the presence of potential nesting habitat (wetlands and annual grasslands). The breeding season for most birds is generally from February 16 to August 15. The occupied nests and eggs of these birds are protected by federal and state laws, including the MBTA and California Fish and Game Code Sections 3503 and 3503.5. DFG is responsible for overseeing compliance with the codes and makes recommendations on nesting bird and raptor protection.

The other special-status migratory birds and raptors either documented in the Project region or having low to moderate potential to occur in the region include northern harrier (*Circus cyaneus*), osprey (*Pandion haliaetus*), western burrowing owl (*Athene cunicularia hypugea*), mountain plover (*Charadrius montanus),* western yellow-billed cuckoo (*Coccyzus americanus occidentalis*), white tailed kite (*Elanus leucurus*), greater sandhill crane (*Grus canadensis tabida*), loggerhead shrike (*Lanius ludovicianus*), and white-faced ibis (*Plegadus chihi*).

Non-special-status birds that were observed during the reconnaissance field surveys include red-tailed hawk, American kestrel, killdeer, western meadowlark (*Sturnella neglecta*), northern mockingbird (*Mimus polyglottos*), red-winged blackbird, western kingbird (*Tyrannus verticalis*), and mourning dove. These generally common species are locally and regionally abundant.

The Project region also provides potential habitat for resident and wintering waterfowl (including mallard, northern pintail [*Anas acuta*], cinnamon teal [*Anas cyanoptera*], ruddy duck [*Oxyura jamaicensis*], American wigeon [*Anas americana*], and northern shoveler [*Anas clypeata*]). These species are most abundant during winter (October through January) and are actively hunted by the numerous duck clubs located in the Project region.

Conditions of Certification

The permit conditions and mitigation measures provided in Table 1 (attached at the end of this amendment) were issued to Calpine from the natural resource agencies and the CEC.

Mitigation Measures

Avoidance Measures

Calpine designed the Project to avoid environmental impacts to the maximum extent practicable. Avoidance measures incorporated into the project design include:

- Trenchless pipeline crossing at 9 drainages using horizontal directional drilling or auger bore technology
- Use of orange barrier fencing to protect environmentally sensitive areas from construction equipment and personnel.
- Preconstruction surveys for special status plants and wildlife in all ground disturbance areas.
- Biological monitoring for special status species during all ground disturbing activities.
- Use of an existing utility corridor and existing well pads for the pipeline and metering sites where practicable. Use of existing roads and metering sites for access to the construction and laydown areas.
- Timing restrictions on construction in giant garter snake habitat.
- Worker environmental awareness training for all employees and contractors

Minimization Measures

The following measures have been incorporated into the project to minimize environmental impacts:

- Modify project design to minimize impacts during construction and operation
- Erosion control near waterways and revegetation of disturbed areas
- An environmental awareness education program will be conducted for construction crews prior to initiating construction. The program will be conducted for new crew members throughout the duration of the project. The education program will include information about the federal and California Endangered Species Acts, the consequences for noncompliance with environmental laws, identification of special-status plant and wildlife species and wetland habitats, and review of conservation measures and permit conditions related to the protection of environmental resources.
- Establish exclusion zones and minimize the amount of area disturbed to the minimum amount necessary to complete the work.
- Vehicles will be restricted to established roadways and approved access routes and staging areas.
- Implement measures specified in the project SWPPP to prevent construction-related erosion and sediments from entering nearby waterways.

- When rainfall is forecast, enclose and cover exposed stockpiles of dirt or other loose, granular construction materials that could contribute sediment to waterways.
- Control and contain soil and filter runoff from disturbed areas, using berms, silt fencing, straw bales or wattles, plastic sheeting or geofabric, silt/sediment traps and catch basins, silt fencing, sand bag dikes, temporary vegetation or other groundcover, or other means necessary to prevent the escape of sediment from the disturbed area.
- Conduct all dewatering activities according to the provisions of the SWPPP. No dewatering materials will be placed in local water bodies or in storm drains leading to such bodies without implementation of proper construction water quality control measures. Dewatered areas will remain dry for at least 15 days prior to work in them.
- To reduce potential contamination by spills, no refueling, storage, servicing, or maintenance of equipment will be performed within 50 feet of sensitive environmental resources. No refueling or servicing will be conducted without absorbent material or drip pans underneath to contain spilled fuel. Any fluids drained from the machinery during servicing will be collected in leak-proof containers and taken to an appropriate disposal or recycling facility. If such activities result in spillage or accumulation of a product on the soil, the contaminated soil will be assessed and disposed of properly. Under no circumstances will contaminated soils be added to a spoils pile or trench backfill.
- All maintenance materials (e.g., oils, grease, lubricants, antifreeze) will be stored at offsite staging areas. If these materials are required during field operations, they will be placed in a designated area away from site activities and sensitive resources.

Temporary Impact Restoration

All temporarily impacted (exposed/disturbed) aquatic and upland habitats will be restored to pre-construction conditions and revegetated in coordination with landowner requirements including use of local native grass seeds, local native grass plugs, and/or a mix of quick growing sterile non-native grass with local native grass seeds. Seeded areas shall be covered with broadcast straw and/or jute netted (monofilament erosion blankets are not authorized).

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Personal Communications

Marr, Jenny. Environmental Scientist, California Department of Fish and Game. Various emails and telephone conversations with Sue Bushnell regarding giant garter snake and process for obtaining a consistency determination under California Fish and Game Code 2080.1.

Watson, Ben. Biologist, U.S. Fish and Wildlife Service. Various emails and telephone conversations with Sue Bushnell regarding giant garter snake conservation measures and the Biological Assessment.

Table 1. Biological Resources Conditions of Certification from California Energy Commission and Permit Conditions from Natural Resource Agencies for the Grimes Pipeline Project

Agency/ Permit	ID	Mitigation-Monitoring Condition	Timing	Reporting Requirement	Inspection Requirement	Resource Topic	Responsible Party
CEC/Sutter Energy Center Amendment	BIO-1-GP[1]	**Designated Biologist** Construction related earth disturbance activities shall not begin until an Energy Commission Compliance Project Manger (CPM) approved designated biologist is available on site. **Protocol:** the designated biologist must meet the following minimum qualifications; 1) a bachelor's degree in biological sciences, zoology, botany, ecology, or a closely related field; 2) three years of experience in field biology or current certification of nationally recognized biological society, such as the Ecological Society of America or The Wildlife Society; 3) one year of field experience with resources found in or near the project area: and 4) ability to demonstrate to the satisfaction of the CPM the appropriate education and experience for the biological resource tasks that must be addressed during project construction and operation. **Verification:** If, within 10 days of receiving the resume of the proposed designated biologist, the CPM determines that the proposed designated biologist is unacceptable, the project owner shall submit another individual's name and qualifications for consideration. If the approved designated biologist needs to be replaced, the project owner shall obtain approval of a new designated biologist by submitting to the CPM the name, qualifications, address, and telephone number of the proposed replacement. No disturbance will be allowed in any designated sensitive area(s) until the CPM approves a new designated biologist and that designated biologist is on-site.	10 days prior to construction	CPM to approve the Designated Biologist		All Biological Resources	Calpine

[1] To avoid confusion with the original 1999 Conditions and to appropriately tailor the new requirements unique to the Grimes Pipeline, the 1999 Conditions, to the extent applicable, have been modified to specifically address the site-specific conditions and impacts related to the Grimes Pipeline Project. To distinguish these proposed 2011 Conditions as applicable to the Grimes Pipeline, the letters "GP" have been added to the applicable Conditions.

Agency/ Permit	ID	Mitigation-Monitoring Condition	Timing	Reporting Requirement	Inspection Requirement	Resource Topic	Responsible Party
		At least 10 days prior to the start of commencement of construction, the project owner shall submit to the CPM for approval, the name, qualifications, address, and telephone number of the individual selected by the project owner as the designated biologist. If a designated biologist resigned or is replaced the information on the proposed replacement as specified in the Condition must be submitted in writing to the CPM for review and approval.					
CEC/Sutter Energy Center Amendment	BIO-2-GP	The CPM approved designated biologist shall perform the following duties: 1) advise the project owner's supervising construction chief inspector and resident engineer on the implementation of the biological resource Conditions of Certification; 2) supervise or conduct mitigation, monitoring, and other biological resources compliance efforts, particularly in areas requiring avoidance or containing sensitive biological resources, such as wetlands and special status species; and 3) notify the project owner and the CPM of any non-compliance with any Condition. **Verification:** The designated biologist shall maintain written records of the task described above, and summaries of these records shall be submitted along with the Monthly Compliance Reports to the CPM.	During Construction	On Site Records of Advise and Non-compliance	As Needed	All Biological Resources	Designated Biologist
CEC/Sutter Energy Center Amendment	BI0-3-GP	The project owner's supervising construction chief inspector shall act on the advice of the designated biologist to ensure conformance with the biologist resources Conditions of Certification. **Protocol:** The project owner's supervising construction chief inspector shall halt, if needed, all construction activities in areas specifically identified by the designated biologist as sensitive to assure that potential significant biological resource impacts are avoided. The designated biologist shall: 1) tell the project owner and supervising construction chief inspector when to resume construction and	Within 2 Working Days of Incident Requiring Stoppage of Work	Phone Call to CPM	As Needed	All Biological Resources	Calpine

Agency/ Permit	ID	Mitigation-Monitoring Condition	Timing	Reporting Requirement	Inspection Requirement	Resource Topic	Responsible Party
		2) advise the CPM if any corrective actions are needed or have been instituted. **Verification:** Within two working days of a designated biologist's notification of non compliance with a Biological Resources Condition or a halt of construction, the project owner shall notify the CPM by telephone of the circumstances and actions being taken to resolve the problem or the non-compliance with a Condition					
CEC/Sutter Energy Center Amendment	BIO-4-GP	**Worker Environmental Awareness Program** The project owner shall develop and implement a Worker Environmental Awareness Program in which each of its own employees, as well as employees of contractors and subcontractors, who work on the Grimes Pipeline Project and Grimes Station site during construction and operation, are informed about biological resource sensitivities associated with the project. **Protocol:** The Worker Environmental Awareness Program 1) shall be developed by the designated biologist and consist of an on-site or classroom presentation in which supporting written material is made available to all participants; 2) must discuss the locations and types of sensitive biological resources on the project site and adjacent areas: 3) must present reasons for protecting these resources; and 4) must present the meaning of habitat protection measures; and 5) must identify who to contact if there are further comments and questions about the material discussed in the program. **Verification:** At least 10 days prior to the start of commencement of construction, the project owner shall provide copies of the Worker Environmental Awareness Program and all supporting written materials prepared by the designated biologist and the name and qualifications of	At Least 10 Days Prior to the Start of Construction	Signed Statement of Receipt of Worker Environmental Awareness Program to the CPM		All Biological Resources	Calpine

Agency/ Permit	ID	Mitigation-Monitoring Condition	Timing	Reporting Requirement	Inspection Requirement	Resource Topic	Responsible Party
		the person(s) administering the program to the CPM for approval. The project owner shall state in the Monthly Compliance Report the number of persons who have completed the training in the prior month and a running total of all persons who have completed the training to date. Each participant in the on-site Worker Environmental Awareness Program shall sign a statement declaring that the individual understands and shall abide by the guidelines set forth in the program material. Each statement shall also be signed by the person administering the Worker Environmental Awareness Program. The signed statements for the construction shall be kept on file by the project owner and made available for examination by the CPM for a period of at least six (6) months after the start of operation of the Grimes pipeline.					
CEC/Sutter Energy Center Amendment	BIO-5-GP	**California Department of Fish and Game Consistency Determination** The project owner shall apply to the California Department of Fish and Game (CDFG), asking for the Department's recommendations to the Commission regarding a consistency determination (per Section 2080.1 of the California Fish and Game Code). **Verification:** At least 10 days prior to the start of construction, the project owner shall submit to the CPM a copy of the owner's request for CDFG's recommendations to the Commission on the consistency determination.	At Least 10 Days Prior to the Start of Construction	Proof of CESA Compliance to CPM		Giant Garter Snake (GGS)	Calpine
CEC/Sutter Energy Center Amendment	BIO-6-GP	**U.S. Fish and Wildlife Service Section 7 Biological Opinion** Prior to construction of the Grimes Pipeline Project, the project owner shall provide final copies of the Biological Opinion per Section 7 of the federal endangered species act obtained from the U.S. Fish and Wildlife Service (USFWS) and incorporate the terms of the agreement into the Biological Resources Mitigation Implementation and Monitoring Plan. In the alternative, the project owner may satisfy this condition by receiving a No Effect Letter from the USFWS. **Verification:** At least 10 days prior to the start of commencement of construction for the Grimes Pipeline	At Least 10 Days Prior to the Start of Construction	Proof of ESA Compliance to CPM		GGS and VELB	Calpine

Agency/ Permit	ID	Mitigation-Monitoring Condition	Timing	Reporting Requirement	Inspection Requirement	Resource Topic	Responsible Party
		Project, the project owner shall submit to the project CPM copies of the final USFWS Biological Opinion or, in the alternative, the final No Effect Letter.					
CEC/Sutter Energy Center Amendment	BIO-7-GP	**California Department of Fish and Game Streambed Alteration Agreement** The project owner shall apply to the California Department of Fish and Game (CDFG), asking for the Department's recommendations to the Commission regarding a Streambed Alteration Agreement for the project. **Verification:** At least 10 days prior to the start of construction, the project owner shall submit to the CPM a copy of the owner's request for CDFG's recommendations to the Commission on the Streambed Alteration Agreement.	At Least 10 Days Prior to the Start of Construction	SAA to CPM		Drainages	Calpine
CEC/ Sutter Energy Center Amendment	BIO-8-GP	**Giant Garter Snake (GGS) Impact Avoidance and Minimization Measures** Construction within 200 feet of canals with potential GGS habitat must follow USFWS construction guidelines. The project Applicant shall minimize all gas pipeline construction within 200 feet of canals with potential GGS habitat to the greatest extent possible. All pipeline construction within GGS areas shall incorporate measures as described in the USFWS GGS construction guidelines including but not limited to the following: • Any dewatered potential habitat shall remain dry for at least 15 consecutive days after April 15 and prior to excavating or filling of the dewatered habitat. • After completion of construction activities, remove any temporary fill and construction debris and, wherever feasible, restore disturbed areas to pre-project conditions. Restoration work may include such activities as replanting species removed from banks during construction or drilling operations. • No fencing or other materials shall be utilized within 200 feet of potential GGS habitat that could potentially entangle or otherwise harm GGS. • All construction that must occur within 200 feet of canals with potential GGS habitat shall occur within the GGS active	At Least 15 Days Prior to Work in or within 200 feet of Drainages	Report Prepared Monthly or within 24 Hours of GGS Sighting to USFWS		GGS	Designated Biologist

Agency/ Permit	ID	Mitigation-Monitoring Condition	Timing	Reporting Requirement	Inspection Requirement	Resource Topic	Responsible Party
		period (May 1-October 1). USFWS must approve in writing any construction work within potential GGS habitat that must be conducted outside of this time window before construction activities commence. **Verification:** The project owner shall submit a report to USFWS and the CPM if any GGS are found within work areas no more than 24 hours after the sighting is made. The report shall include monitoring results; a description of resolution of construction/snake conflict, and any additional monitoring that was required. The monthly monitoring report shall include updates on construction work occurring within potential GGS habitat.					
CEC/Sutter Energy Center Amendment	BIO-9-GP	**Swainson's Hawk Impact Avoidance and Minimization Measures** The project owner shall ensure the following measures are implemented to mitigate or avoid project impacts to Swainson's hawks: 1) The designated biologist shall conduct preconstruction surveys during March through June during construction period to determine if an active nest site is within 0.5 mile of construction activities. 2) Design the project to avoid removal of nest trees within 0.1 mile of nest trees. 3) The designated biologist shall monitor construction activities that occur within 0.5 mile of an active nest site between March 1 and August 15 or until fledglings are no longer dependent on the nest tree. The monitoring plan shall be acceptable to CDFG. **Verification:** At least 10 days prior to commencement of construction, the project owner shall provide to the project CPM for review and approval written documentation (BRMIMP, BIO-12) that the above measures will be accomplished by the applicant and specifying the procedures used or that will be used to implement these measures.	Prior to the Start of Construction	Survey Report to CPM At Least 10 Days Prior to Start	Hawk Surveys within 0.5 Mile	Birds	ICF
CEC/Sutter Energy Center Amendment	BIO-11-GP	**Wetland Impact Avoidance and Minimization Measures** Consistent with the wetlands delineation performed for the project, the project owner shall mark and avoid all wetlands	At Least 10 Days Prior to the Start of Construction	Documentation of Wetland Area Markings to CPM		Wetlands	Calpine/ Designated Biologist

Agency/ Permit	ID	Mitigation-Monitoring Condition	Timing	Reporting Requirement	Inspection Requirement	Resource Topic	Responsible Party
		on site that will not be directly taken. **Verification:** At least 10 days prior to commencement of construction, the project owner shall provide to the project CPM for review and approval written documentation (BRMIMP, BIO-12) that the above measures will be accomplished by the licensee and specifying the procedural terms for implementing these measures.					
CEC/Sutter Energy Center Amendment	BIO-12-GP	**Biological Resources Mitigation Implementation and Monitoring Plan (BRMIMP)** The project owner shall submit to the CPM for review and approval a copy of the amended Biological Resources Mitigation Implementation and Monitoring Plan for the Grimes Pipeline Project. **Protocol:** The Biological Resources Mitigation Implementation and Monitoring Plan shall identify: • all sensitive biological resources to be impacted, avoided, or mitigated by project construction and operation; • all conditions agreed to in the USFWS Biological Opinion and CDFG consistency determination recommendations to the Commission; • all applicable mitigation, monitoring and compliance conditions included in the Amendment; • all conditions agreed to in the USACE Clean Water Act Permits; • all conditions specified in the Streambed Alteration Agreement recommendations of CDFG, if required; • required mitigation measures for each sensitive biological resource; • a detailed description of measures that will be taken to avoid or mitigate temporary disturbances from construction activities; • all locations, on a map of suitable scale, of laydown areas and areas requiring temporary protection and avoidance during construction; • aerial photographs of all areas to be disturbed during project construction activities - one set prior to site	At least 10 Day Prior to Construction and at Least 90 Days Following Construction	BRMIMP to CPM, Completion Report to CPM	Daily	All Biological Resources	Calpine

Agency/ Permit	ID	Mitigation-Monitoring Condition	Timing	Reporting Requirement	Inspection Requirement	Resource Topic	Responsible Party
		disturbance and one set subsequent to completion of mitigation measures. Include planned timing of aerial photography and a description of why times were chosen; • monitoring duration for each type of monitoring and a description of monitoring methodologies and frequency; • description of habitat restoration in disturbed areas and erosion control • a process for proposing plan modifications to the CPM and appropriate agencies for review and approval. **Verification:** At least 10 days prior to commencement of construction, the project owner shall provide the CPM with the final version of the Biological Resources Mitigation Implementation and Monitoring Plan for the Grimes Pipeline Project, and the CPM will determine the plan's acceptability within 5 days of receipt of the final plan. The project owner shall notify the CPM five working days before implementing any modifications to the Biological Resource Mitigation Implementation and Monitoring Plan. Within 90 days after completion of construction, the project owner shall provide to the CPM, for review and approval, a written report identifying which items of the Biological Resource Mitigation Implementation and Monitoring Plan have been completed, a summary of all modifications to mitigation measures made during the project's construction phase, and which condition items are still outstanding.					
CDFG/ Streambed Alteration Agreement	1.1	**Documentation at Project Site.** Calpine will make the Agreement, any extensions and amendments to the Agreement, and all related notification materials and CEQA documents, readily available at the project site at all times and shall be presented to DFG personnel, or personnel from another state, federal, or local agency upon request.	During Construction			All Biological Resources	Calpine
CDFG/ Streambed Alteration Agreement	2.1	**Work Period.** The time period for completing the work within the stream zone shall be restricted to periods of low stream flow and dry weather and shall be confined to the period of May 1 to October 1. Construction activities within the stream zone shall cease until all reasonable erosion control measures, inside and outside of the stream zone, have	May 1 to October 1			Drainages	Calpine

Agency/ Permit	ID	Mitigation-Monitoring Condition	Timing	Reporting Requirement	Inspection Requirement	Resource Topic	Responsible Party
		been implemented prior to all storm events. Revegetation, restoration and erosion control work is not confined to this time period.					
CDFG/ Streambed Alteration Agreement	2.3	**No Equipment in the Water.** No equipment shall be in the water.	During Construction		Daily	Drainages	CPM
CDFG/ Streambed Alteration Agreement	2.4	**Snake fencing/Silt fencing.** If excavation pits will be left open for multiple days, silt fencing (geotextile filter fabric on wooden states) or a Department-approved alternative shall be installed (and partially buried per standard specifications) on the ditch side of the excavation pits to keep snakes and other wildlife from entering the pits.	During Construction		Daily	GGS	CPM
CDFG/ Streambed Alteration Agreement	2.5	**Spoil Placement.** To prevent burying, trapping, or crushing giant garter snakes, spoil from project operations shall not be placed on or near the canal banks where there is a risk of covering rodent burrows or bank-top soil crevices.	During Construction		Daily	Wildlife	CPM
CDFG/ Streambed Alteration Agreement	2.6	**Escape Ramp in Excavation Pits.** At the end of each work day, an escape ramp shall be placed at each end of the open excavation to allow any animals that may have become entrapped in the trench to climb out overnight. The ramp may be construction of either dirt fill or wood planking or other suitable material that is placed at an angle no greater than 30 degrees.	During Construction		Daily	Wildlife	CPM
CDFG/ Streambed Alteration Agreement	2.7	**Biological Monitor.** Calpine shall provide biological monitor(s) for work within giant garter snake habitat and they shall direct access and construction activities. The Biological Monitor shall conduct Environmental Awareness Training, Preconstruction Surveys, survey open excavations every morning prior to start of work, and be present during all work with special attention to excavations, spoil placement, backfilling, and silt fence/snake fence installation and removal.	During Construction		Daily	GGS	Calpine
CDFG/ Streambed Alteration Agreement	2.8	**Environmental Awareness Training.** All construction personnel shall receive worker environmental awareness training conducted by a qualified biologist. This training shall instruct workers to recognize giant garter snakes, their	Prior to Construction	Statement from Attendees of Training		All Bio Resources	Designated Biologist

Agency/ Permit	ID	Mitigation-Monitoring Condition	Timing	Reporting Requirement	Inspection Requirement	Resource Topic	Responsible Party
		habitat(s), and nature and purpose of protection measures, and the terms and conditions of any permit applicable to the Project.					
CDFG/ Streambed Alteration Agreement	2.9	**Preconstruction Surveys for GGS.** Twenty-four hours prior to construction activities, a biological monitor shall survey the work areas within potential giant garter snake habitat for giant garter snakes. Surveys of work areas shall be repeated if a lapse in construction activity of 48 hours or greater has occurred. The results of this preconstruction survey shall be reported to Kelley Barker at the Department even if no snakes are observed.	Prior to Construction	Results of GGS Survey to DFG	At Least 24 Hours Prior to Work in GGS Habitat	GGS	Designated Biologist
CDFG/ Streambed Alteration Agreement	2.10	**Check for Snakes Under Vehicles.** The biological monitor as well as all construction personnel shall visually check for snakes under parked vehicles and equipment within giant garter snake habitat area prior to moving them. If snakes or other listed species are observed by crews, construction personnel will contact the biological monitor.	During Construction		Daily	GGS	All Construction Personnel
CDFG/ Streambed Alteration Agreement	2.11	**Giant Garter Snake Encounters.** If giant garter snake is encountered during construction or preconstruction surveys, activities shall cease at that work area until the animal has moved out of the work area on its own. Sightings, work stoppage, and any incidental take will be immediately reported to the U.S. Fish and Wildlife Service (Service) at (916) 414-6600 and Kelley Barker at the California Department of Fish and Game at (916) 747-4319.	During Construction		Daily	GGS	All Construction Personnel
CDFG/ Streambed Alteration Agreement	2.12	**Cover Open Pipes.** Open ends of pipes, conduits and similar materials shall be covered to exclude wildlife. Such materials shall be checked for signs of wildlife prior to disturbance.	During Construction		Daily	All Biological Resources	CPM, Designated Biologist
CDFG/ Streambed Alteration Agreement	2.13	**Garbage Storage and Removal.** Food wrappers and construction related garbage shall be contained in covered garbage cans and removed from the site.	During Construction		Daily	All Biological Resources	All Construction Personnel
CDFG/ Streambed Alteration Agreement	2.14	**No Pets, Firearms or Campfires.** Workers will not be allowed to bring pets or firearms to with Project Area nor light campfires within the Project Area.	During Construction		Daily	All Biological Resources	All Construction Personnel

Agency/ Permit	ID	Mitigation-Monitoring Condition	Timing	Reporting Requirement	Inspection Requirement	Resource Topic	Responsible Party
CDFG/ Streambed Alteration Agreement	2.15	**Heavy Equipment Confined to Existing Roads.** Construction activities that occur within suitable giant garter snake upland habitat will be minimized. When possible, movement of heavy equipment shall be confined to existing roadways to minimize disturbance.	During Construction		Daily	Water Quality	All Construction Personnel
CDFG/ Streambed Alteration Agreement	2.16	**Restoration of Work Site/Excavated Soil Removal or Distribution.** After completion of construction activities, temporary fill and construction debris shall be removed and disturbed areas shall be restored to pre-project conditions. Excavated soil shall either be removed from work site or backfilled into excavations. With Department approval, some excess excavated soil may be distributed over the existing work area.	After Construction			Water Quality	CPM
CDFG/ Streambed Alteration Agreement	2.17	**Frac-Out Plan.** The Permittee or the Contractor on behalf of the Permittee shall prepare a Jack/Bore Fluid Release Contingency Plan or other plan describing the response if a "frac-out" occurs. This plan shall be submitted to the Department for review and approval prior to commencement of construction activities.	Prior to Construction	Frac Out Plan to DFG	As Needed	Water Quality	Calpine
CDFG/ Streambed Alteration Agreement	2.18	**Cover Spoil Piles.** The contractor shall have readily available plastic sheeting or visqueen and will cover exposed spoil piles and exposed areas to prevent these areas from losing loose soil into the stream. These covering materials shall be applied when it is evident rainy conditions threaten to erode loose soils into the stream.	During Construction		Daily	Water Quality	CPM
CDFG/ Streambed Alteration Agreement	2.19	**Equipment Over Drip Pans.** Stationary equipment such as motors, pumps, generators, and welders, located within or adjacent to the stream/lake shall be positioned over drip pans.	During Construction		Daily	Water Quality	CPM
CDFG/ Streambed Alteration Agreement	2.20	**Check Vehicles/Equipment Daily.** Any equipment or vehicles driven and/or operated within or adjacent to the stream/lake shall be checked and maintained daily to prevent leaks of materials that if introduced to water could be deleterious to aquatic life, wildlife, or riparian habitat.	During Construction		Daily	Water Quality	CPM

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CDFG/ Streambed Alteration Agreement		**Control Drilling Mud.** At no time shall drill cuttings, drilling mud, and/or materials or water contaminated with bentonite or any other substance deemed deleterious to fish or wildlife be allowed to enter the stream or be placed where they may be washed into the stream. Any contaminated water/materials from the drilling and/or project activities shall be pumped or placed into a holding facility and removed for proper disposal.	During Construction		Daily	Water Quality	CPM
CDFG/ Streambed Alteration Agreement		**Speed Limits.** Where practical and safe to do so, vehicle speed within giant garter snake habitat areas of the Project shall be limited to 20 mph on unimproved access routes and roadways to avoid running over snakes.	During Construction		Daily	GGS	All Construction Personnel
CDFG/ Streambed Alteration Agreement		**Bird Nests.** It is unlawful to take, possess, or needlessly destroy the nest or eggs of any bird except as otherwise provided by the Fish and Game Code. No trees that contain active nests of birds shall be disturbed until all eggs have hatched and young birds have fledged without prior consultation and approval of a DFG representative.	During Construction		Daily	Birds	Designated Biologist
CDFG/ Streambed Alteration Agreement		**Vegetation Removal.** Disturbance or removal of vegetation shall not exceed the minimum necessary to complete operations. No native trees (OTHER THAN THOSE IDENTIFIED IN THE PROJECT DESCRIPTION) shall be removed or damaged without prior consultation and approval of a DFG representative. Using hand tools (clippers, chain saw, etc.), trees may be trimmed to the extent necessary to gain access to the work sites. All cleared material/vegetation shall be removed out of the riparian/stream zone.	During Construction		Daily	Vegetation	CPM
CDFG/ Streambed Alteration Agreement		**Sediment Control.** Precautions to minimize turbidity/siltation shall be taken into account during project planning and implementation. This may require the placement of silt fencing, coir logs, coir rolls, straw bale dikes, or other siltation barriers so that silt and/or other deleterious materials are not allowed to pass to downstream reaches. Passage of sediment beyond the sediment barrier(s) is prohibited. If any sediment barrier fails to retain sediment, corrective measures shall be taken. The sediment barrier(s) shall be maintained in good operating condition throughout	During Construction		Daily	Water Quality	CPM

Agency/ Permit	ID	Mitigation-Monitoring Condition	Timing	Reporting Requirement	Inspection Requirement	Resource Topic	Responsible Party
		the construction period and the following rainy season. Maintenance includes, but is not limited to, removal of accumulated silt and/or replacement of damaged silt fencing, coir logs, coir rolls, and/or straw bale dikes. Products with plastic monofilament or jute netting (such as found in straw wattles/fiber rolls and some erosion control blankets) shall not be allowed. Wildlife-friendly erosion control and sediment control products that will not entangle snakes and other wildlife shall be used instead. Special provisions shall be included in the bid solicitation package that prohibit the use of monofilament or jute netting. If this is not possible, the contractors, subcontractors and anyone performing erosion or sediment control work on this project, shall be specifically instructed that these products are not allowed on the work site. The Permittee is responsible for the removal of non-biodegradable silt barriers after the disturbed areas have been stabilized with erosion control vegetation (usually after the first growing season). Upon DFG determination that turbidity/siltation levels resulting from project related activities constitute a threat to aquatic life, activities associated with the turbidity/siltation shall be halted until effective DFG approved control devices are installed or abatement procedures are initiated.					
CDFG/ Streambed Alteration Agreement		**Pollution Control.** Utilize Best Management Practices (BMPs) to prevent spills and leaks into water bodies. If maintenance or refueling of vehicles or equipment must occur on-site, use a designated area and/or a secondary containment, located away from drainage courses to prevent the runoff of storm water and the runoff of spills. Ensure that all vehicles and equipment are in good working order (no leaks). Place drip pans or absorbent materials under vehicles and equipment when not in use. Ensure that all construction areas have proper spill clean up materials (absorbent pads, sealed containers, booms, etc.) to contain the movement of any spilled substances. Any substances which could be hazardous to aquatic life, resulting from project related activities, shall be prevented from contaminating the soil and/or entering the waters of the state. Any of these materials, placed within or where they may enter a stream or	During Construction		Daily	Water Quality	CPM

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		lake by the Permittee or any party working under contract or with the permission of the Permittee, shall be removed immediately. DFG shall be notified immediately by the Permittee of any spills and shall be consulted regarding clean-up procedures.					
USFWS/ Biological Opinion		High visibility construction fencing will be installed at least 20 feet from the dripline of one elderberry shrub located approximately 75-feet from the pipeline alignment. This shrub is located in riparian vegetation which will not be disturbed. Project work will be confined to an adjacent agricultural field.	Prior to Construction			VELB	Designated Biologist
USFWS/ Biological Opinion	Giant Garter Snake	Upon project completion, all temporarily disturbed snake habitat will be restored to pre-project conditions (primarily active rice). The applicant will monitor all restored habitat for one year and provide a monitoring report to the Service, including pre- and post-project photographs.	Following Construction	Monitoring Reports, Pre- and Post Project Photographs		GGS	Designated Biologist
USFWS/ Biological Opinion		After April 15th, all aquatic habitat for the snake must remain dry for at least 15 consecutive days before any construction occurs.	Prior to Construction			GGS	Designated Biologist
USFWS/ Biological Opinion		Construction activity within 200 feet of giant garter snake aquatic habitat will be minimized to the maximum extent practicable. Preserved giant garter snake habitat shall be designated as Environmentally Sensitive Areas and will be flagged by a Service-approved biologist and avoided by construction personnel and equipment.	Prior to Construction			GGS	Designated Biologist
USFWS/ Biological Opinion		No more than 24-hours prior to construction, a Service-approved biologist will conduct a pre-construction survey for the snake. This survey will be repeated if a lapse in construction activity of two weeks or greater occurs. If a snake is encountered during construction, activities will cease until appropriate corrective measures have been completed or it has been determined that the snake will not be harmed. All sightings of the snake will be reported to the Service immediately by telephone at (916) 414-6600. All snake sightings will also be reported to the California Department of Fish and Game for inclusion in the CNDDB.	24 Hours Prior to Work in GGS Habitat	Notify USFWS of any GGS Sightings		GGS	Designated Biologist

Agency/ Permit	ID	Mitigation-Monitoring Condition	Timing	Reporting Requirement	Inspection Requirement	Resource Topic	Responsible Party
USFWS/ Biological Opinion		A Service-approved biologist will be onsite during all construction within 200 feet of aquatic habitat for the snake. The biologist will ensure that all Conservation Measures are followed, and will have authority to stop construction if they are not. All open trenches will be inspected daily for trapped snakes.	During Construction		Daily	GGS	Designated Biologist
USFWS/ Biological Opinion		All construction personnel will receive environmental awareness training from a Service-approved biologist. This training will inform workers on how to identify the giant garter snakes and their habitat, the need to report all sightings of giant garter snakes, and the consequences of not complying with these conservation measures.	Prior to Construction			GGS	Designated Biologist
USFWS/ Biological Opinion		To minimize the effects of increased traffic in the construction area, a construction speed limit of 15 miles-per-hour will be established, and speed limit signs will be posted on all project-controlled roads leading to construction areas.	During Construction		Daily	GGS	All Construction Personnel
RWQCB/ Section 401 Water Quality Certification		CPN Pipeline shall notify the Central Valley Water Board in writing 7 days in advance of the start of any in-water activities. The notification should include the name of the project and the WDlD number, and should be sent to the Central Valley Water Board contact person shown on page five of this Certification.	At least 7 days Prior to Start of In-Water Activities				CPM
RWQCB/ Section 401 Water Quality Certification		Except for activities permitted by the U.S. Army Corps under §404 of the Clean Water Act, soil, silt, or other organic materials shall not be placed where such materials could pass into surface water or surface water drainage courses.	During Construction		Daily	Water Quality	Designated Biologist
RWQCB/ Section 401 Water Quality Certification		All areas disturbed by project activities must be protected from washout or erosion.	During Construction		Daily	Water Quality	CPM
RWQCB/ Section 401 Water Quality Certification		CPN Pipeline will maintain a copy of the Water Quality Certification and Project Information Sheet at the Project site during construction for review by site personnel and agencies.	During Construction			Water Quality	CPM

Agency/ Permit	ID	Mitigation-Monitoring Condition	Timing	Reporting Requirement	Inspection Requirement	Resource Topic	Responsible Party
RWQCB/ Section 401 Water Quality Certification		All personnel (employees, contractors, and subcontractors) performing work on the proposed project must be adequately informed and trained regarding the conditions of the Water Quality Certification.	Prior to Construction	Statement from Attendees of Training		Water Quality	Designated Biologist
RWQCB/ Section 401 Water Quality Certification		An effective combination of erosion and sediment control Best Management Practices (BMPs) must be implemented and adequately working during all phases of construction.	During Construction		Daily	Water Quality	CPM
RWQCB/ Section 401 Water Quality Certification		All temporarily affected areas will be restored to pre-construction contours and conditions upon completion of construction activities.	Following Completion of Construction Activities			Water Quality	CPM
RWQCB/ Section 401 Water Quality Certification		Perform surface water sampling immediately upstream out of the influence of the project and 300 feet downstream of the active work area when within or affecting surface waters.	Grab Samples Every 4 Hours During Construction	Sampling results shall be submitted to RWQCB within two weeks of initiation of sampling and every two weeks thereafter.	Grab Samples and Visual Inspections	Water Quality	CPM
RWQCB/ Section 401 Water Quality Certification		CPN Pipeline shall notify the Central Valley Water Board immediately of any spill of petroleum products or other organic or earthen materials.	During Construction	Phone Call and Email to RWQCB	Daily	Water Quality	CPM
RWQCB/ Section 401 Water Quality Certification		CPN Pipeline shall notify the Central Valley Water Board immediately if the above criteria for turbidity, settleable matter, oil/grease, or foam are exceeded.	During Construction	Phone Call and Email to RWQCB	Daily	Water Quality	CPM
RWQCB/ Section 401 Water Quality Certification		CPN Pipeline must obtain coverage under the NPDES General Permit for Storm Water Discharges Associated with Construction and Land Disturbance Activities issued by the State Water Resources Control Board.	Prior to Construction	File a Notice of Intent (NOI) and Prepare a Storm Water Pollution Prevention Plan (SWPPP)		Water Quality	CPM

Agency/ Permit	ID	Mitigation-Monitoring Condition	Timing	Reporting Requirement	Inspection Requirement	Resource Topic	Responsible Party
RWQCB/ Section 401 Water Quality Certification		When work in a flowing stream is unavoidable, the entire stream flow shall be diverted around or through the work area during the excavation and/or construction operations.	During Construction			Water Quality	CPM
RWQCB/ Section 401 Water Quality Certification		CPN Pipeline shall provide a Notice of Completion (NOC) no later than 30 days after the project completion. The NOC shall demonstrate that that the project has been carried out in accordance with the project's description (and any amendments approved).	No later than 30 days after the project completion	The NOC shall include a map of the project location(s), including final boundaries of any in situ restoration area(s), if appropriate, and representative pre and post construction photographs. Each photograph shall include a descriptive title, date taken, photographic site, and photographic orientation.		Water Quality	CPM
USACE/ Section 404 Permit		The USACE permit conditions will be attached to this document upon receipt of the Section 404 Nationwide 12 permit.					

Appendix A

Designated Biologist Qualifications

STEVEN AVERY

Project Director and Senior Wildlife Biologist

Steve has 23 years of experience managing biology projects, designing field studies, and conducting special-status species surveys in California. His expertise includes BAs and impacts analyses, wildlife census techniques, CEQA compliance as it relates to biology, and environmental compliance monitoring for large linear projects. Steve has successfully managed the survey efforts, environmental document preparation, and environmental compliance monitoring for several large transmission line and gas line projects in California. He evaluates impacts of projects on wildlife populations and provides mitigation planning for a variety of threatened and endangered species. Specifically, Steve has conducted surveys and managed technical studies in northern California, Oregon, and Nevada for federally listed species including California red-legged frog, California tiger salamander, giant garter snake, blunt-nosed leopard lizard, desert tortoise, northern spotted owl, marbled murrelet, and San Joaquin kit fox.

Years of Experience

- 26/1985
- ICF: 22/1989

Education

- MA, Biology, University of Northern Colorado, Greeley, 1990
- BS, Zoology/Wildlife Biology, Ohio University, Athens, 1985

Professional Memberships

- The Wildlife Society

Licenses

- California State Scientific Collecting Permit 801244-01 USFWS 10(a)(1)(A) permit to conduct surveys for Mexican spotted owl and California gnatcatcher surveys

Training

- Fiber-Optic Safety Training (Union Pacific) Water Quality Chlorine Safety Training (Sacramento Regional County Sanitation District Department)

Project Experience

On-Call Master Services Agreement—PG&E, California

Program manager for ICF's on-call master services agreement with PG&E) since 1999. Responsible for negotiating contracts, writing scopes of work and cost estimates, delegating work assignments, conducting technical studies, and managing projects for PG&E's maintenance and operations throughout their service territory. For several large projects, acted as lead biologist or project manager for field investigations, impact assessment, development of mitigation measures and environmental compliance monitoring for special-status wildlife—including VELB, California red-legged frog, California tiger salamander, blunt-nosed leopard lizard, northwestern pond turtle, desert tortoise, Western burrowing owl, Swainson's hawk, and San Joaquin kit fox. As part of master services agreement, served as project manager or lead wildlife biologist for the projects below.

Carrizo-Midway 230kV Transmission Line Reconductoring Project—PG&E

As the senior wildlife biologist, Steve provided peer review of U.S. Fish Wildlife Service (USFWS) biological assessment and California Department of Fish and Game 2081 Agreement documents. He assisted the project manager and PG&E with strategy on difficult

permitting issues including determination of a federal nexus for the project. He assisted the wildlife biologists on determining the appropriate level of effort for preconstruction special status wildlife surveys. Steve also prepared the scope and cost proposals to provide permitting and preconstruction surveys for the project.

C3EPT 500kV Transmission Line Project—PG&E, California

Served as project director, including overall quality assurance to PG&E. Provided management direction and senior-level oversight on scoping document preparation, costing, and availability of company resource to ensure project success.

Managed biological resource studies including protocol-level blunt-nosed leopard lizard surveys and botanical, wetland, and general wildlife surveys for more than 300 miles of project alternative alignments. Provided senior-level input on study design and methodology for appropriate biological resource data collection. Provided peer review of biological resource sections prepared for the project.

Metcalf-Hicks-Vasona and Metcalf El Patio 230 kV Tower Construction and Reconductor Projects—PG&E, California

Managed biological resource surveys and environmental compliance monitoring during reconductor and tower work on the two projects that occurred together. These projects were within Santa Teresa County Park, where several special-status endemic plants and wildlife were identified adjacent to tower construction sites. Conducted preconstruction botanical surveys and mapped rare plant populations near construction sites. The close proximity of rare plant and wildlife resources within the park required diligent biological monitoring and close communication with PG&E construction contractors to ensure protection of these resources.

Hollister 115kV Power Line Reconductoring Project Proponents Environment Assessment—PG&E, California

Project director for the 20-mile reconductoring project in the community of Hollister. Ensured overall client satisfaction, provided peer review of technical sections, prepared scopes of work and contract augmentations. Acted as technical lead for biology and the permitting lead for all of the federal and state permits obtained for the project.

Tri-Valley 230kV Transmission Line Installation—PG&E, Alameda County, California

Conducted biological surveys and managed biological studies for nesting birds, listed fairy shrimp, and San Joaquin kit fox; prepared a BA for the USFWS for San Joaquin kit fox and California red-legged frog for the new 10-mile construction project. Provided testimony before the CPUC on biological issues related to the project. Directed staff in the design of on-site mitigation for aquatic and upland breeding habitat creation for California red-legged frog and California tiger salamander. Managed cultural resources surveys for the project. Provided environmental compliance monitoring during construction of Phase I and Phase II of the project.

Tesla Substation Expansion Project—PG&E, Alameda, California

Managed preparation of a site assessment for California red-legged frog, managed protocol-level surveys for California red-legged frog in Patterson Run Creek, conducted surveys for burrowing owls, prepared a BA for USFWS, managed pre-construction clearance surveys for San Joaquin kit fox and burrowing owls, and managed daily construction monitoring during the one-year project.

HCP for San Joaquin Valley Operations and Maintenance (O&M) Service Area—PG&E, San Joaquin Valley, California

Served as lead wildlife biologist in preparation of the San Joaquin Valley HCP that included nine counties and 24 covered wildlife species, including San Joaquin kit fox. Developed innovative approaches to assessing impacts and providing mitigation to meet PG&E's O&M needs.

Various PG&E Biological Surveys and Monitoring

Managed the following surveys and construction monitoring as part of the PG&E on-call master services agreement:

- Crane Valley focused biological surveys and permitting
- Gas Line 300A anode flex installation and San Joaquin kit fox surveys
- Gas Line 300 valve replacement and recoating biological surveys and monitoring
- Palermo 115-kV transmission line 65-mile reconductoring project

On-Call Environmental Support Services—Caltrans Districts 1, 2, and 3, Contract No. 03A1317, California

Sr. wildlife biologist or task order manager for 8 Task Orders under this contract. Task Orders have included preparing interdisciplinary NEPA/CEQA documents for water quality improvement, highway widening project, noise and vibration studies, air quality studies, special-status wildlife surveys and habitat assessments, paleontology studies and mitigation plans, wetlands delineations, wetland/ riparian mitigation plans, bald eagle nest monitoring and reporting program, installation of bird exclusion netting on bridges, community impact assessments, biological assessment, general biological and fisheries monitoring, fish snorkel surveys, and permit applications.

Habitat Assessments for U.S. 50/Missouri Flat Road Interchange Improvement Project—El Dorado County, California

Senior biologist on interchange improvement project and addition of auxiliary lanes over Weber Creek, habitat for listed California red-legged frog. Conducted extensive coordination with USFWS , Corps, DFG, and prepared BA and Natural Environment Study.

Forest Highway 120 (Quincy–LaPorte) Biological & Environmental Assessment/Evaluation—FHWA/Plumas County, California

Conducted biological surveys and prepared biological resources evaluation report as part of road resurfacing and improvement project. Field investigations included surveys for foothill yellow-legged frogs, mountain yellow-legged frogs, and California Spotted Owls. Report discussed survey results, identified potential impacts, and recommended mitigation measures for impacts on foothill yellow-legged frogs and California Northern Spotted Owls.

Lake Mead National Recreation Area Desert Tortoise Construction Monitoring—NPS, Nevada

Managed the biological compliance monitoring for this 26-mile road improvement project within the Lake Mead National Recreation Area. Services included preconstruction surveys for desert tortoise and construction compliance monitoring for the 12-month project. Monitors were approved by the USFWS to handle and move desert tortoise out of danger during construction. Managed a crew of three full-time biological monitors.

Biological Surveys for the Path 15 Transmission Line Project—Western Area Power Administration, Fresno and Merced Counties, California

As project manager, supervised the wildlife, botanical, and wetland surveys for the 84-mile project and prepared the technical reports to support NEPA documents previously prepared for the project. Prepared a BA for the USFWS to address project effects on federally listed species. Supervised three biologists, two cultural resource specialist, and four paleontologists conducting field studies, preparing documents, and monitoring construction of sensitive resources along the project route during the three-year project.

Prior Experience

Forest Service

Wildlife biologist. Researched home range and habitat requirements of the spotted owl; captured, banded, and outfitted spotted owls with radio transmitters; monitored spotted owls nightly; conducted vegetation sampling of nest site areas; collected pellets for food habits analysis; and conducted spotted owl habitat inventory.

Colorado Division of Wildlife

Wildlife research technician. Surveyed streams and lakes throughout southwestern Colorado; determined fish species composition, size, and weight; assessed habitat quality in streams and lakes; and performed computer data entry and analysis.

Appendix B

Worker Environmental Awareness Training for the Grimes Pipeline Project

Appendix B

Worker Environmental Awareness Training for the Grimes Pipeline Project

A Worker Environmental Awareness Training program will be instituted for the Grimes Pipeline Project and:

1. shall be developed by the designated biologist and consist of an on-site or classroom presentation in which supporting written material is made available to all participants;
2. must discuss the locations and types of sensitive biological resources on the project site and adjacent areas:
3. must present reasons for protecting these resources; and
4. must present the meaning of habitat protection measures; and
5. must identify who to contact if there are further comments and questions about the material discussed in the program.

Introduction

The California Energy Commission is the lead implementing agency for the Grimes Pipeline Project proposed by Calpine.

The Grimes Pipeline Project is a natural gas supply project that will allow the Sutter Energy Center to directly access local natural gas from the Grimes natural gas field in the Sacramento Basin. Once constructed, the proposed pipeline will be capable of transporting approximately 10 million standard cubic feet per day of natural gas from Venoco Inc.'s and other gas producers' existing gas wells north of the community of Grimes to the Sutter Energy Center power station.

The purpose of this training is to:

- Discuss commitment to environmental compliance during the entire duration of construction.
- Review project-specific environmental agreements and permits.
- Provide information on people, roles, and responsibilities as they pertain to environmental compliance.

Training Program Overview

- All personnel working or visiting the project site (exceptions only made at the Designated Biologist and/or the Compliance Project Manager's discretion) are required to attend environmental awareness training
- The Designated Biologist will conduct briefings in the field as needed to heighten awareness of particular sensitive resources issues.
- After training all employees will be given:

- An environmental compliance handout that covers the environmental commitments for the project
- A hard-hat sticker
- An environmental emergency card which will have contact information.

Getting the Most Out of Training

- Stay focused
- Ask questions
- Offer experiences
- Think about field applications

General Construction Requirements

- All access within the project area will be restricted to pre-planned routes that have been identified to minimize impacts to sensitive resources.
- No pets or firearms allowed in the project site
- Properly dispose of all food-related trash
- Do not feed or attract wildlife to the project area
- Report any injured, dead, or trapped wildlife to the Designated Biologist
- No rodenticides or herbicides allowed

Environmental Document

- California Environmental Quality Act: Amendment to the Sutter Energy Center (California Energy Commission)

Key Permits

- Clean Water Act 404 Nationwide Permit 12-Utility Lines (U.S. Army Corps of Engineers)
- Clean Water Act 401 Water Quality Certification (Regional Water Quality Control Board)
- Clean Water Act 402 General Construction Stormwater Permit (State Water Resources Control Board)
- California Fish and Game Code Section 1602 Streambed Alteration Agreement (California Department of Fish and Game)
- Endangered Species Act Section 7 Biological Opinion (U.S. Fish and Wildlife Service)/Consistency Determination (California Department of Fish and Game)

Permits

- Should be kept on site at all times
- Make available upon request

- Read and be familiar with conditions

Biological Resources

- Habitat loss is the most common reason for extinction of wildlife and plant species
- California has the greatest number of rare and endangered species of any state
- Calpine, as the project applicant, has made commitments under state and federal laws to the reasonable protection of biological resources

Sources of Biological Resources Commitments

- Federal Endangered Species Act – Biological Opinion
- California Endangered Species Act – California Department of Fish and Game
- Clean Water Act – Section 404 and 401 permits, Stormwater Pollution Prevention Plan
- Migratory Bird Treaty Act
- California Fish and Game Code (Streambed Alteration Agreement, protection of nests)
- California Environmental Quality Act – Sutter Energy Center mitigation measures

Key Environmental Concerns for Biological Resources, Including Wetlands and Other Water Bodies

- Water Quality
  - Section 401 Water Quality Certification
  - Section 1602 Streambed Alteration Agreement
  - SWPPP
  - Frac-out plan
- Federal Endangered Species Act
  - Prohibits Take of federally listed species
  - Requires consultation with the U.S. Fish and Wildlife Service
  - Mitigation and protection requirements in the Biological Opinion
- Migratory Bird Treaty Act
  - Protects active nests from destruction
  - Habitat removal should occur outside the breeding season
- California Fish and Game Code
  - Protects active raptor nests
  - May require consultation with the California Department of Fish and Game

Sensitive Habitats, Including Wetlands

- Rice fields: Function much like wetlands in that they support aquatic species (aquatic insects, frogs, tadpoles, mosquito fish, and other small fish) that provide seasonal forage for water birds, giant garter snakes, and other species
- Drainages and Canals: Support wetland vegetation in their channels and on the lower banks which also support aquatic species; however, most are regularly maintained to remove vegetation.
- Mature Riparian: Provides summer breeding habitat for the state threatened Swainson's hawk, and other raptors, and migratory birds.

Sensitive Wildlife Species

- Giant Garter Snake (all canals and uplands within 200 feet of canals that contain water during the snake's active period [May 1– October 1])
- Swainson's hawk
- Valley elderberry longhorn beetle (two bushes near Girdner Road)
- Western pond turtle (all canals)

Giant Garter Snake

- Federal and State threatened species
- Historically found throughout Sacramento and San Joaquin Valleys. Today only in Sacramento Valley and isolated areas of San Joaquin Valley.
- Potential to occur in canals and on adjacent banks within the project area
- Highly aquatic snake – usually found in canals and wetlands or nearby upland habitat
- Uses burrows for shelter and hibernation from October through April
- Can reach a length of over 5 feet; background coloration varies from brown to olive green with checkered pattern of black spots and has yellow stripes – one down center and two on either side.

Impact Avoidance Measures for Giant Garter Snake

- All construction that must occur within 200 feet of canals with potential GGS habitat shall occur within the GGS active period (May 1-October 1).
- Designated Biologist or biological monitor (under the direction of the Designated Biologist) will perform preconstruction surveys.
- A biological monitor will be onsite during work within giant garter snake habitat.
- All dewatered potential habitat must remain dry for at least 15 consecutive days after April 15 and prior to excavating or filling of the dewatered habitat.

- Silt fencing (geotextile filter fabric on wooden states) or a Department-approved alternative shall be installed (and partially buried per standard specifications) on the ditch side of the excavation pits to keep snakes and other wildlife from entering the pits.
- To prevent burying, trapping, or crushing giant garter snakes, spoil from project operations shall not be placed on or near the canal banks where there is a risk of covering rodent burrows or bank-top soil crevices.
- At the end of each work day, an escape ramp shall be placed at each end of open excavations to allow any animals that may have become entrapped in the trench to climb out overnight.
- All construction personnel must visually check for snakes under parked vehicles and equipment within giant garter snake habitat area prior to moving them.
- A Jack/Bore Fluid Release Contingency Plan or other plan describing the response if a "frac-out" occurs will be prepared and onsite during trenchless pipeline construction under drainages.
- Environmentally Sensitive Areas and will be flagged by the designated biologist and avoided by construction personnel and equipment.

Swainson's Hawk

- State threatened species
- Protected under CESA, MBTA, and Fish and Game Code
- Breeding season—March 1 to August 15
- Nesting habitat is large trees
- Forages in grasslands and agricultural fields
- Observed foraging in the project area and is known to nest along the river, west of the project area

Impact Avoidance Measures for Swainson's Hawk

- Designated Biologist or biological monitor (under the direction of the Designated Biologist) will perform preconstruction surveys in project area and 0.5 mile buffer
- If active nest is found, up to 0.5 mile radius buffer established with consultation with DFG and the CEC.
- Designated Biologist or biological monitor (under the direction of the Designated Biologist) will:
    - Be present during construction in buffer area
    - Observe nest for signs of disturbance
    - In the event of disturbance to hawks, the biologist will coordinate with DFG and CEC staff to determine if stopping construction activities in the buffer area is necessary
- All other raptor species (e.g. white-tailed kite, red-tailed hawk) typically require 500-ft buffer.

Valley Elderberry Longhorn Beetle (VELB)

- Federally threatened species

- Elderberry shrubs are the host plant and provide the only habitat for the beetle
- Adult beetles are active from March through early June
- Females lay eggs on stems of host plant
- When eggs hatch, larvae burrow into stem and live within stems
- Loss of habitat (riparian habitat) is main reason for beetle decline

Impact Avoidance Measures for VELB

- Designated Biologist or biological monitor (under the direction of the Designated Biologist) will identify and mark elderberry shrubs within 100 feet of work area
- Orange fencing will be placed around elderberry shrubs
- Signs will be posted identifying the VELB habitat as a sensitive area to be avoided

Western Pond Turtle

- State species of special concern
- Only native turtle in Northern California
- Potential to occur in canals and adjacent upland habitat
- Usually 3.5 to 7.5 inches in size, shell dark brown to olive color with flecks or dark lines of dark brown or black
- Often seen basking in the sun on large logs and rocks in or near the water's edge
- In spring, females migrate to uplands to lay eggs
- In fall, migrate to uplands near water to hibernate

Impact Avoidance Measures for Western Pond Turtle

- Pond turtles encountered during construction activities should be allowed to move away from the site on their own
- The Designated Biologist or biological monitor (under the direction of the Designated Biologist) will move turtles that become trapped within the work area
- Inform Designated Biologist or biological monitor (under the direction of the Designated Biologist) of any sightings

Wildlife Mitigation Measures

- In the event that an incident related to environmental resources occurs, notify the Designated Biologist or biological monitor (under the direction of the Designated Biologist) and follow their directions.
- Avoidance of impacts wherever possible
- Potential blackout periods
    - Giant garter snake non-disturbance period: October 1 to April 30

- Swainson's hawk breeding season if occupied nests are found adjacent to Project area: March 1 to August 15

Exclusion Zones

- The contractor will install orange fencing to identify exclusion zones around environmentally sensitive areas (ESAs)
- Buffer zones will be established for any special status bird species nest as determined through consultation between the Designated Biologist or biological monitor (under the direction of the Designated Biologist) and DFG
- A 20-foot exclusion zone (clearly marked by fencing) will be established around all known elderberry bushes

Monitoring Program Summary

- A biological monitor will be present on the job site regularly and as required during ground disturbing activities
- The biological monitor will complete Daily Logs during each day onsite
- The biological monitor will provide regular report summaries to the CPM
- Non-compliance with environmental mandates will immediately be brought to the attention of the CPM, Calpine, and/or regulatory agency representatives as needed

Appendix C

Project Alignment Sheets

Exhibit 1
Project Alignment
Grimes Pipeline Project
January 2011
Sheet 1 of 8

121°53'0"W 121°52'50"W 121°52'40"W

39°6'30"N 39°6'20"N

WD-01
x̄=7'
Acres=0.111

RFW-14
Acres=6.011

RFW-16
Acres=6.043

RFW-17
Acres=12.28

OWD-30
x̄=7'
Acres = 0.099

Venoco Eastside
Master Meter Site

OWD-31
x̄=8'
Acres = 0.083

MMoroniRD

WD-02
x̄=24'
Acres = 0.303

RFW-15
Acres=3.486

OWD-33
x̄=20'
Acres = 1.77

RFW-18
Acres=32.648

OWD-32
x̄=12'
Acres=0.123

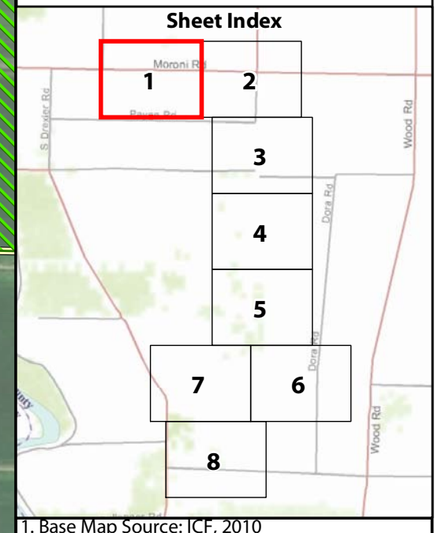
- Natural Gas Pipeline Trench (temporary sidecast fill in rice= 1.41 acres, 9230 CY)
- Bore
- Project Element
- Construction Laydown Area
- Access Road (permanent fill in drainage = 0.012 acres, 60-foot culvert)
- Pipeline Work Area
- Wetland and Biological Study Area (395.88 Acres)
- Culvert
- Other Waters Drainage
- Riparian Drainage
- Wetland Drainage
- Ricefield Wetland
- Elderberry Shrub

N

0 50 100 200 Feet

1 inch = 200 feet

Sheet Index



1. Base Map Source: ICF, 2010
2. Aerial Source: ESRI / Aerial Express 2007
3. USGS Topo Quad: Grimes
4. PLSS: T. 15 N, R. 1 E

Drawn By: Matt Ewalt	Jan 2011

ICF INTERNATIONAL

K:\PROJECTS_1\CALPINE\00776_10_GRIMES\MAPDOC\ALIGNMENT_FIGURES\ALIGNMENT_20110105_W_WETLANDS.MXD SS (01-05-11)

121°52'30"W
121°52'20"W
121°52'10"W
39°6'30"N
39°6'20"N

RFW-20
Acres=0.093
OWD-34
x̄=30'
Acres = 0.561
RFW-19
Acres=13.491
RFW-17
Acres=12.28
RFW-20
Acres=7.133
WD-29
x̄=2'
Acres = 0.009
Moroni Rd
WD-04
x̄=8'
Acres = 0.121
RFW-18
Acres=32.648
RFW-21
Acres=32.415
Hageman Rd
Hageman Rd
OWD-33
x̄=20'
Acres = 1.77

Exhibit 1
Project Alignment
Grimes Pipeline Project
January 2011
Sheet 2 of 8

- Natural Gas Pipeline Trench (temporary sidecast fill in rice= 1.41 acres, 9230 CY)
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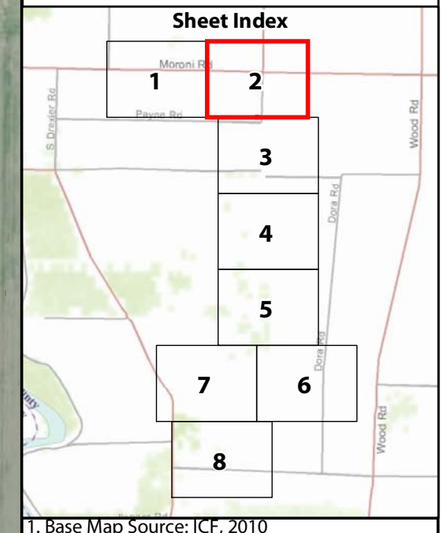
N

0 50 100 200 Feet

1 inch = 200 feet

Sheet Index



1. Base Map Source: ICF, 2010
2. Aerial Source: ESRI / Aerial Express 2007
3. USGS Topo Quad: Tisdale Weir
4. PLSS: T. 15 N, R. 1 E

Drawn By: Matt Ewalt	Jan 2011

ICF INTERNATIONAL

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121°52'30"W
121°52'20"W
121°52'10"W
121°52'0"W
39°6'10"N
39°6'0"N

RFW-18
Acres=32.648

Venoco 32-33-3
Master Meter Site

Payne Rdne Rd

OWD-35
x̄=32'
Acres = 0.775

RFW-22
Acres=11.498

RFW-21
Acres=32.415

WD-05
x̄=33'
Acres = 1.075

OWD-36
x̄=20'
Acres = 2.254

RFW-23
Acres=25.01

RFW-24
Acres=30.643

Exhibit 1
Project Alignment
Grimes Pipeline Project
January 2011
Sheet 3 of 8

- Natural Gas Pipeline Trench (temporary sidecast fill in rice= 1.41 acres, 9230 CY)
- Bore
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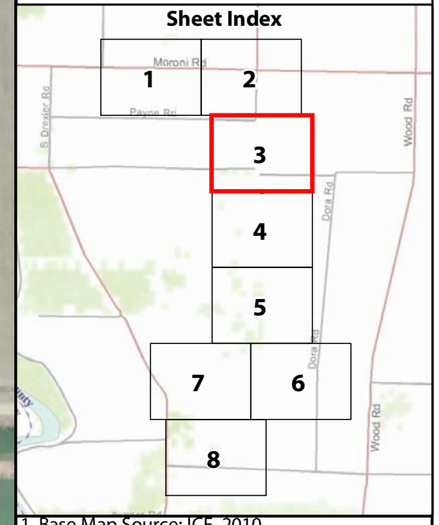
- Ricefield Wetland
- Elderberry Shrub

N

0 50 100 200 Feet

1 inch = 200 feet

Sheet Index



1. Base Map Source: ICF, 2010
2. Aerial Source: ESRI / Aerial Express 2007
3. USGS Topo Quad: Tisdale Weir
4. PLSS: T. 14, R. 1 E & T. 15, R. 1 E

Drawn By: Matt Ewalt	Jan 2011

ICF INTERNATIONAL

K:\PROJECTS_1\CALPINE\00776_10_GRIMES\MAPDOC\ALIGNMENT_FIGURES\ALIGNMENT_20110105_W_WETLANDS.MXD SS (01-05-11)

121°52'30"W
121°52'20"W
121°52'10"W
121°52'0"W
39°5'50"N
39°5'40"N

OWD-36
x̄=20'
Acres = 2.254

RFW-23
Acres=25.01

RFW-24
Acres=30.643

RFW-26
Acres=37.718

WD-06
x̄=16'
Acres = 0.166

Exhibit 1
Project Alignment
Grimes Pipeline Project
January 2011
Sheet 4 of 8

- Natural Gas Pipeline Trench (temporary sidecast fill in rice= 1.41 acres, 9230 CY)
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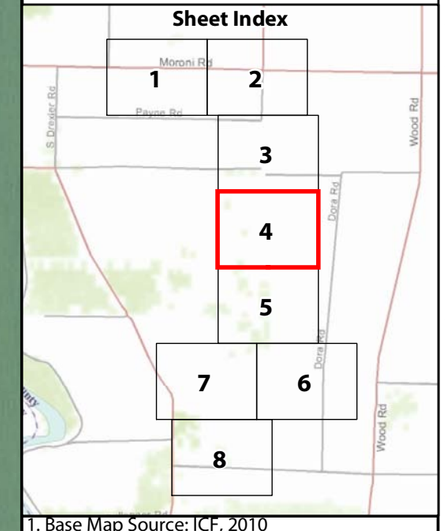

1. Base Map Source: ICF, 2010
2. Aerial Source: ESRI / Aerial Express 2007
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4. PLSS: T. 14, R. 1 E

Drawn By: Matt Ewalt	Jan 2011

ICF INTERNATIONAL

K:\PROJECTS_1\CALPINE\00776_10_GRIMES\MAPDOC\ALIGNMENT_FIGURES\ALIGNMENT_20110105_W_WETLANDS.MXD SS (01-05-11)

121°52'30"W
121°52'20"W
121°52'10"W
121°52'0"W
39°5'30"N
39°5'20"N

WD-07
x̄=10'
Acres = 0.123

OWD-37
x̄=8'
Acres = 0.486

RFW-26
Acres=37.718

OWD-36
x̄=20'
Acres = 2.254

RFW-25
Acres=31.487

Exhibit 1
Project Alignment
Grimes Pipeline Project
January 2011
Sheet 5 of 8

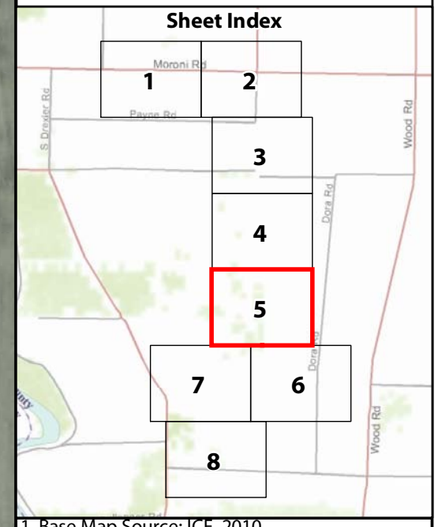
- Natural Gas Pipeline Trench (temporary sidecast fill in rice= 1.41 acres, 9230 CY)
- Bore
- Project Element
- Construction Laydown Area
- Access Road (permanent fill in drainage = 0.012 acres, 60-foot culvert)
- Pipeline Work Area
- Wetland and Biological Study Area (395.88 Acres)
- Culvert
- Other Waters Drainage
- Riparian Drainage
- Wetland Drainage
- Ricefield Wetland
- Elderberry Shrub

N

0 50 100 200 Feet

1 inch = 200 feet

Sheet Index



1. Base Map Source: ICF, 2010
2. Aerial Source: ESRI / Aerial Express 2007
3. USGS Topo Quad: Tisdale Weir
4. PLSS: T. 14, R. 1 E

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Exhibit 1
Project Alignment
Grimes Pipeline Project
January 2011
Sheet 6 of 8

121°52'10"W

121°52'0"W

121°51'50"W

39°5'10"N

39°5'0"N

OWD-36
x̄=20'
Acres = 2.254

OWD-37
x̄=8'
Acres = 0.486

RFW-25
Acres=31.487

RFW-26
Acres=37.718

OWD-39
x̄=14'
Acres = 0.269

WD-08
x̄=14'
Acres = 0.03

OWD-38
x̄=14'
Acres = 1.435

RFW-27
Acres=5.828

RFW-28
Acres=27.793

Dora Rd

- Natural Gas Pipeline Trench (temporary sidecast fill in rice= 1.41 acres, 9230 CY)
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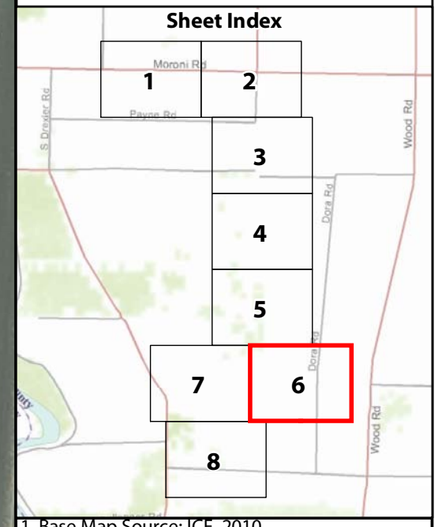
- Riparian Drainage
- Wetland Drainage
- Ricefield Wetland
- Elderberry Shrub

N

0 50 100 200 Feet

1 inch = 200 feet

Sheet Index



1. Base Map Source: ICF, 2010
2. Aerial Source: ESRI / Aerial Express 2007
3. USGS Topo Quad: Tisdale Weir
4. PLSS: T. 14, R. 1 E

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121°52'50"W
121°52'40"W
121°52'30"W
121°52'20"W
39°5'10"N
39°5'0"N

WD-09
x̄=14'
Acres = 0.376

RFW-26
Acres=37.718

OWD-39
x̄=14'
Acres = 0.269

RFW-28
Acres=27.793

OWD-38
x̄=14'
Acres = 1.435

S Meridian Rd

Exhibit 1
Project Alignment
Grimes Pipeline Project
January 2011
Sheet 7 of 8

- Natural Gas Pipeline Trench (temporary sidecast fill in rice= 1.41 acres, 9230 CY)
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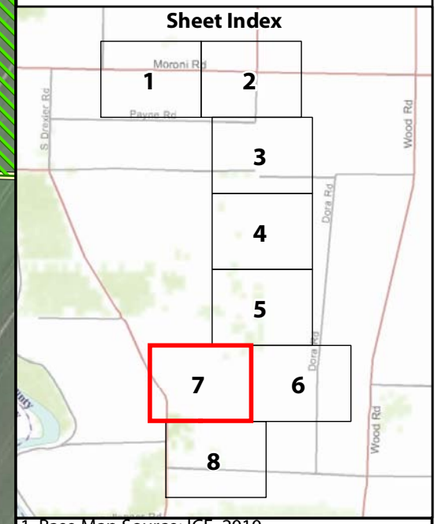
- Culvert
- Other Waters Drainage
- Riparian Drainage
- Wetland Drainage
- Ricefield Wetland
- Elderberry Shrub

N

0 50 100 200 Feet

1 inch = 200 feet

Sheet Index



1. Base Map Source: ICF, 2010
2. Aerial Source: ESRI / Aerial Express 2007
3. USGS Topo Quad: Grimes & Tisdale Weir
4. PLSS: T. 14, R. 1 E

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121°52'40"W
121°52'30"W
121°52'20"W
39°4'50"N
39°4'40"N
S Meridian Rd
Girdner RdGirdner Rd
OWD-38
x̄=14'
Acres = 1.435
OWD-40
x̄=14'
Acres = 0.2
RFW-28
Acres=27.793
RD-10
x̄=6'
Acres = 0.08
RD-10
x̄=8'
Acres = 0.262
WD-12
x̄=3'
Acres = 0.034
WD-12
x̄=8'
Acres = 0.072
Proposed
Grimes
Station Site
Below Ground
Hot Tap and Valve
WD-13
x̄=8'
Acres = 0.061
OWD-41
x̄=14'
Acres = 0.14
WD-11
x̄=8'
Acres = 0.086

Exhibit 1
Project Alignment
Grimes Pipeline Project
January 2011
Sheet 8 of 8

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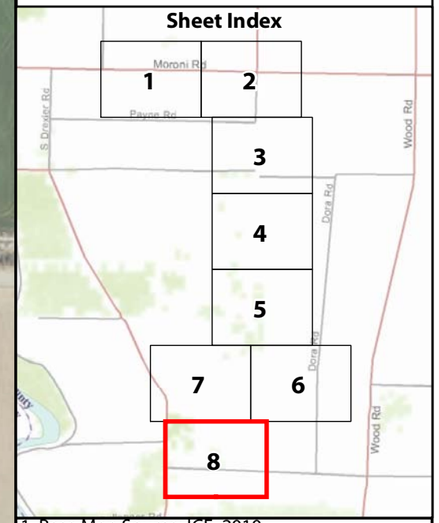

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