3.4: BIOLOGICAL RESOURCES

Introduction

This section addresses potential impacts to upland, wetland, and riparian vegetation; terrestrial wildlife; aquatic resources; and special status species that could result from actions associated with the Wild Goose Storage, Inc. Expansion Project. Special status species are those plants and animals that receive state and/or federal protection status in any of the following ways:

- Formal listing as threatened or endangered by the USFWS or NMFS
- Formal listing as rare (plants only), threatened, or endangered by the CDFG
- Recognition as a candidate for listing by the USFWS or CDFG
- Recognition as proposed threatened or endangered by the USFWS or CDFG
- Recognition as a Species of Special Concern by the CDFG or a federal land-managing agency
- Protection under the Migratory Bird Treaty Act

In addition to the specific legal protection afforded by these state or federal laws and regulations, species may also warrant special consideration if the scientific community, non-governmental organizations, or trustee agencies considers them rare. Of particular importance for these entities is the protection of isolated populations, nests or dens, communal roosts, and other essential habitats. The California Native Plant Society's *Inventory of Rare and Endangered Vascular Plants of California,* for example, ranks plant species and provides guidance for their treatment during the preparation of environmental documents under CEQA. All species protected either by state or federal

law, or in the above-described manners, are cumulatively referred to as "sensitive species" in this document.

Environmental Setting

REGIONAL AND LOCAL SETTING

The project study area historically consisted of an extensive wetland and marsh system sustained by the Sacramento River and its tributaries, including Butte Creek and the Colusa Drain area. Over the last 100 years, most of this system has been developed into agricultural production of primarily rice and millet. West of the Glenn-Colusa Canal the plant community type changes to upland annual grassland that contains vernal pools and swales. Plant community types consist of natural landscapes (primarily wetlands) and human-altered landscapes (agriculture). In general, the natural landscapes can be found within the boundaries of the Sacramento National Wildlife Refuge, the Delevan National Wildlife Refuge, the Gray Lodge Wildlife Management Area, the Upper Butte Basin Wildlife Area, in privately owned and managed wetlands areas, and along the Sacramento River. To some extent, valuable habitat for some species is provided by rice fields, ditches, and canals within the human-altered landscapes.

Natural Communities

Freshwater and Brackish Marsh. Freshwater marsh within the project study area is characterized by a prevalence of perennial monocots that grow in permanently or semi-permanently flooded or saturated soil associated with fresh water. Freshwater marsh occurs along many of the agricultural ditches, canals, and creeks and in areas of long-term inundation such as ponds, reservoirs, and public and private waterfowl management areas.

Freshwater marsh wetlands are mostly dominated by cattails (*Typha latifolia*) or common tule (*Scirpus acutus*). Other sub-dominant species associated with this wetland type include Bermuda grass (*Cynodon dactylon*) and nut sedge (*Cyperus* sp.).

Brackish marshes are also present in the project study area. These areas are similar in hydrology to a typical freshwater marsh, but tend to be inhabited by plant species more specially adapted to alkaline conditions. Alkaline clay flats can also be present as a subtype within this plant community, although they are not prevalent in the project study area.

The proposed project components would be located in both managed and unmanaged freshwater and brackish marshes. In managed freshwater marsh areas, tules are regularly disturbed to create openings in the vegetative cover. These marshes provide forage and nesting habitat for a variety of waterfowl, shore birds, and other species.

Open Water. Open water habitat occurs where water remains ponded year-round at a sufficient depth to preclude the establishment of emergent marsh vegetation. Open water habitat is found in the ponds and reservoirs in the project study area as well as the Sacramento River, larger canals, creeks, and ditches. This habitat type is often found in a mosaic with other wetland habitat types, such as freshwater marsh.

Open water areas are mostly free of vegetation, but may support aquatic species such as duckweed (*Lemna minor*), mosquito fern (*Azolla filiculoides*), parrot's feather (*Myriophyllum* sp.), and curly-leafed pondweed (*Potamogeton crispus*).

Open water is important habitat for many species of wildlife, particularly waterfowl. Fish, such as mosquito fish (*Gambusia* sp.) and carp (*Cyprinus carpio*), are common in the open water ponds in the wildlife management areas. In addition, game fish such as catfish (*Ictalurus punctatus*) are found in the larger canals. Bullfrogs (*Rana catesbeiana*) have been regularly heard throughout the open water areas.

Riparian Scrub. Riparian scrub is defined as a sparsely vegetated plant community composed of short-stature, water-loving trees that rarely exceed 30 feet in height. Patches of riparian scrub are found along the edges of creeks, canals, older ditches, and adjacent to open water and freshwater marsh areas.

Willows (*Salix* sp.), Fremont's cottonwood (*Populus fremontii*), and occasionally Himalayan berry (*Rubus discolor)* are characteristic plants in riparian scrub. Because it provides good nesting habitat and food sources, riparian scrub is important habitat for a number of bird species.

Riparian Woodland. Riparian woodland is characterized by sparse-to-dense, woody, arborescent vegetation, and is usually located within the floodplain of rivers and streams or fluctuating lake and pond margins. Depending on the level of disturbance, the riparian woodland often has three vegetative layers: overstory, midstory, and understory. Winter deciduous trees that are adapted to frequent flooding and/or saturated soil conditions – including Fremont's cottonwood, willows, sycamore (*Platanus racemosa*) and, on less frequently flooded sites, valley oak (*Quercus lobata*) – dominate the overstory.

Mid-story plants may include buttonbush *(Cephalanthus occidentalis*), California wild grape (*Vitis californica*), and poison oak (*Toxicodendron diversilobum*). The understory can be vegetated by a variety of species such as creeping wildrye (*Leymus triticoides*), mugwort (*Artemisia douglasiana*), and ripgut brome (*Bromus diandrus*).

Riparian woodlands and individual riparian trees are important habitat for many wildlife species. Not only do they provide good nesting habitat and food sources, but they are important as migration corridors when the habitat occurs as dense connected stands of trees. Various species of migratory songbirds could be found nesting in riparian areas. Riparian woodland in the project study area is located inside the levees along the Sacramento River and in the Butte Sink.

Seasonal Wetlands. Seasonal wetlands are topographic depressions underlain by soils with slow water permeability that promote ponding or soil saturation during the wet season. Seasonal wetlands occur predominantly as transition areas between freshwater marsh and annual grassland habitats. Many seasonal wetlands in the area are managed for waterfowl habitat enhancement, but also provide habitat for many other birds and wildlife.

Seasonal wetlands support a number of plant species adapted to periodic inundation during the growing season. Typical seasonal wetland plant species include Italian ryegrass (*Lolium multiflorum*), rabbit's foot grass (*Polypogon monspeliensis*), Bermuda grass, curly dock (*Rumex crispus*), Mediterranean barley (*Hordeum marinum* ssp. *gussoneanum*), toad rush (*Juncus bufonius*), and umbrella sedge (*Cyperus eragrostis*).

Many species of birds, mammals, reptiles, and amphibians depend on wetlands during some phase of their life.

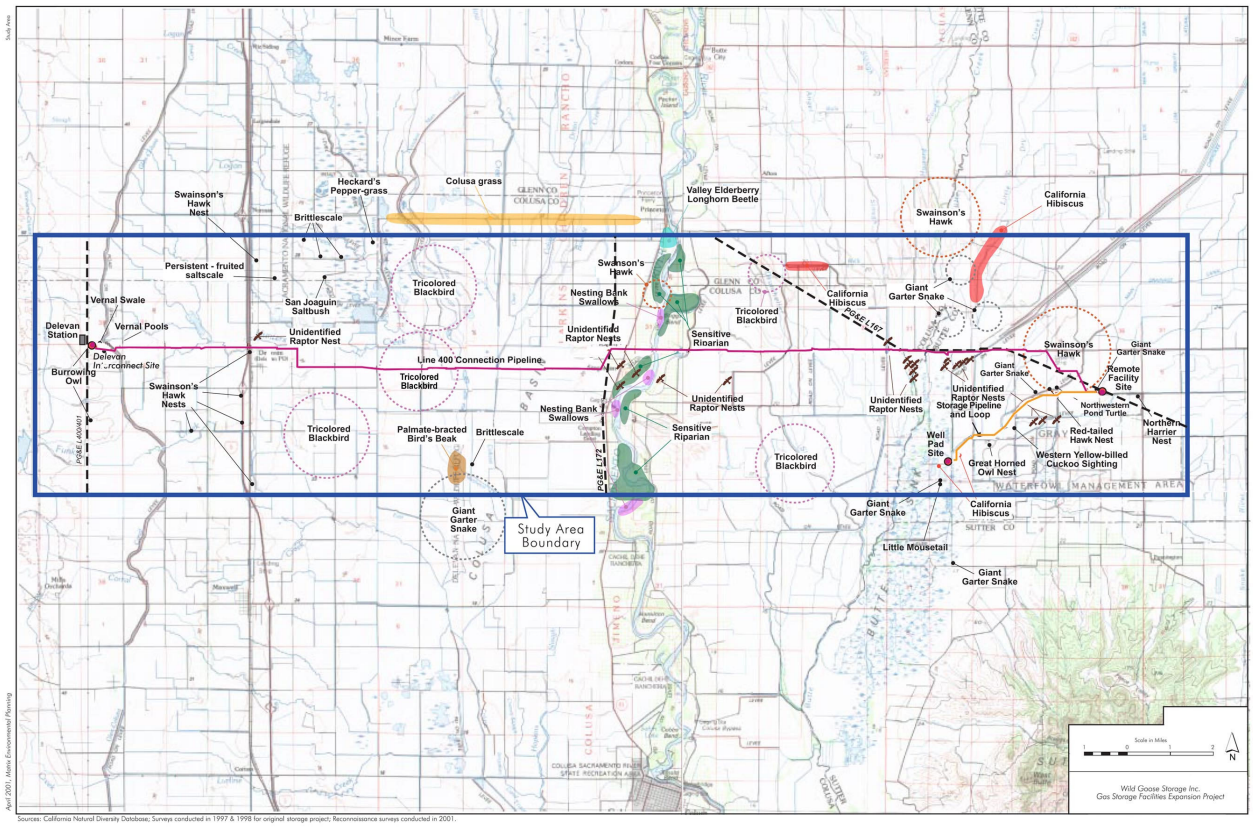
Vernal Pools. Vernal pools are seasonally flooded topographic depressions where water ponds because of limitations to surface or subsurface drainage. Surface drainage is prevented by a depressed or concave topography. Soil layers impervious to the downward infiltration of water inhibit subsurface drainage, resulting in shallow ponding at the surface during the wet season. Vernal pools occurring in the project study area support distinct vegetation adapted to periodic or continuous inundation during the wet season, and the absence of either ponded water or wet soil during the dry season. Plant species typical of the Sacramento Valley vernal pool flora include silver hairgrass (*Deschampsia danthonioides*), Austin's popcorn flower (*Plagiobothrys austiniae*), Fremont's goldfield (*Lasthenia fremontii*), common blennosperma (*Blennosperma nanum*), Pacific foxtail (*Alopecurus saccatus*), water pygmy-weed (*Crassula aquatica*), small stipitate popcorn flower (*Plagiobothrys stipitatus* var. *micranthus*), common spike rush (*Eleocharis macrostachya*), hedge-hyssop (*Gratiola ebracteata*), and American pillwort (*Pilularia americana*).

Other plant species that may also occur in vernal pools to a lesser extent include water-starwort (*Callitriche marginata*), coyote thistle (*Eryngium castrense*), woolly marbles (*Psilocarphus brevissimus*), Carter's buttercup (*Ranunculus bonariensis* var. *trisepalus*), Sacramento mesa mint (*Pogogyne zizyphoroides*), smooth goldfield (*Lasthenia glaberrima*), cuspidate downingia (*Downingia cuspidata*), Mediterranean barley, toad rush, and annual bluegrass (*Poa annua*).

Vernal pool and related swale habitats are relatively uncommon within the project study area. Only the annual grasslands in the very western portion of the project study area (west of the Glenn-Colusa Canal) provide this type of habitat. Based on a review of aerial photography and ground surveys, three small low-quality vernal pools were identified on the pipeline route just west of the Glenn-Colusa Canal along the south side of the access road to the Delevan Compressor Station. The largest of the three pools measures approximately 12 feet by 12 feet, while the other two are approximately 10 X 10 ft and 12 X 8 ft in size

All three pools would be avoided during project design and construction by shifting the pipeline alignment toward the south, where higher elevation upland grassland is present. The approximate location of these pools is plotted on Figure 3.4-1.

Figure 3.4-1: Vernal Pool and Swale Habitats



SOURCE: WGSI Biological Assessment 2001

This Page Intentionally Left Blank

Vernal Swales. Vernal swales are broad, shallow, seasonally wet areas that primarily convey water during and shortly after rain events. Surface runoff collects in swales, wetting and saturating the soil for short periods. Vernal swales usually have somewhat defined channels, but also include poorly defined drainages meandering through gently undulating mounded topography. Some vernal swales connect vernal pools, thus filling or draining them, while others meander through vernal pool terrain, but do not physically connect with individual vernal pools. Often, swales drain into ephemeral drainages. As with vernal pools, only the annual grassland portion of the project study area west of the Glenn-Colusa Canal provides this type of habitat. A potential vernal swale is located north of the access road, between the Delevan Compressor Station and the Glenn-Colusa Canal. The approximate location of this swale is plotted on Figure 3.4-1.

Due to their scarcity and the unique adaptations required to live in these areas, vernal swales provide habitat for a diverse assemblage of sensitive plant and wildlife species. Swales generally support grasses such as Mediterranean barley, silver hairgrass, and Italian ryegrass, interspersed with a low cover of forbs associated with vernal pools such as common spike rush, Austin's popcorn flower, Fremont's goldfield, annual bluegrass, common blennosperma, Green's popcorn flower (*Plagiobothrys greenei*), curly dock, depauperate clover (*Trifolium depauperatum*), and pepper grass (*Lepidium nitidum*). Other less frequently encountered species include soft chess brome, toad rush, hawkbit (*Leontodon taraxacoides*), cuspidate downingia, coyote thistle, Sacramento mesa mint, subterranean clover (*Trifolium subterraneum*), and woolly marbles.

Annual Grassland. Annual grasslands within the project study area are characterized by a dominance of naturalized non-native grasses that cover the slopes, hilltops, and well-drained uplands. Most of the annual grasslands occur in the western portion of the project study area. Small annual grassland areas found within the eastern and central portions of the project study area are isolated fallow agricultural lands that appear to have been subject to disturbances such as mowing, flood irrigation, and herbicide application at one time, but show no evidence of recent agricultural use.

Grasses such as wild oats, soft chess brome, ripgut brome, and cheatgrass dominate annual grassland. Forbs such as narrowleaf plantain, summer mustard, and rose clover may be present in lower numbers.

Several species of songbirds, such as sparrows and finches, use grasslands. In addition, game species, such as ring-necked pheasant (*Phasianus colchicus*) and California quail (*Callipepla californica*), commonly use grassland areas near roads for cover.

Developed and Agricultural Areas

Developed Areas. Developed areas include the portions of the study area characterized by buildings, roads, landing strips, agricultural operations and equipment storage areas, and the surrounding areas with horticultural vegetation.

Vegetation in developed area includes oleander (*Nerium oleander*), blue gum (*Eucalyptus globulus*), and herbs, including lawn grasses (e.g., Fescue [*Festuca* spp.], bluegrass [*Poa* ssp]), and perennial and annual flowers (e.g., iris [*Iris* ssp.] and violets [*Viola* ssp.]). There also are a few scattered valley oaks and black walnut (*Juglans nigra*) in these areas. These areas are typically not considered sensitive, but nesting raptors may utilize tall trees.

Agricultural Use. These areas include fallow fields, hay fields, and row crops. Fallow areas are those agricultural fields that have been recently utilized for hay or row crops but were not being actively farmed during the site visit or the low-altitude airplane flight. Vegetation in fallow fields is often composed of annual and biennial weedy species such as yellow starthistle (*Centaurea solstitialis*), summer mustard, ripgut brome, curly dock, and many annual grassland species. Row crop areas are used for the production of various herbs and vegetables, such as tomatoes, dill, corn, melons, etc. Hay fields include alfalfa, oats, and similar hay varieties used for livestock feed.

Orchard. Orchards, including prunes, pears, apricots, walnuts, almonds, etc., could provide marginal habitat for roosting or nesting birds, particularly if they are located close to extensive or continuous areas of riparian woodland.

Rice. The predominant agricultural crop within the project study area is rice. While flooded, this crop provides important foraging habitat for wintering waterfowl.

Waterways. Except for the Sacramento River, Butte Creek and portions of the Colusa Drain, waterways in the project study area include ditches, canals (soil or concrete-lined), and creeks that have been subject to frequent manipulation for the purpose of conveying water more effectively for agricultural use. Depending upon the size, age, and nature of construction materials, ditches and channels often support vegetation that can be classified into some of the previously discussed plant community types, such as freshwater marsh, open water, riparian scrub, and riparian woodland. Periodic agricultural maintenance results in the temporary reduction of many open water and freshwater marsh plant species.

Sensitive Species

Known locations of sensitive species were obtained from the California Natural Diversity Database (CNDDB) and USFWS. A total of 145 sensitive species – 50 plant and 95 fish and wildlife – were identified from these databases as potentially occurring in this portion of the Sacramento Valley (USFWS, CDFG 2001) and are listed in Appendix H. This list includes species from four counties: Glenn, Sutter, Colusa, and Butte. This list served as a starting point in determining if there were known locations of sensitive species or whether suitable habitat might actually be found in the project study area. Documents and survey reports prepared for the regulatory approval of the initial project development were also reviewed for information regarding sensitive species locations.

Based on project maps, aerial photography, and reconnaissance site visits many of the 145 species identified by the USFWS and CDFG and listed in Appendix H were eliminated from further consideration for one or more of the following reasons:

- Lack of suitable habitat in the project study area
- Outside of species range
- Avoidance of suitable habitat by sensitive facility siting

The result of this evaluation indicates that 17 plant species (Table 3.4-1) and 28 fish and wildlife species (Table 3.4-2) are known to occur in the project study area, or the proposed project components may affect suitable habitat within their known range. These species

are described below. Site-specific surveys were conducted to determine the presence or absence of these species or their habitat in the project study area.

Sensitive Plant Species. Essex Environmental conducted field surveys at three periods between March and May 2001 (March 28-29, April 26-27, and May 21-25) to determine the presence of habitat and locations of the sensitive plant species that may occur in the project area**.** Prior to conducting the surveys, botanists visited the herbarium at the University of California, Davis to become familiar with, and photograph, the species of interest. Surveys were performed by walking transects through the affected areas and identifying all plant species to a level sufficient to determine rarity.

Table 3.4-1: Special Status Plant Species With Potential to Occur in the Project Area

Species	Status	Blooming Period	Habitat Notes
Astragalus tener ssp. *ferrisae* Ferris's milk-vetch	FSC, 1B	April-May	Playas, mesic meadows, and sub alkaline flats in low grasslands. Known from the Sacramento NWR. Potential habitat present in the western portion of the project study area.
Astragalus tener ssp. *tener* Alkali milk-vetch	1B	March-June	Alkaline vernal pools and low grasslands with adobe soils. Potential habitat present in the western portion of the project study area.
Atriplex cordulata Heartscale	FSC, 1B	April-May	Saline/alkaline grassland/scrub pastures. Known from Sacramento NWR. Potential habitat in the western portion of the project study area.
Atriplex depressa Brittlescale	FSC, 1B	May-October	Chenopod scrub, alkaline meadows, low grasslands. Known from Sacramento NWR. Potential habitat present in the western portion of the project study area.
Atriplex joaquiniana Valley spearscale (San Joaquin saltbush)	FSC, 1B	April-July	Valley and foothill grassland, Chenopod scrub, restricted to alkaline/saline soils. Potential habitat present in the western portion of the project study area.
Cordylanthus palmatus Palmate-bracted bird's beak	SE, 1B	May-October	Chenopod scrub, low alkaline grasslands. Only three populations known to exist in Colusa County. Potential habitat present in the western portion of the project study area.
Delphinium recurvatum Napa cryptantha	FSC, 1B	March-May	Cismontane woodlands, chaparral, and valley foothill grasslands. Prefers alkaline heavy clay soils. Limited potential habitat present in the western portion of the project study area.
Eschscholtzia rhombipetala Diamond-petaled California poppy	1B	March- April	Valley and foothill grasslands, prefers clay soils. Suitable grassland habitat present in the western portion of the project study area
Fritillaria pluriflora Adobe lily	FSC, 1B	February-April	Low grasslands with adobe clay soils, chaparral, cismontane woodlands. Potential habitat in the western portion of the study area.
Hibiscus lasiocarpus California hibiscus	2	July - August	Standing water, tule marsh, rice field irrigation systems, canals, streams, marshes, and freshwater soaked riverbanks. Locally abundant in the project area and surrounding region.
Juncus leiospermus var. *ahartii* Ahart's rush	FSC, 1B	March-May	Mesic grasslands, margins of vernal pools. Limited potential habitat present in the western portion of the project study area
Layia septentrionalis	1B	April-May	Valley and foothill grassland, cismontane woodlands. Habitat limited to the western portion of the project study

Species	Status	Blooming Period	Habitat Notes
Colusa layia			area
Lepidium latipes var.heckardii Heckard's pepper-grass	1B	April-May	Valley grasslands, mesic meadows, vernal pools, swales, ditches on alkaline and subalkaline soils. Known from the Sacramento NWR. Suitable habitat limited to mesic alkaline soils of the Butte Sink area.
Lupinus milo-bakeri Milo Baker's lupine	FSC, ST, 1B	June-September	Foothill woodlands and valley grasslands. Limited potential habitat in the western portion of the project study area. Known from 2 locations in Colusa County and 20 locations in Mendocino County.
Myosurus minimus ssp. *apus* Little mousetail	FSC, 3	April-May	Wet places, vernal pools, and marshes. Very strongly associated with alkaline/saline soils. Known to occur in the project area in clay flat areas.
Neostapfia colusana Colusa grass	FT, SE, 1B	May-July	Vernal pools and seasonal wetlands (often alkaline). Not known in Butte County, Species likely extirpated in Colusa County.
Sagittaria sanfordii Valley sagittaria	FSC, 1B	May - October	Freshwater marsh, seasonal wetland. Potential habitat in ditches, canals, and managed wetlands.

*Key to status codes:
FE = Federal Endangered, FE = Federal Threatened, FSC= Federal Species of Concern
SE = State Endangered, ST= State Threatened
1B = CNPS list of plants rare, threatened or endangered in California and elsewhere
2 = CNPS list of plants rare, threatened, or endangered in California but more common elsewhere.
3 = CNPS list of plants needing new information, a review list

SOURCE: CDFG[1], USFWS[2]

Of the special-status plants identified in Table 3.4-1, only the California hibiscus (*Hibiscus lasiocarpus*), a CNPS List 2 species, and little mousetail (*Myosurus minimus* ssp. *apus*), a Federal Species of Concern and CNPS List 3 species, were found on the project site.

California hibiscus was found in large numbers on the Line 400/401 Connection Pipeline ROW, near the Well Pad Site, and along Gridley Road in the Butte Sink area. The species was observed growing in shaded locations within the riparian woodland borders of creek and slough crossings.

Little mousetail was found in clay flats during the development of the initial project. The species, however, was not found in any of the clay flats during the 2001 surveys. The little mousetail is an annual species subject to annual fluctuations in population numbers depending in part on rainfall and other optimal growing conditions. Precipitation in the 2000-2001 rainy season was below normal. It is possible that this species is present in years with normal or above-normal rainfall but would not be evident in years of less than optimal rainfall. Based on past years occurrence, however, the clay flats are assumed to contain the little mousetail.

Sensitive Animal Species. Essex Environmental[3] conducted field surveys at six periods between March and June 2001 to determine the presence of habitat and locations of the

[1] Natural Diversity Data Base. 2001. Natural Heritage Division. California Department of Fish an Game

[2] U.S. Fish and Wildlife Service. 2001. Sacramento Fish and Wildlife Office. Species List for Sensitive Biological Resources in Study area Located Within Glenn, Sutter, Colusa, and Butte Counties. February 5, 2001.

sensitive wildlife species that may occur in the project area (Table 3.4-2). Prior to conducting the spring surveys, an aerial survey was conducted to identify potential raptor nests while trees were dormant. March 2001 surveys in the western grasslands included early morning and evening surveys for burrowing owls and evening flashlight surveys for spadefoot toads.

During surveys later in the spring, all suitable habitat areas were searched on foot. Trees within a half-mile radius of project facilities were scanned for nesting raptors using high power binoculars or spotting scopes. All wildlife species seen or heard, or their sign, were noted. In addition, observers played a tape of yellow-billed cuckoo calls near potentially suitable habitat. A response to such taped calls by cuckoos in the area would have indicated the presence of this secretive species. Due to access restrictions along the east side of the Sacramento River, biologists surveyed the river area from kayaks on June 7 and 8.

Table 3.4-2: Special Status Animal Species With Potential to Occur in the Project Area

Species	Status	Habitat Notes
Invertebrates		
Branchinecta conservatio Conservancy fairy shrimp	FE	Vernal pools and swales. Dependent on seasonal water fluctuations and water quality. Vernal pools and related swale habitats in the western portions of the project study area.
Branchinecta lynchii Vernal pool fairy shrimp	FT	Vernal pools and swales. Dependent on seasonal water fluctuations and water quality. Vernal pools and related swale habitats in the western portions of the project study area.
Desmocerus californicus dimorphus Valley elderberry longhorn beetle	FT	Dependent on elderberry shrubs as a host plant. Potential habitat are shrubs with stems 1 inch in diameter or greater. Elderberry shrubs may be present in or near the Sacramento River.
Lepidurus packardi Vernal pool tadpole shrimp	FE	Vernal pools and swales. Dependent on seasonal water fluctuations and water quality. Vernal pools and related swale habitats in the western portions of the project study area.
Linderiella occidentalis California linderiella	FSC	Vernal pools, swales, seasonal wetlands, ditches, and watering troughs. Dependent on seasonal water fluctuations and water quality. Vernal pools and related swale habitats in the western portions of the project study area.
Fish		
Acipenser medirostris Green sturgeon	FSC	Sacramento River
Lampetra tridentate Pacific lamprey	FSC	River and creek systems
Oncorhynchus tshawytscha Chinook salmon (winter run)	FE	Sacramento River is critical habitat for the species
Oncorhynchus tshawytscha Chinook salmon (spring run)	FT, CSC	Butte Creek is critical habitat. Well-aerated gravel beds and cool water for spawning. Large ponds 1-3 meters deep summer holding areas.

[3] Essex Environmental. 2001. Field Studies Conducted March 8-9, March 28-29, May 2-4, May 21-25, and June 6-8, 2001.

Species	Status	Habitat Notes
Oncorhynchus tshawytscha Chinook salmon (fall/late fall run)	Federal candidate	Sacramento River and Butte Creek
Oncorhynchus kisutch Coho salmon (S. Oregon/ N. California)	FT	Sacramento River and Butte Creek are critical habitat.
Oncorhynchus mykiss Central Valley steelhead	FT	Sacramento River and Butte Creek
Pogonichthys macrolepidotus Sacramento splittail	FT, CSC	Sacramento-San Joaquin estuary. Possible in Butte Creek. Slow-moving sections of rivers and sloughs.
Amphibians		
Scaphiopus hammondii Western spadefoot toad	FSC, CSC	Valley and foothill grasslands, river floodplains, marshes, and alluvial fans. Requires loose, sandy, or gravely soil. Grasslands with shallow, temporary pools (e.g., vernal pools). Susceptible to predation by red swamp crayfish and bullfrogs. Potential habitat west of Glenn-Colusa Canal and vernal pools on western portion of the project study area.
Reptiles		
Clemmys marmorata marmorata Northwestern pond turtle	FSC, CSC	Wetlands, ponds, marshes, lakes, streams and irrigation ditches. Vegetated banks and basking logs are required. Nests typically on unshaded slopes. Has been observed in the project study area.
Thamnophis gigas Giant garter snake	FT, CT	Forage in permanent or seasonal water with emergent vegetation, mud bottoms, and dirt banks. Occurs in irrigation ditches year round, rice fields during growing season. Absent from waters with predatory fish. Requires upland sites above floodwaters for winter refugia. Occurs in the project study area wherever water is present.
Birds		
Botaurus lentiginosus American bittern	MNBMC	Fresh emergent wetlands. Feeds in dense emergent vegetation and adjacent shores. Species observed in the project area.
Plegadis chihi White-faced ibis (rookery site)	FSC, CSC	Any water area, rice field or other harvested grain fields. Nests in aquatic vegetation, shrubs and low trees in large colonies. CDFG reports rookery in Gray Lodge area.
Elanus leucurus White-tailed kite (nesting)	MNBMC	Forages over all habitats, including agricultural areas. Perches and nests in trees and shrubs in riparian areas.
Circus cyaneus Northern harrier (nesting)	CSC	Nests primarily in emergent wetlands. Forages in grasslands and open grain fields. Observed in the project study area.
Accipiter cooperi Cooper's hawk (nesting)	CSC	Open woodlands and streamside groves. Suitable habitat around Sacramento River, Butte Creek, and other riparian woodlands.
Buteo swainsoni Swainson's hawk (nesting)	CT	Nests in riparian floodplain forest, forages over any open land within 10 miles of nest site. Suitable nest sites near Sacramento River, Butte Creek, or in other areas with large trees.
Chlidonias niger Black tern	FSC, CSC	Inland lakeshores and marshes. Some nests in rice fields. Nests somewhat communally in small groups just over or on water.
Coccyzus americanus occidentalis Western yellow-billed cuckoo	CE	Riparian, floodplain forest, shrubs. Prefer large woodlands with unbroken canopy and trees with vertical branches for nesting. Potential habitat near Butte Creek and the Sacramento River.
Athene cunicularia *Burrowing owl (burrow sites)*	FSC, CSC	Primarily grassland, also occasionally in levees and irrigation dikes, if there is enough soil for a burrow. Dependent on ground squirrels for burrows. Suitable grassland habitat west of Glenn-Colusa Canal.

Species	Status	Habitat Notes
Riparia riparia Bank swallow (nesting)	CT	Colonial nesters in riparian and lowland habitats in vertical banks and cliffs with fine-textured or sandy soils. Colonies along Sacramento River.
Lanius ludovicianus Loggerhead shrike	FSC, CSC	Resident and winter visitor throughout the lowlands and foothills of California. Confirmed on Gray Lodge near Remote Facility Site. Prefers habitats with scattered shrubs, trees, posts, fences, and utility lines.
Agelaius tricolor Tricolored blackbird (nesting colony)	FSC, CSC	Mature stands of cattails and scrub near water, blackberries, hay fields, and wheat fields. Nesting synchronous. Potential nesting next to construction sites.
Mammals		
Perognathus inoratus San Joaquin Pocket mouse	FSC, CSC	Dry, open, grassy or weedy areas; fine-textured soil. Potential habitat limited to grasslands in the western portion of the project study area.

*Key to status codes:
FE: Federal Endangered
FT: Federal Threatened
FSC: Federal Species of Special Concern
CE: State Endangered
CT: State Threatened
CSC: State Species of Special Concern
MNBMC: Federal Migratory Nongame Birds of Management Concern

SOURCE: CDFG[4], USFWS[5]

Fourteen of the 28 special-status fish and wildlife species listed in Table 3.4-2 have been confirmed to be present within the project study area. An additional six species have the potential to occur at the proposed sites of some project components. In addition, all of the invertebrate species, although not observed during the field surveys, could occur in the vernal pools and in the Sacramento River. Other species were not observed in the study area. For example, the San Joaquin pocket mouse (*Perognathus inoratus*) was not found during trapping surveys in the grasslands west of the Glenn-Colusa Canal. No evidence of sign or recent activity by western burrowing owl (*Athene cunuculata*) was observed during the 2001 surveys (Essex Environmental 2001).

Special-Status Invertebrates. The conservancy fairy shrimp (*Branchinecta* conservatio), vernal pool fairy shrimp (*Branchinecta lynchi*), vernal pool tadpole shrimp (*Lepidurus packardi*), and California linderiella (*Linderiella occidentalis*) could all be found in three small vernal pools that occur within the annual grasslands in the western portion of the project area. These pools are located near the access road to the Delevan Compressor Station, on the west side of the Glenn-Colusa Canal.

Elderberry bushes (Sambucus mexicana), potential habitat for the Valley elderberry longhorn beetle (*Desmocerus californicus dimporphus*), are common in riparian vegetation near the Sacramento River.

[4] Natural Diversity Data Base. 2001. Natural Heritage Division. California Department of Fish an Game

[5] U.S. Fish and Wildlife Service. 2001. Sacramento Fish and Wildlife Office. Species List for Sensitive Biological Resources in Study area Located Within Glenn, Sutter, Colusa, and Butte Counties. February 5, 2001.

Special-Status Fish. Special-status fish were not sampled in the rivers and creeks of the study area; however, based on known occurrences of these species, it is assumed that these species are present in the Sacramento River and Butte Creek in the vicinity of the Line 400/401 Connection Pipeline. The species likely to occur in the Sacramento River include winter run Chinook salmon (*Oncorhynchus tshawytscha*), fall run Chinook salmon, and Central Valley steelhead (*Oncorhynchus mykiss*). Fish likely to occur in Butte Creek include spring run Chinook salmon, fall run Chinook salmon, and Central Valley steelhead. The Sacramento splittail (*Pogonichthys macrolepidotus*) is unlikely to occur in the project area.

The green sturgeon (*Acipenser medirostris*) and the Pacific lamprey (*Lampetra tridentata*) have the potential to occur in the Sacramento River and Butte Creek. Indirect evidence indicates that green sturgeon spawn both in the Sacramento River and the Feather River and have been reported in the mainstream Sacramento River as far as Red Bluff, Tehama County (Fry 1973). The Pacific lamprey is a parasitic species that is known to spawn in the upper drainages of the Sacramento River system below Red Bluff Dam (Moyle 1976).

Special-Status Amphibians. Suitable habitat for the western spadefoot toad (*Scaphiopus hammondii*) may occur within the western portion of the project study area. Surveys conducted for this species in February and March 2001 (Essex Environmental 2001) were inconclusive due to less than optimal weather conditions. The vernal pools noted near the project area are small and potential breeding of this species on site appears to be unlikely.

Special-Status Reptiles. Northwestern pond turtles (*Clemmys marmorata marmorata*) were observed during initial project development in several aquatic locations along the existing storage pipeline route, as well as in ditches and ponds near the Remote Facility Site (WGSI 2001). The surveys conducted between April and June 2001 documented turtles in the Butte Sink area (WGSI 2001)). Nesting locations were not noted during the surveys, although banks along sloughs and creeks in the Butte Sink area could be used for such nesting. Northwestern pond turtles could be expected in any aquatic habitat near all project components other than the Delevan Interconnect Site.

There are known occurrences of giant garter snake (*Thamnophis gigas*) near the Cherokee Canal crossing of Gridley Road, on the Gray Lodge near the Remote Facility Site, and on the Wild Goose Club. Several documented occurrences exist just north of Gridley Road in the Butte Creek area. During initial project development, giant garter snakes were observed in a rice field irrigation ditch near the Remote facility Site, along the storage pipeline route near the 833 Canal, and near the junction of North Butte Road and the access road into the Wild Goose Club. Wildlife surveys conducted between April and June 2001 documented giant garter snake at the Cherokee Canal at the crossing of Gridley Road. Potential foraging habitat is present near all project components other than the Delevan Interconnect Site (WGSI 2001).

Special-Status Birds. American bittern (*Lanius ludovicianus*) is common on the Wild Goose Club and could be found within any of the other managed wetland areas in the project area. Bitterns were routinely observed in managed wetland areas as well as rice fields during surveys in 2001. Nesting American bitterns could be expected in freshwater marsh communities near all project components other then the Line 400/401 Connection site.

Several white-faced ibis (*Plegadis chihi*) have been seen over the Wild Goose Club, and in other managed wetlands and rice fields. It is likely that at least one rookery exists

somewhere in the immediate area. During the surveys completed in May and June 2001, foraging white-faced ibis flocks were commonly encountered in managed wetlands and rice fields along the Line 400/401 Connection Pipeline and the Storage Loop Pipeline. No nesting rookeries were detected.

Northern harriers (*Circus cyaneus*) were frequently seen over the wetlands at the Wild Goose Club and likely nest in the area. In 1998, during initial project development, a female harrier was observed with nesting material on the Gray Lodge adjacent to West Liberty Road. During the surveys between April and June 2001, Northern harriers were observed nesting north of the ROW and Gridley Road, east of Butte Creek. A harrier was also observed foraging over the rice fields and wetlands on the Gunnersfield Ranch.

Two pairs of nesting Swainson's hawks (*Buteo swainsoni*) were observed within 0.5 mile of the project area, one pair at the Sacramento River, and the other near the town of Delevan. An additional individual Swainson's hawk was observed soaring over rice fields near the Remote Facility Site during two consecutive field visits to the ROW in early May 2001.

Foraging black terns (*Chlidonias niger*) were observed along the Drumheller Slough area and over rice fields 1.5 miles east of Delevan during surveys in May 2001. Later surveys in June were conducted to determine breeding locations of these birds. No nesting terns were detected.

Two breeding bank swallow (*Riparia riparia*) colonies were identified in 1986 and 1987 in the vicinity of the proposed Line 400/401 Connection Pipeline, at the crossing of the Sacramento River (CNDDB 2001). Bank swallows were observed foraging along the eastern bank of the Sacramento River at the proposed bore crossing locations. Both nests and breeding activities were observed near the project area during the May 2001 surveys.

Loggerhead shrikes (*Lanius ludovicianus*) were observed and may have nested on Gray Lodge during initial project development, and could potentially occur in several other different locations in the project area. Suitable nesting habitat occurs along West Liberty Road near the Remote Facility Site and the Storage Loop Pipeline. Shrikes were observed near the Remote Facility Site and along the Line 400/401 Connection Pipeline route on Gridley Road during the surveys in 2001.

The closest known nesting colony of tricolored blackbird (*Agelaius tricolor*) to the project site occurs in the Sacramento National Wildlife Refuge approximately. This area is approximately one mile north of the proposed Line 400/401 Connection Pipeline route. Smaller colonies could occur closer to the Line 400/401 Connection Pipeline route. There are no other known large breeding colonies in the vicinity of the project study area. Surveys in May 2001 observed roosting colonies in trees near the town of Delevan, in blackberry bushes along Delevan Road, near Delevan National Wildlife Refuge, and in managed wetlands near the Storage Loop Pipeline. During later surveys in these areas in June, no nesting colonies were detected in these areas.

Western yellow-billed cuckoo (*Coccyzuz americanus occidentalis*) is known to occur along the Sacramento River in Glenn and Colusa Counties. A single male was observed on the Gray Lodge in 1997 during surveys for the initial project development. A single cuckoo was also observed in 1977 at the Sacramento River south of the proposed Line 400/401 Connection Pipeline crossing (CNDDB 2001). No cuckoos responded to the taped cuckoo calls played during the 2001 field surveys.

Regulatory Setting

In addition to complying with CEQA, the project would conform to other state and federal laws, regulations and permitting requirements specifically associated with sensitive biological resources.

FEDERAL SETTING

Portions of the project would be constructed in wetlands and would cross the Sacramento River, Butte Creek, and other natural waterways. Because the project would affect these "waters of the US", an Individual Permit would be obtained from the US Army Corps of Engineers under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act. Before issuing an Individual Permit, the Corps must ensure that any actions they authorize, fund, or carry out are not likely to jeopardize the continued existence of any listed species or result in the destruction or adverse modification of critical habitat., They must consult with the US Fish and Wildlife Service (USFWS) under Section 7 of the Federal Endangered Species Act (FESA). This process concludes with a written "biological opinion" from the USFWS. The Biological Opinion would detail how the action affects listed species and critical habitat, prescribe associated "terms and conditions" as well as "prudent measures," include a statement that the proposed action would not jeopardize the continued existence of the species, and provide an allowance for incidental take of affected species if appropriate. The Corps would also consult with the National Marine Fisheries Service (NMFS) to request either a determination that the project is not likely to adversely affect listed anadromous fish species, or the issuance of a Biological Opinion. In addition, the Corps must ensure the project complies with its 'no net loss' wetland policy mandate.

STATE SETTING

The California Department of Fish and Game (CDFG) has jurisdiction over the state's fish and wildlife resources. For this project, CDFG discretionary jurisdiction is found under Fish and Game Code Section 1600 et. seq. (Streambed Alteration Agreements) and Section 2080 et. seq. (California Endangered Species Act - CESA). CDFG would be a Responsible Agency in the CEQA review.

WGSI would execute a Section 1603 Streambed Alteration Agreement with CDFG for project effects in wetland and riparian areas to ensure these resources are protected. In addition, the CDFG also issues take permits for state-listed species under Section 2081(b) if the take is incidental to an otherwise lawful activity and impacts of the take are minimized and fully mitigated.

Other laws enforced by CDFG as a trustee agency are the California Native Plant Protection Act, which requires protection of rare, threatened, and endangered plants in the state, and the Migratory Bird Treaty Act, which prohibits the taking of migratory bird species.

The Central Valley Regional Water Quality Board (RWQCB) would need to confirm that the project activities would not violate state water quality standards. Along with a copy of the Corps permit application, a letter would be submitted to the RWQCB requesting confirmation in making the RWQCB a Responsible Agency under CEQA. The RWQCB

would review the Corps permit application and the CPUC Draft EIR, then post a public hearing notice regarding their intent to issue water quality certification. If the CPUC certifies the Final EIR, the RWQCB would then issue its decision letter. WGSI would file a Notice of Intent for coverage under two General Permits issued by the RWQCB for construction storm water and construction dewatering. These permits and processes are discussed in the Regulatory Setting portion of Section 3.5. There would be no discharges to the Sacramento River.

LOCAL SETTING

Sacramento River Conservation Area.

State, federal and local representatives have combined to form the Sacramento River Conservation Area (SRCA), which stretches over 200 miles of river from Sacramento to Redding. The SRCA succeeded an advisory council created in 1986 by the state legislature to address the river's future. Following 13 years of meetings involving land owners, governmental representatives and environmental groups, a consensus was reached on the key issues surrounding the long term planning for the river. The council produced the Sacramento River Conservation Area Handbook in June 1998 as a blue print for riparian habitat restoration along the river. A non-profit organization has been formed to seek grants and permits to implement the plans. The plan divides the river into four reaches based on physical characteristics, and the project study area is within the Chico Landing – Colusa reach. The SRCA includes all land areas between the setback levees, as well as a one-mile transition area outside the levees where the soils are suitable for riparian species or valley oak woodland. Restoration policies for this reach include:

- Preserve intact river meander and associated successional riparian processes.
- Allow riparian forests to reach maturity.
- Restore physical and successional processes.
- Conduct reforestation activities.

At the proposed crossing of the Sacramento River, a narrow band of riparian woodland/scrub encircles an oxbow lake on the east side of the river, and narrow bands of riparian scrub are found along the river banks. The balance of the land area between the two levees is either row crop or orchard.

Impact Analysis

AREAS OF POTENTIAL ENVIRONMENTAL CONCERN

The following are areas of potential environmental concern that may be associated with implementation of the proposed project:

- The potential taking or harassment of endangered, threatened, or rare plant or animal species or their habitats
- The potential taking of wetland and riparian habitats

- The potential interference with movement, corridors, or nursery sites of native resident wildlife
- The potential interference with migratory fish or wildlife species or wildlife nursery sites
- The potential conflict with local policies, plans, or ordinances protecting biological resources.
- The potential conflict with provisions of a Habitat Conservation Plan, Natural Community Conservation Plan, or other local, regional, or state conservation plan.

THRESHOLD OF SIGNIFICANCE

The significance of the potential effect of the proposed project on vegetation and wildlife is evaluated according to defined standards or criteria determined by CEQA Guidelines and accepted professional opinion. The CEQA Guidelines and appendices list a number of conditions that would result in significant impacts to the environment**.** According to Appendix G of the Guidelines, a project would have a significant adverse effect on biological resources if it would:

- Substantially affect a rare or endangered species of animal or plant or the habitat of the species;
- Interfere substantially with the movement or any resident or migratory fish or wildlife species; or
- Substantially diminish habitat for fish, wildlife, or plant species.

For the purposes of this EIR, an impact would be considered significant if it would:

- Result in a substantial adverse effect, either directly or through habitat modifications, on any special-status species identified as a candidate, sensitive, or special-status species in local or regional plans, policies or regulations, or by the California Department of Fish and Game or US Fish & Wildlife Service;
- Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, regulations or by the California Department of Fish and Game or US Fish and Wildlife Service;
- Result in a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marsh, vernal pool, etc.) through direct removal, filling, hydrological interruption, or other means;
- Interfere substantially with the movement of any native resident or migratory fish or wildlife species or with established native resident or migratory wildlife corridors, or impede the use of native wildlife nursery sites;
- Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance;
- Conflict with the provisions of an adopted Habitat Conservation Plan, Natural Community Conservation Plan, or other approved local, regional, or state habitat conservation plan.

IMPACT DISCUSSION

Impacts to biological resources, by project component, are discussed below in terms of levels of significance with and without mitigation. The mitigation measures outlined were originally proposed by WGSI, then augmented or modified by MHA.

Impact 3.4-1: Potential for disturbance or elimination of native vegetation during vegetation management activities

WGSI will manage the vegetation on the pipeline ROW to prevent damage to the system, facilitate inspections, and comply with regulations. In addition, the landscaping and irrigation systems on the berms surrounding the Well Pad Site and Remote Facility Site require regular maintenance to ensure the vigorous growth needed to meet visual mitigation requirements. Physical removal of deep routed trees and brush directly over the pipeline, or indiscriminate weed control using herbicides in an improper manner could inadvertently affect nearby natural vegetation.

Level of Significance Without Mitigation. The improper control of invasive vegetation or weeds along berms surrounding the Well Pad Site and Remote Facility, and along the pipeline route could result in significant impacts to native plant species.

> **Mitigation 3.4-1.** WGSI shall develop and implement an Integrated Vegetation Management Plan

WSGI shall prepare a vegetation management plan that incorporates post-construction monitoring and maintenance procedures pursuant to such guidance provided by FERC *Upland Erosion Control, Revegetation, and Maintenance* procedures or other appropriate guidance documents. WSGI shall prepare and implement an Integrated Vegetation Management (IVM) plan that incorporates actions employing the most appropriate vegetation management methods and strategies, along with a monitoring and evaluation system, to achieve maintenance goals and objectives in an environmentally sound manner. The IVM process shall include the following principle components:

- Monitoring
- Determining injury levels and action thresholds
- Proper timing of maintenance efforts
- Selection of least disruptive control and effective revegetation tactics
- Evaluation

The IVM approach would involve the establishment of low-maintenance, beneficial native screening vegetation around the Well Pad Site and Remote Facility Site. It would also include the suppression of unwanted pest or problem vegetation along the pipeline ROW when monitoring indicates action thresholds have been reached. The IVM approach would integrate biological, manual, mechanical, chemical, and educational tactics with a emphasis on prevention of problems rather than reaction to them. As such, vegetation management would not necessarily occur according to a fixed schedule. Rather, actions would occur only when monitoring indicates treatments are necessary. If treatments were needed, they would be selected and timed to be:

- Most effective against the vegetation problem
- Least hazardous to wildlife
- Least disruptive to natural pest controls or desirable vegetation

Level of Significance after Mitigation. Implementation of the Integrated Vegetation Management Plan would reduce the identified impact of vegetation management to a less-than-significant level.

Impact 3.4-2: Potential for vegetation clearing and soil grading to disturb or eliminate local populations of two special-status plants species - California hibiscus and little mousetail.

Vegetation clearing, soil excavation, grading, and backfilling could eliminate the California hibiscus (*Hibiscus lasiocarpus*) and little mousetail (*Myosurus minimus* ssp. *apus*) from some portions of the project area**.** The California hibiscus is associated with standing water habitats, canals, streams, freshwater marshes, and rivers on banks**.** The little mousetail is associated with wet places, such as marshes and vernal pools, and is often found on alkaline or saline soils.

Neither the California hibiscus nor the little mousetail have legal protection under the state or federal Endangered Species Acts but the California hibiscus is considered rare under Section 15380 of the CEQA Guidelines**.** The Federal Government has established the little mousetail as a Federal Species of Concern.

Well Pad Site. The California hibiscus was found near the Well Pad Site. Expansion of the well pad may disturb or eliminate individuals or localized populations of this plant.

Storage Loop Pipeline. Neither the little mousetail nor the California hibiscus has been identified within the ROW of the Storage Loop Pipeline.

Habitat Enhancement Site. The little mousetail was confirmed in clay flats on the Wild Goose Club**.** Site clearing, soil grading and recontouring on clay flats to develop the Giant Garter Snake Habitat Enhancement area could disturb or eliminate individual plants or localized populations of this plant.

Remote Facility. Neither the little mousetail nor the California hibiscus has been identified on the Remote Facility project area.

Line 400/401 Connection Pipeline. The California hibiscus was found in several areas within the Butte Sink along Gridley Road. The soil disturbance, trenching, grading and recontouring actions associated with pipeline construction along embankments could disturb or eliminate individual plants or localized population s of this plant.

Level of Significance Without Mitigation. The potential impacts to the California hibiscus or little mousetail are considered significant if the project would jeopardize the species in the project area. Implementation of these mitigation measures would reduce the identified impacts to special-status plant species to a less-than-significant level.

Mitigation Measure(s). The following section describes the mitigation measures proposed for this impact.

Mitigation 3.4-2 (a). Preconstruction surveys for California hibiscus and little mousetail will be initiated by WSGI.

A qualified botanist or biologist shall conduct pre-construction surveys during the appropriate blooming periods of the California hibiscus (July-August) and little mousetail (April-May) to determine the presence/absence of either species in the study area. The surveys shall be conducted according to study protocols acceptable to the USFWS, CDFG, and CNPS. If a special-status plant is identified on the site, the botanist/biologist shall, through necessary consultation with the USFWS or CDFG, determine if a special-status plant population would be jeopardized by project construction or operation. If a potential jeopardy determination were made, one of the following measures would be implemented.

Mitigation 3.4-2(b). Populations of California hibiscus and little mousetail shall be avoided and protected by WSGI

Potential adverse effects on a population of California hibiscus or little mousetail shall be avoided to the extent practicable by implementing the following:

- Construction activities in wetlands shall be restricted to the driest periods (approximately early June through mid September).
- WSGI would determine and delineate the largest, practicable, on-site area containing the special-status plant for avoidance and preservation.
- Areas supporting a special-status plant population, designated for avoidance and preservation would be flagged and fenced to prevent direct or incidental disturbance during construction.

Mitigation 3.4-2(c). If avoidance of populations of California hibiscus or little mousetail is not feasible, WSGI shall implement compensatory habitat restoration

If avoidance and on-site preservation of a population of California hibiscus or little mousetail is not feasible, the construction impact area would be restored to reestablish the target plants on site. A post construction replacement ratio of 1:1 shall be maintained for each plant removed or severely impacted. To facilitate post construction restoration and plant establishment, prior to land disturbance, rhizomes or seeds of the California hibiscus and seeds of the little mousetail shall be collected, appropriately stored/germinated and grown for later planting in the restored construction area. A nursery familiar with propagation of native plants shall do the plant propagation.

Impact 3.4-3: Potential for temporary disturbance of riparian habitat.

Riparian woodland in the project area is located inside the levees along the Sacramento River and in the Butte Sink. Patches of riparian scrub are found along the edges of creeks, canals, older ditches, and adjacent to open water and freshwater marsh areas.

Potential disturbance of riparian woodland and riparian scrub was avoided as much as possible during the siting and alignment of project components at the project planning and design stage. The use of directional drilling to construct pipelines at many of the

crossings of rivers, creeks, and other waterways lined with riparian woodland or riparian scrub would reduce the potential impact to these vegetation types.

The temporary disturbance or permanent loss of riparian scrub vegetation or individual riparian trees could occur if the pipeline trench were open cut (eleven crossings along the Line 400 and Storage Loop Pipeline) through dry ditches or channels, or if vegetation should require clearing to position the directional drilling equipment.

Well Pad Site. Construction of the Well Pad Site expansion would not require crossing of streams, creeks, channels, irrigation ditches, canals, sloughs or other water bodies providing riparian habitat dominated by trees. The construction site is located within wet meadow and upland habitat. Construction at the Well Pad Site would not adversely affect riparian vegetation.

Storage Loop Pipeline. The Storage Loop Pipeline construction would temporarily impact approximately 0.04 acres of riparian vegetation.

Habitat Enhancement Site. The proposed Habitat Enhancement Site is predominantly a wet meadow area that would be excavated and contoured to provide a system of meandering channels capable of carrying water to enhance habitat for the giant garter snake. Construction of the Habitat Enhancement Site, therefore, would impact freshwater wetland and wet meadow habitat only. No channels, creeks, streams, canals, or sloughs other water bodies providing riparian habitat dominated by trees would be encountered. The construction of the Habitat Enhancement Site would not adversely affect riparian vegetation.

Remote Facility. The Remote Facility Site is located in rice fields. Construction at the site would not be located near or involve the crossing of channels, creeks, sloughs, canals, or streams providing riparian habitat dominated by trees. Construction of the Remote Facility Site would not adversely affect riparian vegetation.

Line 400/401 Connection Pipeline. The Line 400/401 Connection Pipeline route travels through approximately 700 feet of riparian woodland along Gridley Road in the Butte Sink.

Level of Significance Without Mitigation. The tree and shrub cover along rivers, creeks, and other waterways provide important habitat for a variety of wildlife species, many of which are special-status species. The riparian vegetation is a beneficial habitat component for native fish and other aquatic organisms. The shade provided by overhanging riparian vegetation serves as a moderating effect on high water temperatures, particularly during the summer months. Because of the habitat value of riparian vegetation, any project effects that would substantially reduce the cover of this vegetation type (i.e., through direct removal or injury to trees) would be a significant impact. Implementation of these mitigation measures would reduce the identified impacts to riparian woodland and riparian scrub to a less-than-significant level.

Mitigation Measure(s). This following section describes the mitigation measures proposed for this impact.

Mitigation 3.4-3(a). Trees within the pipeline ROW shall be avoided during construction

All trees within the pipeline ROW would be avoided, if feasible, by routing the pipeline alignment and construction areas around such trees. If complete avoidance were not possible, then the following partial avoidance and protection measures (Mitigation 3.4-6(b)) would be implemented.

> **Mitigation 3.4-3(b).** Soil compaction and excavation within the root zone (root zone = 15 feet beyond the drip line of the canopy or tree crown) shall be minimized and protected by appropriate buffers.

Trees to be protected would be flagged and fenced off at the 15-foot "protected perimeter," which includes the root zone. A pre-project meeting would be scheduled between the contractor and a biologist or arborist to identify and flag trees.

The following measures shall be implemented:

- The arborist shall determine the location for protective fencing around trees. The protective fencing shall remain in place for the duration of construction. The recommended location of fencing is 15 feet outside the drip line.
- Changes in grade and compaction of the soil shall be minimized within the protected zone. Storage of equipment and materials would not be permitted within the protected zone.
- Storage of oil, gasoline, or other substances potentially hazardous to trees or tree roots shall not be stored or dumped within the protected zone or in any location where such substances may enter the roots.

If earth excavation or compaction cannot be avoided within the 15-foot protective perimeter, the arborist/biologist in consultation with the construction contractor shall determine the least impacting construction techniques to be used. Trenching, excavation, or grading would occur only under supervision of the arborist. At a minimum, the removal of more than 15 inches of soil from the existing grade within the drip line of trees to be preserved shall be avoided.

> **Mitigation 3.4-3(c).** If tree roots must be severed or exposed; protective treatments to prevent root drying will be implemented.

For those tree roots needing to be severed, clean cuts shall be made and the soil backfilled immediately to minimize drying of roots. The backfilled soils shall not be compacted but lightly tampered.

Exposure of roots during any trenching or grading operations should receive the following treatment:

- Two-inch diameter roots and larger shall be pruned back to the nearest lateral with a clean cut free of rips and tears whenever possible.
- Excavation exposing roots, which would not be backfilled with in 72 hours, shall be covered with burlap or dense jute netting. This material shall be kept moist until backfill operations are complete.

Mitigation 3.4-3(d). Riparian scrub vegetation disturbed at water crossings shall be restored

Should open cutting or access be required for construction or maintenance at any water crossing supporting riparian scrub habitat, that vegetation would be replanted as described in the project's Restoration and Monitoring Plan.

Impact 3.4-4: Potential for loss and conversion of wetlands.

Freshwater marsh, wet meadow, and clay flat wetland are all found in the project study area. Freshwater marsh, either managed or naturally occurring, occurs mainly in small, isolated patches. A few exceptions are large areas of freshwater marsh on the Tule Gun Club, Wild Goose Club, and in the Butte Sink. These large wetland areas would be avoided by project construction.

Wet meadow is the most common wetland community found in the project area, primarily in Butte County. This wetland type is located either within or adjacent to areas managed for waterfowl habitat. Clay flats occur in pockets in various areas within the proposed project ROWs. They are usually surrounded by wet meadow.

- Temporary disturbance or permanent loss of wetlands would result from trenching, earth excavation/backfilling, grading, and other related actions during the construction of project components. The proposed project would result in the temporary disturbance of 21.5 acres of wetlands and permanent conversion of 1.4 acres of wetlands for construction of the Well Pad Site, Storage Loop Pipeline, Remote Facility, and 400/401 Connector Pipeline.

After project construction and after the first growing season, the 21.5 acres of temporarily impacted wetlands would be expected to recover preconstruction functions and values. The placement of fill within approximately 1.4 acres of wetlands at the Well Pad Site, however, would result in permanent conversion of wetlands to upland habitat and the permanent loss of such wetland functions and values.

Well Pad Site. The Well Pad Site is surrounded by managed wetlands. Avoidance is not possible but limiting the area required for the well pad would minimize the impact to wetlands. Two design components would be used to accomplish this – horizontal well drilling and close well spacing. The existing 1.5 -acre Well Pad Site would be expanded westward to accommodate the construction of 19 new gas injection/withdrawal wells (Figure 3.4-2 a,b). Approximately 26,000 cubic yards of fill material would be required to elevate the pad site, with an additional 1,000 cubic yards of soil required to construct an earthen perimeter berm around the pad. This would result in the placement of fill within approximately 1.4 acres of wet meadow/clay flat wetlands. The project would also temporarily disturb an additional 1.3 acres of such wetlands (Table 3.4-3) during construction.

Table 3.4-3: Habitat and Wetlands Impacts Associated with Components of the Wild Goose Gas Storage Project

Permanent Disturbance by Project Component

	Well Pad	Storage Loop Pipeline	Habitat Enhancement Site	Remote Facility	Line 400/401 Connect. Pipeline	Project Totals
Habitat						
Freshwater marsh*	--	--	--	--	--	0.0 acres
Wet meadow*	1.4 ac	--	--	--	--	1.4 ac
Rice fields	--	--	--	6.0 ac	--	6.0 ac
Grassland	--	--	--	--	--	0.0 ac
Riparian	--	--	--	--	--	0.0 ac
Other agricultural land	--	--	--	--	--	0.0 ac
Wetlands	**1.4 ac**	**0.0 ac**	**0.0 ac**	**0.0 ac**	**0.0 ac**	**1.4 ac**[1]

Temporary Disturbance by Project Component

	Well Pad	Storage Loop Pipeline	Habitat Enhancement Site	Remote Facility	Line 400/401 Connect. Pipeline	Project Totals
Habitat						
Freshwater marsh*	--	8.8 ac	15.3 ac	--	1.8 ac	25.9 ac
Wet meadow*	1.3 ac	2.6 ac	7.7 ac	--	7.0 ac	18.6 ac
Rice fields	--	27.4 ac	--	--	216.0 ac	243.4 ac
Grassland	--	4.3 ac	--	--	17.0 ac	21.3 ac
Riparian	--	0.04 ac	--	--	--	0.04 ac
Other agricultural	--	--	--	--	80 ac	80.0 ac
Wetlands	**1.3 ac**	**11.4 ac**	**23.0 ac**	**0.0 ac**	**8.8 ac**	**44.5 ac**[2]

* Wetland habitat
[1] Total permanent wetland impact
[2] Total temporary wetland impact

SOURCE: MHA 2002 from WGSI 2001

Figure 3.4-2 a,b: Well Pad Expansion Area

Looking west from existing Well Pad Site berm.

Looking northwest from existing Well Pad Site berm.

SOURCE: WGSI 2001

Storage Loop Pipeline. The construction of the new Storage Loop Pipeline would generally follow the existing pipeline, staying for the most part within the same permanent easement area wherever feasible**.** The Storage Loop Pipeline would be installed approximately 10 feet from the existing pipeline within the same easement, except along an existing country road. In this section, the Storage Loop Pipeline would be installed along the southern edge of private rice fields on the north side of the road. A total of approximately 11.4 acres of wetlands (8.8 acres of freshwater marsh and 2.6 acres of wet meadow) would be temporarily disturbed by construction (Table 3.4-3).

Remote Facility. The construction of the new compressor units, dehydration units and reboilers, natural gas coolers, and enlargement of the existing compressor building would take place in upland areas, rice fields, and perimeter landscaped berms. The construction of project components associated with the Remote Facility Site expansion would not affect wetland habitat.

Line 400/401 Connection Pipeline. The pipeline would cross through wetlands at the Sacramento River, Butte Sink wetlands, and some rice fields. In the Colusa Drain, the route crosses through approximately 500 linear feet of the north edge of a small, managed wetland tract to avoid a major managed wetland north of the alignment. Another isolated, degraded remnant of wetland would be crossed along the north edge of Gridley Road at its intersection with Butler Road. The largest wetland complex crossed by this pipeline is in the Butte Sink. Construction activities within the proposed right-of-way of the Line 400/401 Connection Pipeline would result in the temporary disturbance of a total of 8.8 acres of wetlands (1.8 acres of freshwater marsh and 7.0 acres of wet meadow (Table 3.4-3).

Level of Significance Without Mitigation. The temporary (1-3 years) disturbance to 21.5 acres of freshwater and wet meadow/clay flat wetlands would represent a less-than-significant impact because WGSI would implement a Wetland Restoration and Monitoring Plan that would ensure that significant impacts would not result from temporary wetland disturbance. Implementation of this mitigation measure would reduce the identified impacts to wetlands to a less-than-significant level.

To avoid or minimize wetland impacts, the following measures are incorporated into the project design:

- Horizontal drilling would be implemented and the space between wells at the Well Pad Site would be minimized
- Flagging and posting of signs during construction at the Well Pad Site would be implemented to prevent expansion of construction areas into adjacent wetlands
- Alignment of the Storage Loop Pipeline and Line 400/401 Connection Pipeline has been designed to avoid or minimize impacts to wetlands.
- Construction activities in managed wetlands would be limited to the driest periods (approximately early June through mid-August).
- Topsoil from construction areas at depths excavated to 24 inches during pipeline trenching would be segregated and replaced/backfilled after construction to restore the construction sites
- Vegetation would be cut at ground level, wherever possible, leaving existing root systems intact.

- Vegetation debris would be removed from wetlands and waterways for off-site disposal, unless otherwise requested in writing by property owners or habitat managers.

Wetland restoration would be as provided in the project's Restoration and Monitoring Plan and would include restoring wetland areas to their original contour and elevation.

The permanent conversion and loss of 1.4 acres of wet meadow wetlands associated with the Well Pad Site Expansion, however, would result in a significant impact to wetlands.

Mitigation Measure. The following section describes the mitigation measure proposed for this impact.

> **Mitigation 3.4-4.** WSGI shall compensate the loss of 1.4 acres of wetlands by wetlands creation, restoration, or securing mitigation at an appropriate mitigation bank

WSGI has applied for a Clean Water Act Section 404 Permit for the placement of fill within wetlands and would also obtain all necessary permits from the RWQCB to authorize the placement of such fill. WSGI shall finalize and implement the project's Wetland Restoration and Monitoring Plan to meet with the approval of the US Army Corps of Engineers (ACOE), in consultation with the CDFG and the RWQCB. The Plan shall accurately identify the total wetlands and other jurisdictional areas affected by the project. The Plan shall provide for re-establishment, enhancement, and/or replacement of wetland habitat and vegetation.

For on-site compensatory wetlands development, the Plan shall include the following.

- Identification of the location(s) of mitigation areas. Mitigation for the 1.4-acre loss of wetlands shall be provided at a replacement ratio of 2:1, and shall result in created or restored wetlands with an equal or higher habitat value;
- Site preparation and re-vegetation procedures, along with an implementation schedule, and funding sources to ensure long-term management of the overall wetland mitigation plan and
- Specify success criteria, maintenance, monitoring requirements, and contingency measures. Monitoring shall be provided for a minimum of five years and continue until the success criteria are met.

If on-site wetlands mitigation is not feasible, suitable off-site compensatory mitigation shall be developed in consultation with the CDFG and ACOE. This would include compensation for wetland loss and impacts at the Dolan Ranch Conservation Bank or other appropriate mitigation bank. Compensatory ratios would be determined in consultation with the ACOE, USFWS, and CDFG.

Impact 3.4-5: Potential to convert freshwater marsh and wet meadow wetlands to other wetland types.

The construction of the Giant Garter Snake Habitat Enhancement Site would involve soil excavation, grading and land recontouring, and construction of perimeter berms and connecting channels. WSGI has developed a plan for the enhancement. WGSI proposes

temporary impacts to freshwater marsh and wet meadow habitat (Table 3.4-3). Temporary habitat disturbance would result from soil excavation to create water channels, channel banks, and moderately sloping-bank refugia for the giant garter snake. According to this plan, approximately 15.3 acres of freshwater marsh and 7.7 acres of wet meadow/clay flat wetlands would be temporarily disturbed.

Rather than resulting in temporary disturbance to wetlands, soil excavation, grading, reencountering, and the creation of berms and channels could result in permanent conversion of existing wet meadow and freshwater wetlands to open water, mud bank, riparian scrub or some other wetland types. Potentially, 23 acres of freshwater marsh and wet meadow habitat could be converted. The conversion of one wetland type to another type could alter those functions and values of freshwater and wet meadow habitat, or special aquatic habitat (giant garter snake habitat), already provided by the Enhancement Site. Such conversions, therefore, may result in a "net loss" of existing freshwater and wet meadow wetlands (Figure 3.4-2 c,d).

Figure 3.4-2 c,d: Giant Garter Snake Habitat Enhancement Site

Looking south from the northwest edge of the site.

Looking northwest from the southwest edge of the site.

SOURCE: WGSI 2001

Level of Significance Without Mitigation. The potential conversion of 23 acres of freshwater and wet meadow/clay flat wetlands would represent a significant impact. **.** Implementation of this mitigation measure would reduce the identified potential impact of wetland conversion to a less-than-significant level.

> **Mitigation 3.4-5.** WSGI shall compensate the conversion of 23 acres of wetlands by wetlands creation, restoration, or securing mitigation at an appropriate mitigation bank

WSGI would apply for a Clean Water Act Section 404 Permit for the placement of fill within wetlands and would also obtain all necessary permits from the RWQCB to authorize the placement of such fill. WSGI shall finalize and implement the project's Wetland Restoration and Monitoring Plan to meet with the approval of the US Army Corps of Engineers (ACOE), in consultation with the EPA, CDFG and the RWQCB. The Plan shall accurately identify the total wetlands and other jurisdictional areas affected by the project, and the actual acreage of wetland conversion. The Plan shall clearly delineate what areas in the Garter Snake Habitat Enhancement Area that potentially could be permanently converted as distinguished from those areas that would be temporarily impacted. The Plan shall provide for re-establishment, enhancement, and/or replacement of wetland habitat and vegetation.

For on-site compensatory wetlands development, the Plan shall include the following.

- Identification of the location(s) of mitigation areas. Mitigation for the fraction of the 23 acres of wetlands potentially converted to other wetland or non-wetland habitat shall be provided at a replacement ratio of 2:1, and shall result in created or restored wetlands, type vs. type, with an equal or higher habitat value;
- Site preparation and re-vegetation procedures (including a revegetation plan using native plants), along with an implementation schedule, and funding sources to ensure long-term management of the overall wetland mitigation plan and
- Specify success criteria, maintenance, monitoring requirements, and contingency measures. Monitoring shall be provided for a minimum of five years and continue until the success criteria are met.

If on-site wetlands mitigation is not feasible, suitable off-site compensatory mitigation shall be developed in consultation with the CDFG, EPA and ACOE. This would include compensation for wetland loss and impacts at the Dolan Ranch Conservation Bank or other appropriate mitigation bank. Compensatory ratios would be determined in consultation with the ACOE, USFWS, and CDFG.

Impact 3.4-6: Potential for effects on the habitat of special-status fish species.

Special-status fish species most likely occur in the Sacramento River and Butte Creek. Those species likely to occur in the Sacramento River include winter run Chinook salmon, fall run Chinook salmon, Central Valley steelhead, Green sturgeon, and Pacific lamprey. Butte Creek is expected to provide habitat for spring run Chinook salmon, fall run Chinook salmon, Central Valley steelhead, and Pacific lamprey. These species could be adversely affected by the following project activities:

- Lethal or sub lethal contamination of water, soil, and/or food organisms from pipeline construction and operation.
- Habitat loss and degradation within the 100-year floodplain of the Sacramento River or Butte Creek due to pipeline construction and operation.

During trenching, pipeline installation, backfilling, and grading, surface soils could be disturbed. These activities could result in accelerated erosion and movement of excess sediment by way of overland flow into streams, waterbodies, rice fields, and wetlands.

The pipeline crossings of the Sacramento River and Butte Creek would be constructed via directional drilling. A borehole would be drilled underneath the river and creek, and the pipeline would be installed by pulling it through the borehole.

All other water crossings – irrigation ditches, canals, creeks, sloughs, or other natural water bodies – would also be bored by either directional or traditional drills. Boring under these water features would substantially reduce potential environmental impacts to fisheries. The technique avoids many of the most damaging impacts to waters. Most of the damage involved in physical installation of a pipeline is expected to be temporary with sufficient reclamation of the disturbed areas.

Directional drilling installation, however, presents the potential for waterway disturbance and increased turbidity through seepage of drilling fluids. The directional drilling process would use drilling fluid composed primarily of water and clay. The primary active clay component is bentonite, which is a naturally occurring, non-hazardous clay product. A primary concern is that the drilling mud seeping from a drill bore might be washed downstream and collect in backwater habitats important for juvenile fish.

Well Pad Site. Construction of the Well Pad Site expansion would not require crossing of streams, creeks, channels, irrigation ditches, canals, sloughs or other water bodies. The construction site is located within wet meadow and upland habitat. Well Pad Site expansion construction, therefore, would not adversely affect the habitat for special-status fish species.

Storage Loop Pipeline. The Storage Loop Pipeline would cross a drainage canal at two locations. Directional boring or traditional drilling would be used to construct the pipeline across these water features. The employment of these techniques would avoid potential water quality degradation and effects to fish. Construction of the Storage Loop Pipeline across these water features, therefore, would not adversely affect the habitat for special-status fish species.

Habitat Enhancement Site. The proposed Habitat Enhancement Site is predominantly a wet meadow area that would be excavated and contoured to provide a system of meandering channels capable of carrying water to enhance habitat for the giant garter snake. Construction of the Habitat Enhancement Site, therefore, would temporarily impact freshwater wetland and wet meadow habitat only. No channels, creeks, streams, canals, or sloughs would be encountered. The construction of the Habitat Enhancement Site would not adversely affect the habitat for special-status fish species.

Remote Facility. The Remote Facility Site is located in rice fields. Construction at the site would not be located near or involve the crossing of channels, creeks, sloughs, canals, or

streams. Construction of the Remote Facility, therefore, would not adversely affect the habitat for special-status fish species.

Line 400/401 Connection Pipeline. No direct effects on special-status species in the Sacramento River or Butte Creek are expected to occur because directional drilling under these waterways would avoid or minimize adverse effects. Use of directional drilling would not normally disturb streambed sediments. There is a potential for leakage of drilling fluids upward through the riverbed and into the water column. A release of drilling fluids into the water could result in localized, short-term turbidity and the physical sediment deposition on the river bottom. While adult fish would likely avoid the disturbed area, drilling mud may wash downstream and collect in backwater habitats important for juvenile fish. In addition to juvenile fish, less mobile organisms, such as benthic macroinvertebrates (fish food source), could be adversely affected if they were buried by drilling mud deposition. Macroinvertebrates would likely recolonize the impacted area within approximately 1 year after construction.

Indirect effects to sensitive fish species could occur due to accidental discharge of drilling mud from the banks into waterways, and accidental spills of hazardous materials.

Level of Significance Without Mitigation. Impacts to special-status fish during pipeline construction would be avoided by implementing the directional bore techniques incorporated into the project design and construction plans. These techniques would result in less-than-significant construction impacts to special-status fish.

The accidental discharge of drilling mud from the banks into waterways or accidental spills of hazardous materials could result in potentially significant impacts to water quality with potential adverse effects on fish and other aquatic life.

Mitigation Measure. The following section describes the mitigation measures proposed for this impact.

> **Mitigation 3.4-6(a).** Drilling of channel crossing bores would be scheduled to avoid the spawning periods of special-status fish.

To the extent possible, drilling activities would be scheduled to occur at the Sacramento River between April 15 and June 15, and between June 15 and October 1 at Butte Creek, outside of the spawning period of special-status fish.

> **Mitigation 3.4-6(b).** Best Management Practices would be employed to Avoid or Minimize the Discharge of Drilling Mud or Hazardous Materials.

The bore would be aligned at the maximum feasible depth to minimize the potential for frac-outs. The drilling activities would be monitored to detect accidental releases of drilling fluids. The drilling contractor would stop drilling immediately if a frac-out occurs. The drilling contractor would take remedial actions (e.g., reduce drilling pressure, thicken drilling mud). No instream containment or diversion would be installed without the approval and proper permits from affected resource agencies, such as CDFG, USFWS, NMFS.

Best Management Practices shall be implemented to prevent accidental spills of hazardous materials from entering waterways by fueling and servicing equipment and vehicles well away from the waterbody. If fueling and servicing are necessary within a close distance, such as fueling of a stationary drill rig, a temporary containment berm would be installed to capture any accidental releases, and best management practices, such as drip pans and drip pads would be installed during fueling and equipment servicing.

Level of Significance after Mitigation. Pipeline construction using the directional drilling techniques incorporated into the project design and construction plans by WSGI would mitigate, through impact avoidance, potential impacts to special-status fish species at the crossings of rivers and creeks. The addition of the supplemental considerations would enhance the performance of the directional drilling method of impact avoidance, resulting in less-than-significant impacts on special-status fish species and their habitat.

The implementation of the mitigation measures to reduce the potential adverse effects of accidental discharge of drilling mud or hazardous materials would reduce such potential significant impacts to a less-than-significant level.

Impact 3.4-7: Potential for water withdrawals from perennial streams to adversely affect downstream fisheries and aquatic life.

WGSI proposes to use surface waters to supply water for the hydrotesting Line 400/401 Connection Pipeline and the Storage Loop Pipeline following construction. WGSI proposes to withdraw water from tributaries of the Sacramento River or Butte Creek;, these water withdrawals may adversely affect fisheries and other aquatic life downstream of the withdrawal point. These effects may be a result of short-term alteration of stream hydrology or direct injury or death to eggs or juveniles of special-status fish species.

Level of Significance Without Mitigation. Depending on where the water intake structures would be located, and the potential presence of special-status species at these locations, water pumping for the hydrostatic testing of pipelines could have a potentially significant impact on juveniles or eggs of these species. The implementation of the mitigation measures to reduce the potential adverse effects of hydrostatic testing would reduce the potential significant impacts to a less-than-significant level.

Mitigation Measures. The following section describes the mitigation measure proposed for this impact.

The following measure would further insure that the construction impacts of pipeline crossings at rivers and creeks would be less-than-significant and that the potential significant impacts of hydrostatic testing would be reduced.

> **Mitigation 3.4-7.** Water Withdrawal for Hydrostatic Testing will be Timed and Conducted in a Manner to Avoid Adverse Effects to Fish and Aquatic Life

To ensure that downstream fisheries and aquatic life would not be affected by hydrostatic test water withdrawals from tributaries to either the Sacramento River or Butte Creek, WGSI would notify the CDFG, NMFS, and USFWS prior to hydrostatic testing. WSGI would submit plans for water withdrawal indicating the volume of expected withdrawals, the timing of the withdrawals, and the methods of the withdrawals to these agencies.

- WSGI would coordinate with CDFG, NMFS, and USFWS as to the requirement for appropriated fish screens at the water pumps to prevent the accidental take of fish species, including eggs and juveniles.
- As determined by and in coordination with these agencies, WSGI shall establish a downstream monitoring program to verify that withdrawal volume does not adversely impact fisheries or the aquatic life components that support the special-status fish species. If, during the course of the hydrostatic testing, an incidental take of a special-status species is observed in the form of an impingement, mortality, or physical removal, such incidental take will be reviewed by CDFG, USFWS, and NMFS. All hydrostatic water withdrawal shall cease and will not restart until an explanation of the causes of the taking and review with the USFWS determines that those reasonable and prudent measures can be employed to prevent the incidental taking of special-status fish.
- All hydrostatic test water shall be discharged in accordance with the water quality restrictions and conditions specified in a National Pollution Discharge Elimination System (NPDES) permit obtained for the project.

Impact 3.4-8: Potential for effects to special-status wildlife species from project construction.

Potential impacts of construction on special-status wildlife species in the study area could include, habitat alteration, population migration or displacement, changes in productivity, or death. A major impact of construction would be the alteration or elimination of wildlife habitat resulting from vegetation clearing, removal of trees, soil excavation and grading, alteration of site hydrology, and habitat conversion. Habitat conversion would result in the permanent loss of habitat equivalent to the area that the pipelines, well pads, and other ancillary structures would cover. The impact of this habitat loss would be significant if a large percentage of a habitat type, essential for the survival of a special-status species, were destroyed.

Construction-related disturbances caused by right-of-way clearing and other activities may result in temporary or permanent displacement of special-status species in the vicinity of the construction site. Where habitat is completely removed through clearing or excavation, displacement of resident special-status wildlife could be permanent. Where habitat disturbance or alterations were short-term, wildlife would most likely be temporarily displaced. The greatest impact to special status wildlife would occur during the breeding season of the respective species. Significant short-term decreases in population levels could occur where construction activities interfered with the nesting of sensitive bird species. For other species, the overall impact of construction-related displacement upon population levels would generally be low because displaced wildlife would eventually return to the vicinity of the construction site and to normal activity.

Changes in mortality rates of special-status wildlife in the study area during construction activities would be temporary in most cases. Excavations for pipelines may result in direct loss of some burrowing special status animals, such as the burrowing owl, or upland nesting sites for such species as the northwestern pond turtle. Indirect mortality could occur as a result of an inability of permanently displaced animals to find suitable or available habitat elsewhere for their life-cycle functions and survival.

Potential adverse direct and indirect effects on Special-status or "sensitive" wildlife species associated with construction of proposed project components are summarized in the Table 3.4-4.

Table 3.4-4: Potential Direct and Indirect Effects on Special-Status Wildlife Species

Species	Direct Effects	Indirect Effects
Western spadefoot (*Scaphiopus hammondii*)	Disruption or destruction of breeding sites in vernal pools during pipeline construction and connection to the Delevan Compressor Station. Vernal pools would be avoided; therefore, these direct effects would not occur.	None anticipated.
Giant garter snake (*Thamnophis gigas*)	Direct mortality during construction activities, temporary disruption of breeding and foraging habitat, and permanent loss of foraging habitat. Primary impacts could occur as a result of construction within rice fields and wetlands.	Indirect effects are not expected to occur.
Northwestern pond turtle (*Clemmys marmorata marmorata*)	Direct mortality or loss of breeding locations. Potential elimination of upland habitat required for nesting and hibernation due to trenching or setting up bore sites.	Temporary disruption of foraging habitat if construction activities are adjacent to pond turtle habitat.
Swainson's hawk (Buteo swainsoni)	Temporary disturbance of nesting and foraging during construction.	Indirect effects are not expected to occur.
Northern harrier (*Circus cyaneus*)	Temporary loss of wet meadow nesting habitat. Temporary disturbance of nesting.	Indirect effects are not expected to occur.
Western yellow-billed cuckoo (*Coccyzus americanus occidentalis*)	Temporary disruption of breeding, nesting, and foraging due to construction activities.	Indirect effects are not expected to occur.
Loggerhead shrike (*Lanius ludovicianus*)	Potential disturbance of nesting if activity goes beyond the start of May.	Temporary loss of foraging habitat.
American bittern (*Botaurus lentiginosus*)	Potential direct mortality of nesting birds during clearing of freshwater marsh and rice fields.	Temporary disruption of foraging activities.
White-faced ibis (*Plegadis chihi*)	Nesting is not likely to occur in the project area. No direct effects are anticipated.	Temporary loss of foraging habitat (rice fields) for one season.
Black tern (*Chlidonias niger*)	Nesting is not likely to occur in the project area. No direct effects are anticipated.	Temporary loss of foraging habitat (rice fields) for one season.
Tricolored blackbird (*Agelaius tricolor*)	Nesting is not likely to occur in the project area. No direct effects are anticipated.	Temporary loss of foraging habitat (blackberry bushes and trees along pipeline ROW) for one season.
Western burrowing owl (*Athene cunucularia hypigea*)	Although not seen in the project area, the birds could use existing ground squirrel burrows or new squirrel burrows prior to the start of	Indirect effects are not expected to occur.

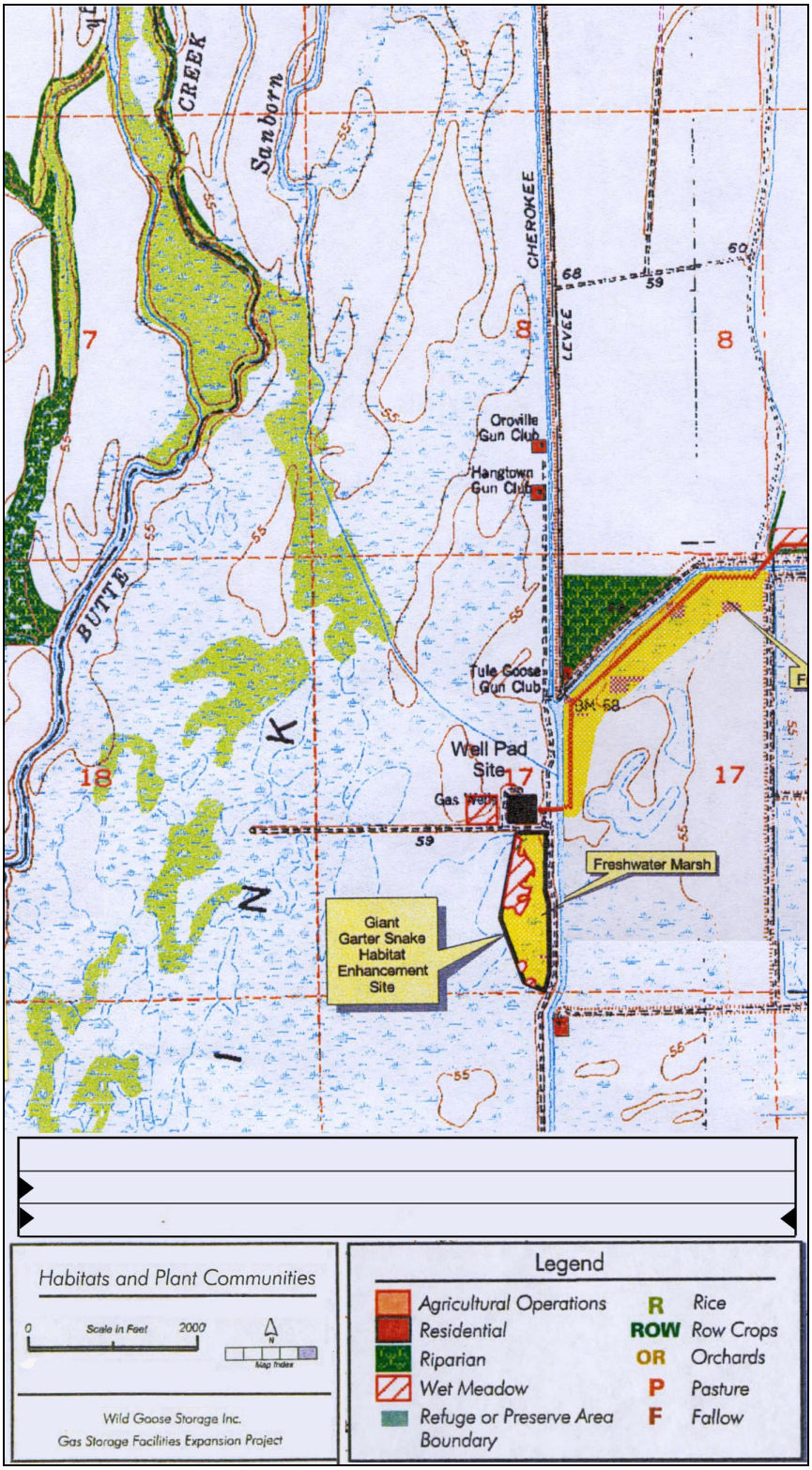
Species	Direct Effects	Indirect Effects
	burrows prior to the start of construction. Direct mortality of owls if burrows are occupied at the time of construction.	
Bank swallow (*Riparia riparia*)	No direct effects are anticipated.	Potentially, exposing banks along the Sacramento River for the directional drill may encourage nesting.
Conservancy fairy shrimp (*Branchinecta conservatio*)	No direct effects are anticipated. Vernal pools or vernal swales on the western portion of will not be impacted by the project.	No construction would occur within the drainage of vernal pools.
Vernal pool fairy shrimp (*Branchinecta lynchii*)	No direct effects are anticipated. Vernal pools or vernal swales on the western portion of will not be impacted by the project.	No construction would occur within the drainage of vernal pools.
Vernal pool tadpole shrimp (*Lepidurus packardi*)	No direct effects are anticipated. Vernal pools or vernal swales on the western portion of will not be impacted by the project.	No construction would occur within the drainage of vernal pools.
California linderiella (*Linderiella occidentalis*)	No direct effects are anticipated. Vernal pools or vernal swales on the western portion of will not be impacted by the project.	No construction would occur within the drainage of vernal pools.
Valley elderberry longhorn beetle (*Desmocerus californicus dimorphus*)	Elderberry shrubs may be present in or near the Sacramento River. Shrub stems 1 inch in diameter or greater may be cut or disturbed by directional bore installation	Indirect effects are not expected to occur.

SOURCE: **Adopted from Essex Environmental, June 2001**[6]

Well Pad Site. Approximately 1.4 acres of potential giant garter snake and northwestern pond turtle habitat would be permanently lost because of the placement of fill onto existing wetlands (Table 3.4-3). The direct impact could be direct mortality or displacement of either species, or disruption of breeding and foraging activities. The fill of the wetland would result in habitat conversion and direct loss of habitat values for these species. The project incorporates a Giant Garter Snake Habitat Enhancement Plan to compensate for the loss of wetland habitat. The well pad expansion would be to the west of the existing site; the habitat enhancement would be to the south of the Well Pad Site (Figure 3.4-3).

[6] Biological Assessment for the Wild Goose Storage, Inc. Gas storage Facilities Expansion Project, Prepared by Essex Environmental. June 2001.

Figure 3.4-3: Giant Garter Snake Habitat Enhancement Site Map



SOURCE: WGSI 2001, MHA 2002

White-faced ibis use the wetlands adjacent to the Well Pad Site for foraging. No rookeries have been detected in the area and no adverse impacts to this species are anticipated by project construction and conversion of the 1.4 acres of wetlands.

American bittern forage over managed wetlands and rice fields. There would be a temporary reduction in foraging habitat for the species. The primary potential impact is the elimination or disruption of nests and nest sites. Nesting American bittern could be expected in freshwater marsh communities near the Well Pad Site.

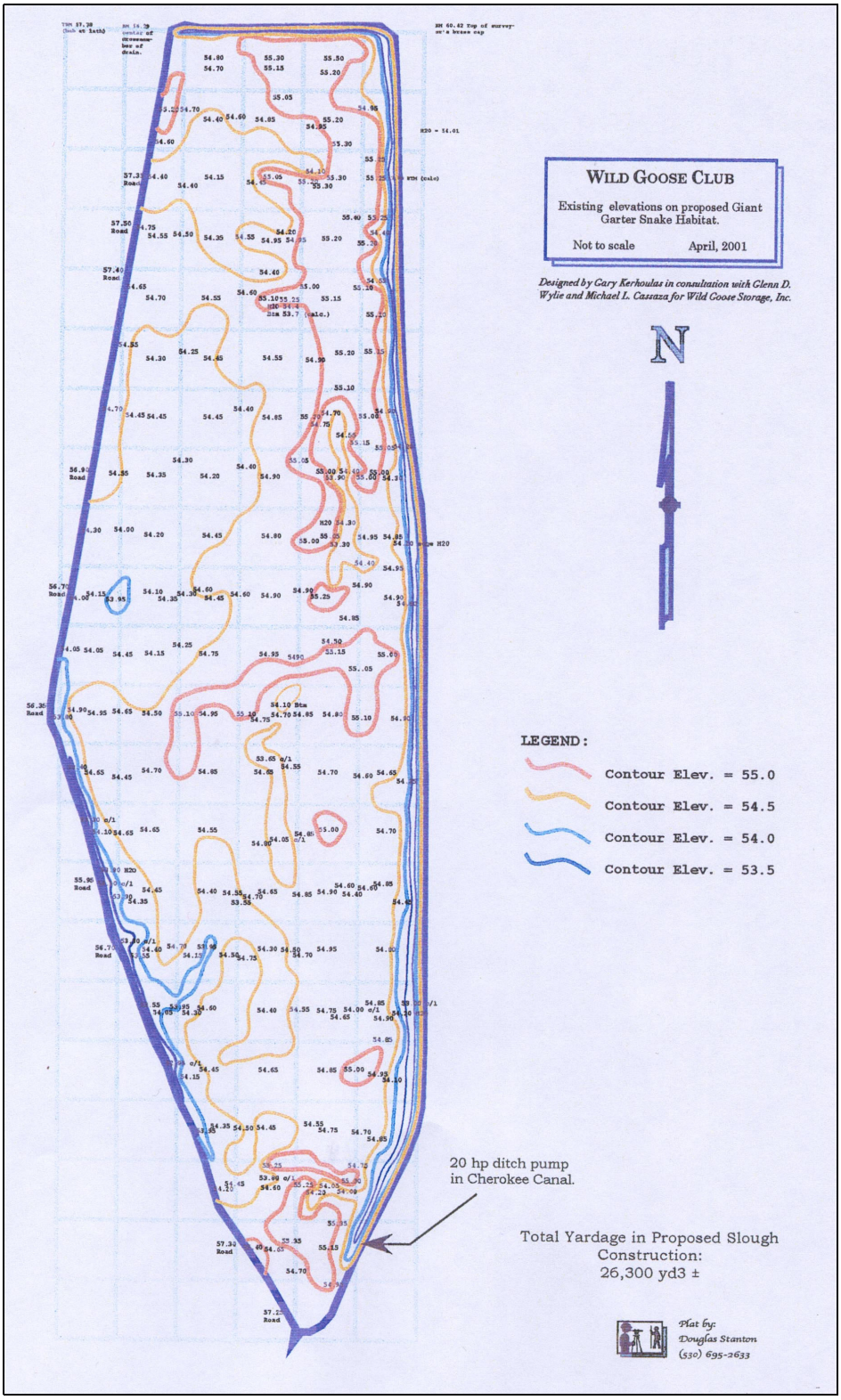
Storage Loop Pipeline. Approximately 27 acres of rice fields, potential giant garter snake habitat, would be temporarily drained for construction (Table 3.4-3). The temporary impacts to foraging/basking/retreat habitat are expected to last for one season.

Permanent surface water, including sloughs, irrigation ditches, and unlined canals, provide potentially suitable habitat for the northwestern pond turtle. The Storage Loop Pipeline would cross nine of these habitat features. The pipeline across eight of these features would be constructed using the directional drilling; at the other feature, the pipeline would be constructed across the feature using an open cut or trench.. Impacts to this species would be avoided by the implementation of the directional drilling techniques incorporated into the project design and construction plans.

Pipeline construction, involving vegetation removal and excavation of soil would result in the temporary elimination of approximately 9 acres of freshwater marsh, 2.6 acres of wet meadow, 4.3 acres of grassland, and 27.4 acres of rice field foraging area for white-faced ibis, American bittern, loggerhead shrike, and tricolored blackbird (Table 3.4-3). The impact would persist for approximately one growing season until the affected construction sites are naturally revegetated. The removal of trees and other nest sites for these species, however, could have direct effects on breeding and reproduction of these species.

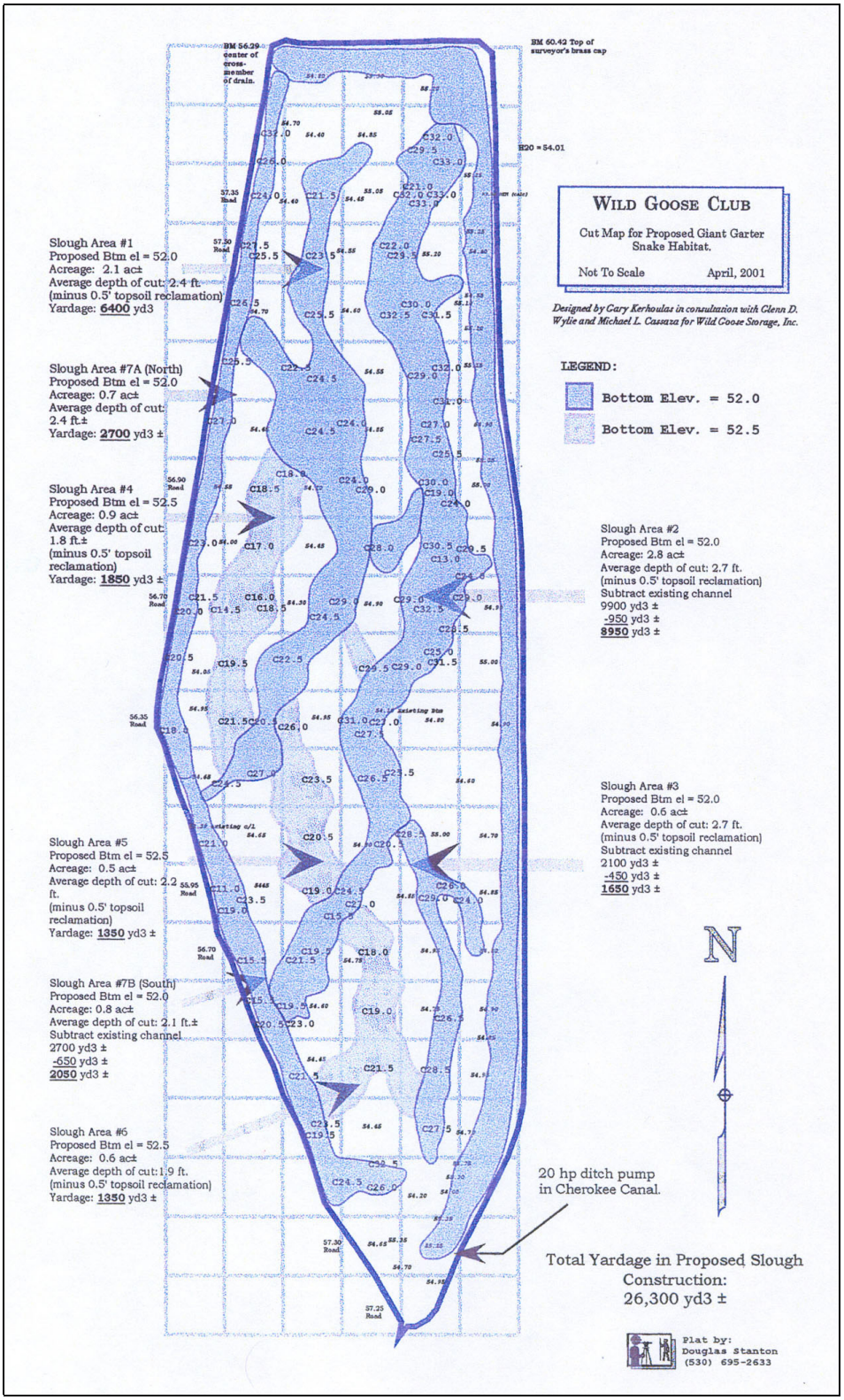
Habitat Enhancement Site. Approximately 23 acres of freshwater marsh and wet meadow, potential giant garter snake habitat, would be temporarily drained for construction. Surface disturbing activities on the site would not occur during the months of October through April, the known hibernating period of the giant garter snake. The temporary impacts to foraging/basking/retreat habitat resulting from vegetation disturbance or removal would last for one growing season. After the growing season, the wetland vegetation is expected to reestablish naturally (Figures 3.4-4 and 3.4-5).

Figure 3.4-4: Existing Habitat



SOURCE: WGSI Biological Assessment 2001

Figure 3.4-5: Converted Habitat



SOURCE: WGSI Biological Assessment 2001

Remote Facility. Approximately 6 acres of rice fields, potential giant garter snake habitat, would be permanently drained and converted as a result of construction to expand the Remote Facility (Table 3.4-3).

Swainson's hawk and loggerhead shrike have been observed foraging over the Remote Facility Site but there is no suitable nesting habitat in the construction zone of the facility. No adverse effects on species displacement, reproduction, or mortality are anticipated by construction activities at the Remote Facility Site.

Line 400/401 Connection Pipeline. Approximately 216 acres of rice fields, potential giant garter snake habitat, would be temporarily drained for construction. The temporary impacts to foraging/basking/retreat habitat are expected to last for one season.

Permanent surface water, including sloughs, irrigation ditches, and unlined canals provide potentially suitable habitat for the northwestern pond turtle. The Line 400 Pipeline would cross 55 of these habitat features. Forty-five of these would be bored crossings; the remaining 10 would be open cut crossings. Direct impacts to northwestern pond turtle habitat would be avoided in those areas with bored crossings. Open cut crossings could, however, result in direct mortality of turtles, disruption or temporary elimination of upland nesting habitat, and displacement.

Pipeline construction, involving vegetation removal and excavation of soil, would result in the temporary elimination of approximately 1.8 acres of freshwater marsh, 7 acres of wet meadow, 17 acres of grassland, 216 acres of rice field, and 80 acres of other agricultural lands (Table 3.4-4). These land areas provide foraging area for northern harrier, Swainson's hawk, loggerhead shrike, black tern, and tricolored blackbird. The temporary loss of habitat would persist for approximately one growing season until the affected construction sites are restored and naturally revegetated. The removal of trees and other nest sites, however, could have direct effects on breeding and reproduction of these species.

- Northern harriers are known to nest in areas north of the proposed pipeline ROW and Gridley Road, east of Butte Creek. Harriers forage over rice fields and wetlands throughout the project area.
- Swainson's hawk has been observed foraging along the Sacramento River and near the Town of Delevan.
- Black terns have been observed foraging over the rice fields east of Delevan.
- Suitable nesting habitat for the loggerhead shrike occurs near the Pipeline ROW. The species has been observed foraging along the Line 400/401 Connection Pipeline route on Gridley Road.
- Small, roosting colonies of tricolored blackbird could occur close to the pipeline ROW. There are no known breeding colonies in the area.

In addition to the potential nest sites of Swainson's hawk, the nest sites of three other species associated with the Sacramento River could be adversely affected by pipeline construction. The western yellow-billed cuckoo is known to occur along the Sacramento River and bank swallow colonies have been observed nesting along the eastern bank of the river. In addition, the valley elderberry longhorn beetle is known to occur in riparian shrub vegetation cover along many portions of the Sacramento River. The removal or

disruption of tree and shrub nesting and cover could adversely affect yellow-billed cuckoo. The disturbance of bank habitat could adversely affect the bank swallow. The removal of elderberry shrubs with stems sized 1-inch or larger could adversely affect the valley elderberry longhorn beetle.

Vernal pool and related swale habitats are relatively uncommon within the project study area. Only the annual grasslands in the very western portion of the project study area (west of the Glenn-Colusa Canal) provide this type of habitat. This area also provides potentially suitable habitat for the Conservancy fairy shrimp, vernal pool fairy shrimp, vernal pool tadpole shrimp, and California linderiella.

Three small low-quality vernal pools are located on the pipeline route just west of the Glenn-Colusa Canal along the south side of the access road to the Delevan Compressor Station. All three pools would be avoided during project design and construction by shifting the pipeline alignment toward the south, where higher elevation upland grassland is present. The proposed Line 400/401 Connection Pipeline is not expected to adversely impact the Conservancy fairy shrimp, vernal pool fairy shrimp, vernal pool tadpole shrimp, or California linderiella.

Level of Significance without Mitigation. Avoidance measures and sensitive construction techniques incorporated into the project design would mitigate the temporary impacts to special-status animal species. Additional potential direct or indirect effects (i.e., habitat loss, loss of nest or nest sites, etc.) on the giant garter snake, northwestern pond turtle, Swainson's hawk, northern harrier, western yellow-billed cuckoo, loggerhead shrike, American bittern, white-faced ibis, black tern, tricolored blackbird, western burrowing owl, bank swallow, and valley elderberry longhorn beetle would be considered significant. Implementation of these mitigation measures would reduce the identified impacts to special-status wildlife species to a less-than-significant level.

Mitigation Measure(s). The following section describes the mitigation measures proposed for this impact.

> **Mitigation 3.4-8(a).** Preconstruction surveys shall be conducted and construction shall be scheduled in giant garter snake habitat to avoid impacts to snakes or their habitat.

Preconstruction surveys would be conducted by WSGI within 24 hours prior to pipeline construction in snake habitat. An authorized biologist, in consultation with the CDFG, would be onsite to remove any giant garter snakes from the work area. All waterways would be bored, with the exception of flooded rice fields containing flowing or standing water or that have not been dried out at least 14 days prior to construction. Construction between May and September in wetlands shall be restricted to prevent inadvertent mortality of giant garter snakes before they emerge from dormancy.

> **Mitigation 3.4-8(b).** Preconstruction surveys shall be conducted for giant garter snake and protective actions (such as snake removal) shall be initiated prior to implementation of the Habitat Enhancement Plan.

WSGI proposes to implement a Giant Garter Snake Habitat Enhancement Plan to improve habitat on the Wild Goose Club. Preconstruction surveys would be conducted by WSGI within 24 hours prior to constructing isolation berms and channels in the enhancement area. An authorized biologist, in consultation with the CDFG, would be onsite to remove any giant garter snakes from the work area.

> **Mitigation 3.4-8(c).** Preconstruction surveys for northwestern pond turtle shall be conducted and impact avoidance and species protection procedures shall be implemented.

Preconstruction surveys for northwestern pond turtle at waterway crossings would be conducted by WSGI prior to construction if vegetation removal, excavation, or grading is to be initiated during the active nesting season of the species (April through November). If construction begins outside of the active nesting season, then pre-construction surveys shall not be required but relocation of adult turtles shall be considered in consultation with the CDFG prior to any in- channel disturbance. If active pond turtle nests are identified, a buffer area of 300-feet shall be established between the nest and wetland location nearest the nest. Temporary fencing shall be installed to define a construction buffer zone if construction has or would begin before the nesting period ends. A qualified biologist shall conduct the surveys.

> **Mitigation 3.4-8 (d).** Preconstruction surveys for Swainson's hawk shall be conducted and construction activities shall be scheduled to avoid impacts to nest sites.

Pre-construction nesting surveys for Swainson's hawk shall be conducted during the months of April through July prior to any destruction of suitable nesting habitat. A qualified biologist shall conduct the surveys no more than 30 days prior to initiation of tree removal. If a potential nest is found within the construction area after April of the construction year, grading and construction in the area shall either stop or continue only after the nests are protected by an adequate setback approved by a qualified biologist. If avoidance of nests is not feasible, impacts to nest shall be minimized by avoiding disturbances to the birds during the nesting season unless a qualified biologist verifies that the birds have either: a) not begun egg-laying and incubation, or b) that the juveniles from those nests are foraging independently and capable of independent survival at an earlier date.

> **Mitigation 3.4-8(e).** Preconstruction surveys for Northern harrier shall be conducted and construction activities shall be scheduled to avoid impacts to nest sites.

Pre-construction nesting surveys for northern harrier shall be conducted during the months of April through July prior to any destruction of suitable nesting habitat. A qualified biologist shall conduct the surveys no more than 30 days prior to initiation of grading. If any of these species are found within the construction area after April of the construction year, tree removal, excavation, grading and other related construction activities shall either stop or continue only after the nests are protected by an adequate setback approved by a qualified biologist. If avoidance of nests is not feasible, impacts to nesting birds shall be minimized by avoiding disturbances to the birds during the nesting season unless a qualified biologist verifies that the birds have either: a) not begun egg-

laying and incubation, or b) that the juveniles from those nests are foraging independently and capable of independent survival at an earlier date. All pipeline construction areas shall be restored to pre-project, baseline habitat conditions and values.

> **Mitigation 3.4-8(f).** Preconstruction surveys for Western yellow-billed cuckoo shall be conducted and construction activities shall be scheduled to avoid impacts to nest sites

Preconstruction surveys would be conducted on the banks of the Sacramento River, at the sites of the proposed directional drilling, to confirm that cuckoos are not actively nesting in the area or along nearby portions of the Line 400/401 Connection Pipeline ROW. If active nest sites are identified, a minimum 500-foot construction would be established around any nest sites. All construction would be avoided where active nests are discovered until the cuckoos have finished nesting.

> **Mitigation 3.4-8(g).** Preconstruction surveys for Loggerhead shrike shall be conducted and construction activities shall be scheduled to avoid impacts to nest sites

Pre-construction nesting surveys for loggerhead shrike shall be conducted during the months of April through July prior to any destruction of suitable nesting habitat. A qualified biologist shall conduct the surveys no more than 30 days prior to initiation of vegetation clearing, soil excavation or grading. If shrike nests are found within the construction area after April of the construction year, construction in the area shall either stop or continue only after the nests are protected by an adequate setback approved by a qualified biologist. If avoidance of nests is not feasible, impacts to nests shall be minimized by avoiding disturbances to the birds during the nesting season unless a qualified biologist verifies that the birds have either a) not begun egg-laying and incubation, or b) that the juveniles from those nests are foraging independently and capable of independent survival at an earlier date.

> **Mitigation 3.4-8(h).** Preconstruction surveys for American bittern shall be conducted and if present, nest sites shall be protected by appropriate buffers during construction.

Preconstruction surveys in fresh water marsh areas shall be conducted to determine whether bitterns are actively nesting in the project area. If nests are found, a minimum 250-foot buffer zone around the nest would be established before construction shall commence or if it is determined by a qualified biologist that the birds have either a) not begun egg-laying and incubation, or b) that the juveniles from those nests are foraging independently and capable of independent survival at an earlier date. All pipeline construction areas shall be restored to pre-project, baseline habitat conditions and values.

> **Mitigation 3.4-8(i).** Preconstruction surveys for White-faced ibis shall be conducted and if present, nest sites shall be protected by appropriate buffers during construction.

Preconstruction surveys in fresh water marsh areas and nearby trees shall be conducted to determine whether white-faced ibis are actively nesting in the project area. If nests are found, a minimum 250-foot buffer zone around the nest would be established before construction shall commence or if it is determined by a qualified biologist that the birds

have either a) not begun egg-laying and incubation, or b) that the juveniles from those nests are foraging independently and capable of independent survival at an earlier date. All pipeline construction areas shall be restored to pre-project, baseline habitat conditions and values.

> **Mitigation 3.4-8(j).** Preconstruction surveys for Black tern shall be conducted and if present, nest sites shall be protected by appropriate buffers during construction.

Preconstruction surveys in fresh water marsh and rice fields shall be conducted to determine whether black terns are actively nesting in the project area. If nests are found, a minimum 250-foot buffer zone around the nest would be established before construction shall commence or if it is determined by a qualified biologist that the birds have either a) not begun egg-laying and incubation, or b) that the juveniles from those nests are foraging independently and capable of independent survival at an earlier date. All pipeline construction areas shall be restored to pre-project, baseline habitat conditions and values.

> **Mitigation 3.4-8(k).** Preconstruction surveys for Tricolored blackbird shall be conducted and if present, nest sites shall be protected by appropriate buffers during construction.

Preconstruction surveys in emergent fresh water marsh and areas of blackberry bushes near creek or other waterway crossing shall be conducted to determine whether tricolored blackbirds are actively nesting in the project area. If nests are found, a minimum 250-foot buffer zone around the nest would be established before construction shall commence or if it is determined by a qualified biologist that the birds have either a) not begun egg-laying and incubation, or b) that the juveniles from those nests are foraging independently and capable of independent survival at an earlier date. All pipeline construction areas shall be restored to pre-project, baseline habitat conditions and values.

> **Mitigation 3.4-8(l).** Preconstruction surveys for Western burrowing owl shall be conducted and if required, species protection, or species relocation plans shall be implemented.

Pre-construction surveys shall be conducted in annual grasslands or waterway embankments along the Line 400/401 Connection Pipeline ROW for burrowing owls. These surveys shall be conducted within 30 days of project-related ground disturbing activities throughout the year to determine whether any nesting owls are present and to provide for their protection during the active breeding season or passive relocation during the non-breeding season if nests are encountered. The surveys shall be conducted by a qualified biologist and shall comply with Burrowing Owl Protocol and Mitigation Guidelines (CDFG 1997).

If burrowing owl burrows are identified through the preconstruction surveys, protective measures may include such avoidance actions as the following:

No disturbance of occupied burrows during the nesting season, from February 1 through August 31, unless the Department of Fish and Game verifies that the birds have not begun egg-laying and incubation, or that the juveniles from those burrows are foraging independently and capable of independent survival at an earlier date.

- If destruction of occupied burrows is unavoidable, burrows would be created (by installing artificial burrows) in a ratio of 1:1 in adjacent suitable habitat that is contiguous with the foraging habitat of the affected owls.
- If owls must be moved away from the disturbance area, passive relocation (see below) is preferable to trapping. A time period of at least one week is recommended to allow the owls to move and acclimate to alternate burrows.
- On-site passive relocation shall be implemented if the above avoidance requirements cannot be met. Passive relocation is defined as encouraging owls to move from occupied burrows to alternate natural or artificial burrows that are beyond 50 m from the impact zone. Relocation of owls would only be implemented during the non-breeding season.
- Owls will be excluded from burrows in the immediate impact zone and within a 50 m (approx. 160 ft.) buffer zone by installing one-way doors in burrow entrances. One-way doors would be left in place 48 hours to insure owls have left the burrow before excavation.
- One alternate natural or artificial burrow will be provided for each burrow that will be excavated in the project impact zone. The project area will be monitored daily for one week to confirm owl use of alternate burrows before excavating burrows in the immediate impact zone.
- Whenever possible, burrows will be excavated using hand tools and refilled to prevent reoccupation. Sections of flexible plastic pipe or burlap bags will be inserted into the tunnels during excavation to maintain an escape route for any animals inside the burrow.

Mitigation 3.4-8(m). Protective measures will be implemented to prevent Bank swallow nesting in potentially high impact construction zones

The directional bore pits shall be covered to discourage bank swallows and other wildlife from entering the work area. Within one-quarter mile of the Sacramento River, if bore pits or trench walls with suitable textured soils are open more than three days between April and July, efforts would be made to cover the area, slope trench walls, or other methods to preclude bank swallows from nesting. A qualified biologist shall monitor the open trenches on the Sacramento River banks during the breeding season to ensure nesting is not being attempted.

Mitigation 3.4-8(n). Preconstruction surveys for elderberry shrubs shall be initiated by WSGI and, as appropriate, avoidance through project redesign shall be implemented.

WSGI will conduct surveys for elderberry shrubs at the pipeline crossing points along the Sacramento River. If elderberry plants are found at the sites of the directional drilling, the workspace will be limited and sited to avoid removal of elderberry plants.

Impact 3.4-9: Exposed pipeline trenches or bores could pose a barrier to wildlife movement and result in increased wildlife mortality.

Exposed pipeline trenches or bores could trap mammals, amphibians, or reptiles moving through the area. Nocturnal animals would be particularly vulnerable to falling into the

exposed trenches. If animals cannot escape from the trench or bore, the risk of exposure to predators or the lack of food and cover could result in mortality.

As part of the project's Biological Protection Plan and construction plan, backfilling of trenches would occur within 72 hours of pipeline installation to preclude potential impacts to wildlife that may fall into the trench. At the conclusion of each day's trenching activity, the end of the trench would be left ramped at an approximate 2 to 1 slope to allow any wildlife falling into the trench to escape.

The project's drilling plans and Biological Protection Plan specifies that short portions of trench bores shall be left open at construction sites until the work is completed at that site. This would allow wildlife to escape from the boreholes. A similar wildlife escape ramp would be maintained at the bore tie-in and thrust block sites where backfilling would not coincide immediately with the installation of the pipe.

Level of Significance Without Mitigation. With the implementation of the project construction plans for timely trench backfilling, provision of wildlife escape ramps, and retention of wildlife escape openings, the potential impact to wildlife is less-than-significant.

Mitigation Measure. None required.

Impact 3.4-10: Potential exposure of nesting birds to sudden noise emissions greater than ambient noise levels

Noise generated from construction of the proposed facilities would be temporary and would be considered less-than-significant (See Noise Section 3.10). The greatest potential noise impacts would come from pressure relief valves and frequent blowdowns (de-pressurization) at the Remote Facility and at block valves along the Line 400/401 Pipeline. Such noise levels are expected to be extremely loud, but would last only five to ten seconds. The noise level would be equivalent to a diesel locomotive whistle or a commercial jet plane during takeoff.

The primary concern to birds would be the startle effect, which occurs when birds are surprised by sudden, unexpected loud noises and leave the nest or perch suddenly. Possible negative impacts from this behavior include the expulsion of eggs or nestlings from the nest as the parent leaves suddenly, increased predation of eggs or young when parents are off the nest, and the chilling of eggs or young if the parent is off the nest for an extended period of time.

Level of Significance Without Mitigation. The sudden impulsive events of pressure releases could result in a significant, short-term impact to nesting birds. Implementation of these mitigation measures would reduce the identified noise impacts to a less-than-significant level.

> **Mitigation 3.4-10(a).** WGSI will schedule blowdowns at the Sacramento River to avoid impacts to sensitive bird species (see WSGI Measure 3.10-4).
>
> If the proposed block valves are located adjacent to or in the vicinity of the riparian vegetation along the Sacramento River, blowdowns at these locations will not be planned between April 15 and August 1, unless absolutely necessary, to preclude

sudden disturbance to Swainson's hawk or other sensitive bird species that may be nesting in the area.

Mitigation 3.4-10(b). Operations blowdowns and emergency shutdown valve blowdowns shall be routed into silencers (see WSGI Measure 3.10-2).

Mitigation 3.4-10(c). WGSI will reduce the gas/volume in the pipeline to a minimum prior to a planned maintenance blowdown (see WSGI Measure 3.10-3).

Impact 3.4-11: Potential introduction and spread of noxious weeds

Noxious weeds could potentially be brought into the project area from other areas of the region or from out of state, with the likelihood of spreading throughout the project area. There are at least two such weeds that are currently the targets of control in the Sacramento, Delevan, and Colusa national Wildlife Refuges. The two are perennial peppergrass (*Lepidium latifolium*) and yellow starthistle (*Centaurea solstitialis*). Perennial peppergrass tends to occur along the upper portions of canal banks. Peppergrass patches tend to initiate and spread in disturbed sites, especially in flood plains. Small patches, however, have shown up in almost every vegetation type, including seasonal wetlands and uplands. Starthistle is widespread on all refuges at the Sacramento NWR complex and occurs primarily on disturbed upland sites in grasslands. Each of these problem weeds, if introduced to the pipeline construction sites from construction equipment or other sources could spread to agricultural fields or other areas within Butte and Colusa counties.

Level of Significance Without Mitigation. The spread of noxious weeds from the project construction sites to nearby agricultural areas or refuges, affecting the weed control and management programs in these areas would be a significant impact. Implementation of these mitigation measures would reduce the identified potential impacts of weed introduction and invasion to a less-than-significant level.

Mitigation 3.4-11(a). WGSI will implement an equipment-washing program to control the introduction and potential spread of noxious weeds.

Washing of construction equipment before such equipment is delivered to the project site will be implemented to control the introduction of potentially noxious weeds to the project area. In addition, only weed-free materials will be used to for erosion control materials.

Mitigation 3.4-11 (b). WSGI shall implement a weed eradication program if weeds are introduced to construction areas.

All construction areas revegetated by the project will be monitored to ensure that noxious weeds are not present. If noxious weeds do occur on the pipeline ROW in numbers exceeding those in populations adjacent to the ROW, in areas not disturbed by construction, a noxious weed control program will be implemented. This program would be a component of the Integrated Vegetation Management Plan (see Mitigation 3.4-9) and would involve eradication of weeds by a combination of grubbing or chemical spraying pursuant to the IVM goals of environmentally sound vegetation management.