
Initial Study Document and Proposed Negative Declaration

June 2012

Revised McArthur Swamp Management Plan – Implementation of the Waterfowl Restoration Project Shasta County

State Water Resources Control Board
P.O. Box 2000
Sacramento, California 95812-2000

Prepared By
Pacific Gas and Electric Company (PG&E)

Proposed Negative Declaration Pacific Gas & Electric Company

Revised McArthur Swamp Management Plan – Implementation of the Waterfowl Restoration Project

Lead Agency:

State Water Resources Control Board
Division of Water Rights
1001 I Street, 14th Floor
Sacramento, CA 95814

Attn: Mr. Peter Barnes, Engineering Geologist/Project Manager
(916) 445-9989 or pbarnes@waterboards.ca.gov

Introduction and Project Description

The Revised McArthur Swamp Management Plan – Implementation of the Waterfowl Restoration Project (McArthur Swamp Waterfowl Restoration Project or Project) proposes the flooding of Ash Field, Rat Farm Pond, and a portion of Hollenbeak Field. The primary water supply for the Project will come directly from Big Lake. A portable water pump will be used annually to pump water into the three sites as described below. To control water levels, two new water control structures will be built: one in Central Drain and a second structure in Ash Field. Fencing will be installed to control cattle access to the drains and canals. A rotational grazing plan was originally proposed; however, due to the many cattle leases this element is no longer part of the plan. Instead, PG&E will continue to work with the local cattle ranchers who lease the property for grazing to ensure they conduct their grazing operations to minimize environmental disturbance.

The Project area encompasses approximately 475 acres. To help distribute water in the fields during flood-up, approximately 133 acres of meandering swales will be constructed. In addition to swales, approximately 18 acres of elevated mounds will be created. Swale construction will generate approximately 67,500 cubic yards of soil, of which 41,700 cubic yards will be used to create elevated mounds for cover habitat and 1,067 cubic yards for new berm construction. Remaining spoils will be used to reinforce segments of the existing Big Lake levee (spoils will be deposited in upland habitat) and the re-shaping of the existing Rat Farm Pond levee. Construction of the swales (133 acres), elevated mounds less than 24 inches high (12 acres), temporary road and equipment staging areas (2.94 acres), re-grading of the Central Drain (1.8 acres), and the reshaping of the existing Rat Farm Pond levee (1.38 acres) will result in the temporary impacts to approximately 152 acres of jurisdictional wetlands. Construction of two water control structures (0.04 acres), two rocked swale crossings (0.11 acres), a new section of berm (0.22 acres), and the creation of mounds greater than or equal to 24 inches in height (5.97 acres) will result in a permanent impact to 6.34 acres of jurisdictional wetlands.

PG&E proposes to construct and operate the Project as outlined in the Initial Study and California Environmental Quality Act (CEQA) Checklist. The baseline for evaluating the potential significant environmental impacts of the Project includes the existing facilities. Therefore, this Initial Study and Negative Declaration evaluate the potential impacts from the construction and operation of the Project.

Findings and Determination

The Project plans or proposals, already made by, or agreed to, by PG&E will avoid the negative environmental impacts or mitigate the Project's potential effects to a point where no significant impact on the environment will occur. The State Water Board has determined that the Project will have a less than significant effect on the environment for the reasons specified in the Initial Study and CEQA Checklist prepared for this Project. Once approved, this Negative Declaration will be filed pursuant to the CEQA Guidelines.

DRAFT

Barbara Evoy, Deputy Director
Division of Water Rights
State Water Resources Control Board

Date: _____

Initial Study and Environmental Checklist

-
1. **Project Title:** Revised McArthur Swamp Management Plan – Implementation of the Waterfowl Restoration Project (McArthur Swamp Waterfowl Restoration Project or Project)
 2. **Lead Agency Name and Mailing Address:** State Water Resources Control Board
Division of Water Rights, P.O. Box 2000,
Sacramento, California 95812-2000
 3. **Contact Person and Phone Number:** Mr. Peter Barnes, (916) 445-9989
 4. **Project Location:** Big Lake; located approximately 5 miles north of McArthur (Shasta County). USGS 7.5 minute Fall River Mills Quad – T38N, R5E, Sections 21, 27, 28, 29, 30 and 32
 5. **Project Sponsor's Name and Address:** Pacific Gas and Electric Company,
3600 Meadowview Drive, Redding, CA. 96001
PG&E Contact: Mr. Steve Yonge, 530-246-6547
 6. **General Plan Designation:** Agriculture
 7. **Zoning:** Unclassified
 8. **Description of Project:**

PROJECT BACKGROUND

On March 19, 2003, the Federal Energy Regulatory Commission (FERC) issued a new license for Pacific Gas and Electric Company's (PG&E) Pit 1 Hydroelectric Project (FERC Project No. 2687). Article 406 required PG&E to develop a management plan for Hollenbeak Field, Rat Farm Pond, and the canals and drains located within the McArthur Swamp area adjacent to Big Lake and within the FERC Project boundary. In consultation with various stakeholders, PG&E developed the "McArthur Swamp Management Plan," which was approved by FERC. (PG&E 2003.)

The original management plan required the seasonal flooding of all of Hollenbeak Field (approximately 700 acres), Rat Farm Pond (80-84 acres), fencing of the Central and Lee drains, fencing of the east side of the McArthur Drain and McArthur Canal, and rotational grazing. The flooding of Rat Farm Pond was scheduled for February through August with the intent to provide waterfowl nesting and brood habitat. The flooding of Hollenbeak Field was scheduled for August-April and, if appropriate, into May and June to provide wintering, nesting, and brood habitat. The management plan also required the identification of a water source that would seasonally flood Hollenbeak Field and Rat Farm Pond. Various water source options were considered, and a well was determined to be the most practical and reliable at the time.

PG&E began the necessary steps in 2006 and 2007 to begin implementation of FERC Article 406 as described in PG&E's (2003) management plan. In support of the proposed Project, the California Waterfowl Association (CWA) conducted a detailed topographic survey of Hollenbeak Field, Ash Field, Rat Farm Pond, and the drains and canals. Water percolation tests were also conducted in Hollenbeak Field to determine whether or not all of Hollenbeak Field, as originally proposed, could be flooded. (PG&E 2003.)

Based on the results of the topographic survey and water percolation test, consideration of the cost to construct and maintain a well, consultation with the CWA, and input from PG&E's Burney Hydroelectric personnel, it was determined the original management plan was not feasible. As a result, PG&E developed and filed with FERC a revised plan (PG&E 2009) that met the intent of the original management plan, but made use of a water source and delivery system that had the potential to infringe upon a pre-existing water right. As a result, PG&E developed a modified project design, the "Revised McArthur Swamp Management Plan – Implementation of the Waterfowl Restoration Project" (McArthur Swamp Waterfowl Restoration Project or Project) (PG&E 2011) that proposes pumping water from Big Lake and installing two water control structures, and an alternate grazing strategy to minimize environmental disturbance. All other aspects of the original 2003 and revised 2009 plan remain the same. (PG&E 2003, 2009.)

AGENCY CONSULTATION

On December 30, 2008, PG&E submitted a progress report to FERC, the agencies and interested parties, which included a draft of the McArthur Swamp Waterfowl Restoration Project. PG&E requested a meeting with the agencies and interested parties during the first quarter of 2009. On January 27, 2009, a meeting was held to present and discuss the Project. In attendance were representatives from U.S Fish and Wildlife Service (USFWS) (Kim Squires, Fish and Wildlife Biologist), California Department of Fish and Game (CDFG) (Matt Myers, FERC Coordinator and Steve Baumgartner, Fisheries Biologist), California State Parks (State Parks) (Heidi Horvitz, Superintendent), and CWA (Rick Maher, Northeastern Regional Biologist). Additionally, the United States Army Corps of Engineers (ACOE) and the State Water Resources Control Board (State Water Board) were invited but were not in attendance. PG&E requested comments by May 1, 2009. The USFWS, State Parks, and CWA submitted their concurrence with the revised plan via email. ACOE and the State Water Board did not submit comments.

CDFG submitted verbal comments concerning rough sculpin (*Cottus Ikamathensis macrops*) a protected species under the California Endangered Species Act (Fish & G. Code, §§ 2050 et. Seq.), requesting that rough sculpin be kept from fields, canals, and drains that are proposed for flooding or to be used for water conveyance, respectively. To address CDFG's concerns, PG&E developed a sculpin exclusion structure that was intended to be installed at the confluence of the Tule River and McArthur Canal. CDFG reviewed the design of the proposed exclusion structure and stated the structure would be sufficient in excluding rough sculpin from the Project area. The exclusion barrier was incorporated into PG&E's 2009 revised plan, but is now not applicable since water will not be diverted from the Tule River via the McArthur Headgate.

PG&E met with the McArthur Resource Management Association (MRMA) on March 18, 2009, to present and discuss the revised plan. PG&E requested that comments be submitted by May 1, 2009. No comments were received by May 1, but the MRMA sent a letter directly to FERC dated June 10, 2009, describing MRMA's concerns with the plan as well as other PG&E operations/activities within the Project vicinity.

PG&E filed the 2009 McArthur Swamp Waterfowl Restoration Project with FERC on June 30, 2009, which FERC approved on January 13, 2010. The revised plan was then challenged due to its potential interference with a pre-existing water right held by another party. In order to avoid conflict and impeding pre-existing water rights, PG&E decided to change the point of diversion and divert out of Big Lake under a claim of riparian right. PG&E revised the 2009 plan and submitted the McArthur Swamp Waterfowl Restoration Project (PG&E 2011), which is described below.

In March 2010, PG&E filed a wetland delineation with ACOE that was verified in June 2010 by Lisa Grudzinski, ACOE, Redding Field Office. (ACOE 2010.) During the field verification, the ACOE requested that additional data points be collected and the wetland delineation boundary be adjusted. The ACOE accepted the revised delineation (Dittes and Guardino Consulting 2010), issuing its preliminary jurisdiction determination on July 8, 2010. The ACOE also determined that the Project would be permitted using Nationwide Permit No. 27. The ACOE also requested that additional

cultural resource information be gathered, consultation with the USFWS be completed regarding the Shasta crayfish (*Pacifastacus fortis*), and a mitigation and monitoring report be prepared.

PG&E initiated consultation with the USFWS on September 13, 2010, for the Shasta crayfish and the proposed water pump intake design. PG&E requested concurrence with the plan to pump water from Big Lake to annually flood the various fields. The USFWS issued their concurrence on September 29, 2010, that implementation of the McArthur Swamp Waterfowl Restoration Project, “is not likely to adversely affect the Shasta crayfish based on the position of the pump inlets in the water column and distance away from suitable habitat.” (USFWS 2010.)

At the request of ACOE, PG&E collected additional cultural resource information for the area of potential effect (Far Western Anthropological Research Group 2010) and assessed the historical significance of the canals and drains of McArthur Swamp (JRP 2011). PG&E consulted with the Pit River Tribe and initiated consultation with the State Historic Preservation Office (SHPO) on February 25, 2011. The SHPO issued a “conditional no adverse effect determination” concurrence for the Project on April 11, 2011. (SHPO 2011.)

PG&E originally consulted with the Central Valley Regional Water Quality Control Board’s (Central Valley Regional Water Board) Assistant Executive Officer (Dennis Heiman, pers. comm., March 3 and November 15, 2010) with respect to acquiring a Storm Water Pollution Prevention Plan (SWPPP) and a water quality certification pursuant to Section 401(a)(1) of the Federal Clean Water Act (33 U.S.C. §1341(a)(1)). The Central Valley Regional Water Board determined that a SWPPP was not necessary and that the existing water quality certification for the FERC Project (State Water Board 2001) was adequate. However, in 2011, due to the changes in the Project description noted above, a new water quality certification is required.

ENVIRONMENTAL SETTING

Big Lake is located approximately 4 miles north of McArthur, California, in Shasta County. The Project area is located on the United States Geological Survey (USGS) 7.5 minute Fall River Mills quadrangle (T38N, R5E, Sec. 21, 28, 29, 30, 32). PG&E currently owns approximately 6,000 acres of wetland/grassland habitat that is known as the McArthur Swamp. The property is used for cattle grazing and is open to the public for outdoor recreation activities. Two boat ramps provide access to Big Lake and the Tule River, respectively. The Rat Farm Boat Launch is the primary access for the Ahjumawi Lava Springs State Park, which is located on the north side of Big Lake. The entire Project area is located within the FERC Project boundary.

Historically, McArthur Swamp was known to flood south to the Inter-Mountain Fairgrounds and the low-lying lands of the Glenburn area. After construction of the various canals and drains and construction of the Big Lake Levee system during the late 1800s and early 1900s, McArthur Swamp was drained and the extent, magnitude and duration of flooding were greatly reduced. Currently the swamp occasionally floods, but not as consistently as it once did.

PG&E originally purchased the property in 1924. Since that time, major levee breaches have occurred in 1954, 1964, 1986, 1994, 1997, and 2003. (PG&E 2004.) In 2003 PG&E began to reinforce the levee system with high quality imported fill material in an effort to avoid future levee failures. As a result of these levee improvements, some portions of Ash and Hollenbeak fields have dried out and their vegetative wetland component have changed. Flixweed (*Decurainia sophia*), a species associated with upland habitat, has become established as the dominant plant species in portions of Ash and Hollenbeak fields. In association with well-developed wetlands, the presence of flixweed reflects a shift in hydrology which can be attributed to the canal/drain system and levee improvements. Annual grasses also occur in areas of McArthur Swamp, signifying a change in hydrology. (Dittes and Guardino Consulting 2010.)

Wildlife Resources

Big Lake and adjacent lands are known to support federal- and/or state-listed wildlife species that include: the federal and state endangered Shasta crayfish (*Pacifastacus fortis*); state threatened Swainson's hawk (*Buteo swainsoni*) and bald eagle (*Haliaeetus leucocephalus*); and the state fully-protected rough sculpin (*Cottus asperimus*), greater sandhill crane (*Grus canadensis tabida*), peregrine falcon (*Falco peregrinus anatum*), and white-tailed kite (*Elanus leucurus*). Other state species of special concern known to occur in the area include the western pond turtle (*Clemmys marmorata*), osprey (*Pandion haliaetus*), short eared owl (*Asio flammeus*), tri-colored black bird (*Agelaius tricolor*), bigeye marbled sculpin (*Cottus klamathensis macrops*), and northern harrier (*Circus cyaneus*).

The Shasta crayfish is known to occur in Big Lake, primarily in the spring areas of northern Big Lake. Shasta crayfish are also found in small numbers along sections of the Big Lake levee. The Shasta crayfish is a benthic species, inhabiting the lake bottom and not occurring in the water column. The majority of Shasta crayfish found along the Big Lake levee are in a small cove at the eastern end of the levee. (Spring Rivers Ecological Sciences 2006.) This area is not located within the proposed Project area and will not be impacted by restoration efforts. The location of the portable water pump that will be used to flood Hollenbeak Field will be located approximately one mile west of the occupied cove. The proposed pump location for Ash Field is located near an area where four Shasta crayfish were observed in the early 1990s but have not been found since. (Spring Rivers Ecological Sciences 2009.) Since the pump inlet will be positioned 20-45 feet from the levee bank, suspended in the water column and draw water off the top 3 feet of the lake surface, impacts to the Shasta crayfish are not anticipated. (Spring Rivers Ecological Sciences 2010; USFWS 2010.)

Big Lake is also known to support the rough sculpin and bigeye marbled sculpin. (PG&E 1993.) Rough sculpin and bigeye marbled sculpin are mainly restricted to spring fed tributaries of the Pit River system that have cool flowing and clear water. (Moyle 2002.) Both sculpin share similar habitat requirements; however, rough sculpin are more likely to be associated with fine-grained substrate of gravel, sand, or silt, whereas bigeye marbled sculpin are more likely to be associated with lava cobble substrate. (Moyle and Daniels 1982.) Both rough and bigeye marbled sculpin are known to occur in Big Lake. Both species are benthic, utilizing the lake-bottom and submergent aquatic vegetation to forage, escape from predators, and breed. Because these two species are benthic and the portable pump will be drawing water off the top 3 feet of the lake surface, they are not expected to come into contact with the water pump. Impacts to these two species are not anticipated. (Steve Baumgardner, Fisheries Biologist, CDFG, pers. comm., September.15, 2010).

Emergent wetland habitat adjacent to Big Lake provides suitable nesting habitat for the short-eared owl, northern harrier, tri-colored black bird, and greater sandhill crane, and the dense stand of bulrush (*Juncus* sp.) in Hollenbeak Field provides cover for nest sites during spring and summer months. Adjacent upland grassland habitat provides suitable foraging habitat for these species as well as the peregrine falcon, white-tailed kite, and Swainson's hawk. With the exception of a few mature willow trees (*Salix* sp.) scattered within Ash Field, there is no suitable nesting habitat for tree nesting species within the immediate Project area. Big Lake provides suitable foraging habitat for osprey and bald eagle and conifer forests located north of Big Lake within the Ahjumawi Lava Springs State Park provide suitable nesting habitat.

Big Lake is located within the Pacific Flyway and attracts large numbers of birds during the winter, spring, and summer months. (Jones and Stokes 1991; PG&E 1991.) Waterfowl species known to winter and nest in the Big Lake area include the Great Basin Canada geese (*Branta canadensis* sp.), mallard (*Anas platyrhynchos*), gadwall (*Anas strepera*), wigeon (*Anas americana*), cinnamon teal (*Anas cyanoptera*), northern pintail (*Anas acuta*), green-wing teal (*Anas crecca*), northern shoveler (*Anas clypeata*), canvasback (*Aythya valisineria*), and redhead (*Aythya americana*). Species known only to winter in the area include the tundra swan (*Cygnus columbianus*), cackling goose (*Branta canadensis minima*), Taverner's goose (*Branta canadensis* sp.), greater white-fronted goose (*Anser albifrons*), snow goose (*Chen caerulescens*), Ross's goose (*Anser rossii*), wood duck (*Aix sponsa*), blue-wing teal (*Anas discors*), ring-necked duck (*Aythya collaris*), greater scaup (*Aythya marila*), lesser

scaup (*Aythya affinis*), common goldeneye (*Bucephala clangula*), bufflehead (*Bucephala albeola*), ruddy duck (*Oxyura jamaicensis*), common merganser (*Mergus merganser*), and hooded merganser (*Lophodytes cucullatus*).

Botanical Resources

The Project area consists of wet meadow, emergent and seasonal wetland, emergent and seasonal marsh and annual grassland habitat types. (Dittes and Guardino Consulting 2010.) Characteristic species of wet meadow habitat within the Project area include bluegrass (*Poa pratensis*), velvet grass (*Holcus lanatus*), barley (*Hordeum* sp.), scribner grass (*Scribneria bolanderi*), and rye grass (*Elymus glaucus*). (PG&E 1990.) Fresh emergent wetland habitat is dominated by bulrush (*Juncus* sp.), which has formed a dense impenetrable stand within Hollenbeak Field and portions of Ash Field. Annual grassland habitat within the Project area is annually grazed by cattle and dominated by a variety of species including soft chess (*Bromus mollis*), red brome (*B. rubens*), barley (*Hordeum* sp.), wildoats (*Avena* sp.), bull thistle (*Cirsium vulgare*), horehound (*Marrubium vulgare*), and ladino clover (*Trifolium repens*). (PG&E 1990.)

No federal or state listed threatened or endangered plant species are known to occur within the Project area. (PG&E 1990; CDFG 2011.) Vernal pools occur within the Project vicinity and have the potential to support the federally threatened and state endangered slender orcutt grass (*Orcuttia tenuis*) and state listed (endangered) Boggs Lake hedge-hyssop (*Gratiola heterosepala*). However, there are no known occurrences of these two species within 5-miles of Big Lake (CDFG 2011) and there is no suitable habitat within the Project area.

McArthur Swamp supports a variety of invasive weedy species including bull thistle, yellow star thistle (*Centaurea solstitialis*), flixweed, medusa head (*Taeniatherum caput-medusae*), cheat grass (*Bromus tectorum*), horehound, broad-leaved peppergrass (*Lepidium latifolium*), and soft chess (*Bromus hordeaceus*). In support of the operation and maintenance of the Big Lake levee system, PG&E is attempting to control invasive plant species growing on the levee walls. Shasta County and the local cattlemen's association have also initiated invasive plant control efforts within the Project area.

Cultural Resources

The Project vicinity is known to support cultural resource sites, most recently documented and re-verified by the Far Western Anthropological Research Group. (Far Western Anthropological Research Group 2008; 2010.) In support of PG&E's levee maintenance plan and the revised McArthur Swamp Management Plan, the drains and canals, Ash Field, Rat Farm Pond, construction lay-down areas, Hollenbeak Field and access routes were surveyed. (JRP 2011.) No new cultural resource sites were found within the immediate Project area. Portions of Ash Field, Rat Farm Pond, and Hollenbeak Field could not be surveyed due to flooding and dense vegetation, but it was determined that these areas would not likely support cultural resource sites because of their geomorphic setting and the distribution pattern of known cultural sites that were reviewed. (Far Western Anthropological Research Group 2008; 2010; JRP 2011.)

During the 2007 survey, six cultural resource sites and two isolates were identified along Rat Farm Road, the primary access route into the Project area. Five of the six sites were previously documented, but re-verified during this survey. One new site was discovered approximately 20 meters west of Rat Farm Road and two isolates were also discovered along the road corridor. (Far Western Anthropological Research Group 2008.) No sites were discovered within the road bed making it unlikely that any archeology sites will be impacted by Project-related vehicles utilizing Rat Farm Road.

The known Rat Farm archeology site is located within an area used for recreation that has been significantly modified by human activity. This site currently provides public access to an existing boat launch and handicapped-accessible parking. During construction, this portion of the site will be conspicuously flagged and avoided. Therefore, based on current site conditions, it is not anticipated that construction will impact sensitive cultural resource sites at this location or any other known site within the area of potential effect. (Far Western Anthropological Research Group 2008; 2010.)

PROJECT DESIGN

The current management plan proposes the flooding of Ash Field, Rat Farm Pond, and a portion of Hollenbeak Field. The primary water supply for the Project will come directly from Big Lake. A portable water pump will be used annually to pump water into the three sites as described below. To control water levels, two new water control structures will be built - one in Central Drain and a second structure in Ash Field. The drains and canals will be fenced off as originally proposed. Due to the number of cattle leases, the rotational grazing plan that was originally proposed will not be implemented as part of the revised management plan. However, PG&E will continue to work with the local cattle ranchers who lease the property for grazing to ensure they conduct their grazing operations appropriately.

The Project area encompasses approximately 475 acres. To help distribute water in the fields during flood-up, approximately 133 acres of meandering swales will be constructed. In addition to swales, approximately 18 acres of elevated mounds will be created. (Figure 1, attached.) Swale construction will generate approximately 67,500 cubic yards of soil, of which 41,700 cubic yards will be used to create elevated mounds for cover habitat and 1,067 cubic yards will be used for new berm construction. Remaining spoils will be used to reinforce segments of the existing Big Lake levee (spoils will be deposited in upland habitat) and the re-shaping of the existing Rat Farm Pond levee. Construction of the swales (133 acres), elevated mounds less than 24 inches high (12 acres), temporary road and equipment staging areas (2.94 acres), regrading of Central Drain (1.8 acres), and the reshaping of the existing Rat Farm Pond levee (1.38 acres) will result in the temporary impacts of approximately 152 acres of jurisdictional wetlands. Construction of two water control structures (0.04 acres), two rocked swale crossings (0.11 acres), a new section of berm (0.22 acres), and the creation of mounds greater than or equal to 24 inches in height (5.97 acres) will result in the permanent impact of 6.34 acres of jurisdictional wetlands. (See Table 1.)

Table 1. Permanent and temporary impact estimates to jurisdictional wetlands mapped by Dittes and Guardino (2010) and verified by the Army Corps of Engineers (ACOE 2010).

	Wetland Type	Permanently Impacted	Temporarily Impacted
Hollenbeak Field	Emergent Marsh	1.3 acres (mounds)	54.0 acres (swales), 2.67 acres (mounds)
	Seasonal Marsh/wet meadow	0 acres	4.0 acres (swales)
	Wet Meadow/ Problematic	0 acres	1.34 acres (Temp. road and equip. staging area)
	Wet Meadow	0 acres	0.27 acres (Temp. road)
	Seasonal Marsh/Wet meadow	0 acres	0.41 acres (Temp road)
	Drainage Ditch	0.02 acres (footing for water control structure)	1.80 acres (ditch elevation adjustment)
Ash Field	Emergent/Seasonal marsh	3.67 acres (mounds), 0.02 acres (footing for water control structure), 0.22 acres (berm)	60.3 acres (swales), 0.92 acres (equipment staging area), 7.33 acres (mounds)
Rat Farm Pond	Emergent/Seasonal marsh	1.0 acre (mounds)	15.0 acres (swales), 2.0 acres (mounds)
	Disturbed wetland (existing levee)	0.11 acres (2 rocked crossings)	1.38 acres (reshape existing levee)
Total		6.34 acres	151.42 acres

Upon completion of construction, all disturbed soil above the flood line will be planted with an upland seed mix of grass species consisting of slender wheatgrass (*Elymus trachycaulus*), blue bunch wheatgrass (*Pseudoroegneria spicata*), streambank wheatgrass (*Elymus lanceolatus* spp. *lanceolatus*), and common reed (*Phragmites australis*) at a rate of 15 lbs/acre and blended with 50lbs/acre of annual ryegrass (*Lolium multiflorum*) as a nurse seed crop. Seed will be broadcast into a clean seed bed and harrowed in. Seeding is anticipated to take place in late October/early November after the first initial rain event and prior to the onset of winter.

Ash Field

Approximately 245 to 275 acres of Ash Field will be flooded annually from mid-October to mid-April to provide waterfowl wintering habitat. (Figure 1, attached.) To avoid constructing an elaborate levee system to hold water, the natural topography of the field will be used. Ash Field will be flooded with water pumped from Big Lake. A series of meandering swales will be excavated within Ash Field to provide open water foraging areas. Swales will be between 40 and 200 feet wide (average width 125 feet wide) by 18 inches deep. Approximately 60.3 acres of swales (25,000 linear feet) will be constructed in wetland habitat that was mapped as “emergent/seasonal marsh”. (Dittes and Guardino 2010.) Swales will be contoured to drain south towards the Rat Farm Pond and into the McArthur Drain. The swale design will allow for controlled water management of the field. Excavated soil from swale development will be used to create 11 acres of elevated mounds that will provide loafing areas and escape cover for waterfowl and other bird species. Elevated mounds will be constructed in habitat that was mapped as “emergent/seasonal marsh”. (Dittes and Guardino 2010.) Elevated mounds will vary in height from 12, 18, and 24 inches. Depending on water levels at any given moment, mounds set at 12 and 18 inches will be partially or completely flooded during portions of the proposed flood regime. In addition to the swales being flooded, adjacent sections of field will be inundated. As water levels recede, only swales will hold water.

One new water control structure will be required in Ash Field and will be constructed in a natural swale that conveys water into an unnamed drainage ditch that borders the southern boundary of Ash Field. (Figure 1, attached.) This structure will consist of two culverts cast in concrete (pre-cast structure) and fitted with manually operated screw gates. The footing for the water control structure will be approximately 40 feet wide by 24 feet long. Geotextile fabric will be installed over the existing location and backfilled with levee core material. To minimize/eliminate erosion, rip rap (energy dissipater) will be placed at the entrance and exit points of the water control structure. The area where the riprap will be placed is incorporated into the area calculation (40 feet x 24 feet=0.02 acres) listed in Table 1. The control structure will be incorporated into a newly constructed berm, approximately 400 feet long, which will tie into the existing levee around Rat Farm Pond. The berm will be approximately 3 feet high and 24 feet wide at the base (0.22 acres). The berm will be constructed of native material excavated from swale construction. This new section of berm is required because the existing section of Rat Farm Pond levee near the new water control structure has fallen into disrepair due to lack of maintenance. Both the berm and water control structure will be installed in habitat that was mapped as “emergent/seasonal marsh.” (Dittes and Guardino 2010.)

During construction, a temporary equipment staging area that is 200 feet by 200 feet (0.92 acres) will be located adjacent to the Rat Farm Pond levee and the levee that borders Big Lake. The staging area will be lightly graded so as to accommodate heavy equipment; significant grading is not anticipated. A temporary access route from the existing Big Lake levee will be created to provide access to the staging area. The temporary access road will be no more than 50 feet long. The staging area and temporary access route are located in habitat that was mapped as “emergent/seasonal marsh” and “disturbed wetland”. (Dittes and Guardino 2010.)

Approximately 300 linear feet of new rip rap will be added to the existing Big Lake levee, on the land side. This new rip rap will be installed near a section of levee that previously failed. Rip rap will be delivered to this location via the existing gravel levee road. Rip rap will be installed in habitat that was mapped as “upland”. (Dittes and Guardino 2010.)

Rat Farm Pond

Rat Farm Pond will be managed the same as the Ash Field. The pond will be flooded from mid-October through mid-April and managed for wintering waterfowl habitat. A total of 80-84 acres will be flooded annually via water from Big Lake. A network of shallow, meandering swales that are a minimum of 40 feet wide (average width 100 feet) and 18 inches deep will be constructed to provide foraging habitat. Excavated soil from swale construction will be mounded to create elevated mounds. Approximately 15 acres of swales (10,000 linear feet) and 3 acres of mounds will be created in habitat that was mapped as “emergent/seasonal marsh” and “excavated wetland” habitat. (Dittes and Guardino 2010.) Water will be managed from the water control structure installed in Ash Field.

To facilitate the flooding of Rat Farm Pond, the section of levee that borders the pond to the northwest will be reshaped. This section of levee has not been maintained, is breeched in multiple locations, and is full of small mammal burrows. The section of levee that will be reshaped is approximately 2,500 feet long and will be roughly 24 feet wide at the base (1.38 acres). The levee was mapped as “disturbed wetland”. (Dittes and Guardino 2010.) Material excavated from the swales will be used to reshape this levee section.

To facilitate access to the new water control structure in Ash Field, two rocked crossings within the reshaped levee will be constructed. The rocked crossings will be roughly 24 feet wide (width of levee) by 100 feet long (width of swale). Each crossing will be rocked with 3 inch to 6 inch unweathered rock that will be wheel-rolled by heavy equipment. The two rocked crossings will be constructed in habitat that was mapped as “disturbed wetland”. (Dittes and Guardino 2010.) The rocked crossings are required because swales will bisect the levee in two different locations and the Rat Farm Pond levee will provide all-terrain access to the water control structure. Because Rat Farm Pond will be managed as one unit with Ash Field, the swales in Rat Farm Pond must be connected to the swales in Ash Field to allow for proper water conveyance.

Hollenbeak Field

Approximately 150-200 acres of Hollenbeak Field will be flooded annually from January through mid to late June to provide waterfowl nesting and brood habitat. (See Figure 1, attached.) Water pumped from Big Lake will be used to flood Hollenbeak Field. To improve waterfowl use, a series of meandering swales (average width 125 feet), similar to those proposed for Ash Field and Rat Farm Pond, will be excavated. Swales will be excavated so as to drain into the northeast end of Central Drain. Approximately 58 acres of swales will be constructed: 54 acres (20,000 linear feet) within habitat mapped as “emergent marsh” and 4 acres of habitat mapped as “seasonal marsh/wet meadow.” Approximately 4 acres of elevated mounds will also be constructed and will be located in habitat mapped as “emergent marsh.” (Dittes and Guardino 2010.)

A new water control structure will be constructed in the Central Drain to hold water in Hollenbeak Field during the proposed flood period. This structure will consist of 2 culverts cast in concrete (pre-cast structure) and fitted with manually-operated screw gates. The footing for the water control structure will be approximately 40 feet wide by 24 feet long. Geotextile fabric will be installed over the existing location and backfilled with levee core material. To minimize/eliminate erosion, rip rap (energy dissipater) will be placed at the entrance and exit points of the water control structure. The area where the rip rap will be placed has been incorporated into the area calculation (40 feet x 24 feet; 0.02 acres) listed in Table 1. The area where the new water control structure will be located was mapped as “drainage ditch.” (Dittes and Guardino 2010.)

To properly manage water in Hollenbeak Field, approximately 2,000 linear feet by 40 feet wide (1.8 acres) of the Central Drain will be re-contoured and a slight “hump” in the drain will be removed. The Central Drain was mapped as “drainage ditch.” (Dittes and Guardino 2010.) This grading will be accomplished with an excavator positioned on the bank of the ditch and within the temporary access road needed to access Hollenbeak Field and a temporary equipment staging area.

To facilitate construction, a temporary equipment staging area of 200 feet by 200 feet will be located immediately adjacent to the Central Drain and approximately 1,000 feet northeast of the existing boat launch. The equipment staging area (0.92 acres) will be located in habitat that was mapped as “wet meadow/problematic.” The location of the staging area was chosen because it is located behind two locked gates and away from the public. A temporary access route from the boat launch to the staging area will also be necessary. The access route will be 12 feet wide by 4,000 feet long (1.1 acres) and be located in habitat that was mapped as “wet meadow/problematic”, “wet meadow”, and “seasonal marsh/wet meadow.” (Dittes and Guardino 2010.) The access route will parallel the Central Drain, as the majority of this route will also be used as the access to regrade approximately 2,000 linear feet of the Central Drain. The temporary access route will only be lightly graded to smooth out any big humps or low dips; significant grading will not be required.

New fencing will be composed of 4-strand barbwire, with the bottom wire positioned between 16 inches and 18 inches above the ground. The height of the bottom wire will allow for improved wildlife passage. In the event that pronghorn antelope (*Antilocarpa americana*) or other wildlife in the area attempts to cross the fenced features, this fence design will allow for safe passage underneath the bottom wire.

Canals and Drains

To improve waterfowl nesting cover along the canals and drains, Central Drain, Lee Drain, McArthur Drain, and McArthur Canal will be fenced to exclude cattle. Currently no riparian woody vegetation [i.e. willow (*Salix* spp.)] occurs along the canals and drains within the Project area. Fencing, in addition to willow planting in the Central Drain, will improve bird nesting and escape cover, improve wildlife travel corridors, and improve the overall health of the existing drainage system.

As described in the original management plan (PG&E 2003), the perimeter of Central Drain (1.9 linear miles) and the north side of the Lee Drain (5,200 linear feet) will be fenced. The east side of the McArthur Drain and canal (2.5 linear miles) from the south end of Rat Farm Pond to its intersection with Rat Farm Road and the Tule River boat launch road will be fenced. Steve Yonge (PG&E, Wildlife Biologist) met with Craig McArthur (Fall River-Big Valley Cattlemen's Association, Grazing Chair) October 3, 2007 to discuss the proposed fencing. Mr. McArthur stated that three additional stock watering locations (concrete or steel water troughs connected to the existing stock watering system) would be required in the fenced fields east of the McArthur Canal. If the State Water Board requires the new stock water locations to be registered, PG&E will do so once constructed. The perimeter of Rat Farm Pond (1.5 linear miles) will also be fenced. Old fence material along the north side of the pond will be removed and replaced with new fence material. To control vegetation within the pond, cattle will be allowed access annually or fire will be prescribed.

WATER REQUIREMENTS

To seasonally flood Ash Field and Rat Farm Pond, approximately 493 acre feet of water will be required annually. Approximately 314 acre feet of water will be needed to flood Hollenbeak Field. Depending on the type of water year, the amount of acreage flooded for each field will fluctuate. PG&E will divert a maximum of 807 acre feet of water under the claim of riparian right to annually flood Ash Field, Rat Farm Pond, and Hollenbeak Field.

Ash and Hollenbeak Fields and Rat Farm Pond will be flooded with water directly pumped from Big Lake. A portable pump will be positioned on the Big Lake levees during the initial flood up period and convey water until the fields reach their targeted flood level. It is estimated that it will take approximately 17 days to flood Hollenbeak Field and 25 days to flood Ash Field and Rat Farm Pond. The pump will be fitted with an inlet hose that will extend approximately 20-40 feet off the levee bank and will be equipped with floats. The floats will ensure the inlet hose pulls water from the top 3-4 feet of the lake surface. To prevent fish entrainment, the hose inlet will be screened with a "screen box" with 1/4 inch perforations.

As PG&E will be using their claim of riparian right to water in Big Lake a Statement of Water Diversion and Use (SWDU) will be submitted for each calendar year. The SWDU will be filed with the State Water Board before July 1 of the following calendar year. PG&E will file a SWDU for each of the two diversion points within Big Lake.

CONCLUSION

With the development of the drains/canals and levee system around Big Lake, McArthur Swamp was drained, reducing its ability to function as a wetland. As required by Article 406 of PG&E's FERC Project license, PG&E developed this Project to restore approximately 475 acres of wetland habitat within McArthur Swamp. The Project was designed to improve waterfowl wintering and nesting habitat, but will also benefit a variety of other wildlife species. The consistent flood regime will improve wetland conditions and restore areas of the swamp that are dominated by bulrush or weedy plant species typically associated with upland habitat.

9. Surrounding Land Uses and Setting:

Varies: live stock grazing, agriculture production (i.e., rice, alfalfa), and outdoor recreation (e.g., hunting, wildlife viewing, boating, fishing, etc.). The Project is bordered to the north by the Ahjumawi Lava Springs State Park.

10. Other Public Agencies Whose Approval is Required:

USFWS – Technical Assistance / Concurrence regarding the Shasta Crayfish – Concurrence issued September 2010.

CDFG – Concurrence regarding the rough sculpin – Concurrence issued September 2010. Waiver for the need to acquire a Streambed Alteration Agreement. Waiver issued September 2009.

SHPO – Issued “No adverse effect determination” for cultural resource sites April 2011.

ACOE – Issued Nationwide Permit #27 June 28, 2011. Will redraft permit when water quality certification is issued.

FERC – Project is required by License Article 406 of the Pit 1 Hydroelectric Project (FERC Project No. 2687).

State Water Board – Project requires water quality certification pursuant to Section 401(a)(1) of the Federal Clean Water Act (33 U.S.C. §1341(a)(1)).

Environmental Factors Potentially Affected

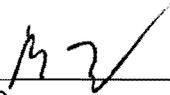
The environmental factors checked below would potentially be affected by this Project (i.e., the Project would involve at least one impact that is a "Potentially Significant Impact"), as indicated by the checklist on the following pages.

- | | | |
|---|--|---|
| <input type="checkbox"/> Aesthetics | <input type="checkbox"/> Agricultural and Forestry | <input type="checkbox"/> Air Quality |
| <input type="checkbox"/> Biological Resources | <input type="checkbox"/> Cultural Resources | <input type="checkbox"/> Geology/Soils |
| <input type="checkbox"/> Greenhouse Gas Emissions | <input type="checkbox"/> Hazards and Hazardous Materials | <input type="checkbox"/> Hydrology/Water Quality |
| <input type="checkbox"/> Land Use/Planning | <input type="checkbox"/> Mineral Resources | <input type="checkbox"/> Noise |
| <input type="checkbox"/> Population/Housing | <input type="checkbox"/> Public Services | <input type="checkbox"/> Recreation |
| <input type="checkbox"/> Transportation/Traffic | <input type="checkbox"/> Utilities/Service Systems | <input type="checkbox"/> Mandatory Findings of Significance |

Determination

On the basis of this initial evaluation:

- I find that the proposed Project **COULD NOT** have a significant effect on the environment, and a **NEGATIVE DECLARATION** will be prepared.
- I find that although the proposed Project could have a significant effect on the environment, there will not be a significant effect in this case because revisions to the Project have been made by or agreed to by the Project proponent. A **MITIGATED NEGATIVE DECLARATION** will be prepared.
- I find that the proposed Project **MAY** have a significant effect on the environment, and an **ENVIRONMENTAL IMPACT REPORT** is required.
- I find that the proposed Project **MAY** have an impact on the environment that is "potentially significant" or "potentially significant unless mitigated" but at least one effect (1) has been adequately analyzed in an earlier document pursuant to applicable legal standards and (2) has been addressed by mitigation measures based on the earlier analysis, as described on attached sheets. An **ENVIRONMENTAL IMPACT REPORT** is required, but it must analyze only the effects that remain to be addressed.
- I find that although the proposed Project could have a significant effect on the environment, because all potentially significant effects (a) have been analyzed adequately in an earlier **ENVIRONMENTAL IMPACT REPORT** or **NEGATIVE DECLARATION** pursuant to applicable standards, and (b) have been avoided or mitigated pursuant to that earlier **ENVIRONMENTAL IMPACT REPORT** or **NEGATIVE DECLARATION**, including revisions or mitigation measures that are imposed upon the Project, nothing further is required.



JUN 26 2012

Barbara Evoy, Deputy Director, Division of Water Rights
State Water Resources Control Board

Evaluation of Environmental Impacts

1. A brief explanation is required for all answers except “No Impact” answers that are adequately supported by the information sources a lead agency cites in the parentheses following each question. A “No Impact” answer is adequately supported if the referenced information sources show that the impact simply does not apply to projects like the one involved (e.g., the project falls outside a fault rupture zone). A “No Impact” answer should be explained if it is based on project-specific factors as well as general standards (e.g., the project will not expose sensitive receptors to pollutants, based on a project-specific screening analysis).
2. All answers must take account of the whole action involved, including offsite as well as onsite, cumulative as well as project-level, indirect as well as direct, and construction as well as operational impacts.
3. Once the lead agency has determined that a particular physical impact may occur, the checklist answers must indicate whether the impact is potentially significant, less-than-significant with mitigation, or less-than-significant. “Potentially Significant Impact” is appropriate if there is substantial evidence that an effect may be significant. If there are one or more “Potentially Significant Impact” entries when the determination is made, an Environmental Impact Report (EIR) is required.
4. “Negative Declaration: Less-than-Significant with Mitigation Incorporated” applies when the incorporation of mitigation measures has reduced an effect from a “Potentially Significant Impact” to a “Less-than-Significant Impact”. The lead agency must describe the mitigation measures and briefly explain how they reduce the effect to a less-than-significant level. (Mitigation measures from Section XVII, “Earlier Analyses”, may be cross-referenced.
5. Earlier analyses may be used if, pursuant to tiering, program EIR, or other California Environmental Quality Act (CEQA) process, an effect has been adequately analyzed in an earlier EIR or negative declaration [Section 15063(c)(3)(D)]. In this case, a brief discussion should identify the following:
 - a. Earlier Analysis Used. Identify and state where earlier analyses are available for review.
 - b. Impacts Adequately Addressed. Identify which effects from the above checklist were within the scope of and adequately analyzed in an earlier document pursuant to applicable legal standards and state whether such effects were addressed by mitigation measures based on the earlier analysis.
 - c. Mitigation Measures. For effects that are “Less-than-Significant with Mitigation Incorporated,” describe the mitigation measures that were incorporated or refined from the earlier document and the extent to which they address site-specific conditions for the project.
6. Lead agencies are encouraged to incorporate into the checklist references to information sources for potential impacts (e.g., general plans, zoning ordinances). Reference to a previously prepared or outside document should, when appropriate, include a reference to the page or pages where the statement is substantiated.
7. Supporting Information Sources: A source list should be attached, and other sources used or individuals contacted should be cited in the discussion.
8. This is only a suggested form, and lead agencies are free to use different formats; however, lead agencies should normally address the questions from this checklist that are relevant to a project’s environmental effects in whatever format is selected.
9. The explanation of each issue should identify: the significance criteria or threshold, if any, used to evaluate each question; and the mitigation measure identified, if any, to reduce the impact to a less-than-significant level.

	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
I. Aesthetics				
Would the project:				
a. Have a substantial adverse effect on a scenic vista?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b. Substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings along a scenic highway?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c. Substantially degrade the existing visual character or quality of the site and its surroundings?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d. Create a new source of substantial light or glare that would adversely affect daytime or nighttime views in the area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Explanation (a, b, and d): No Impact. The proposed Project area does not occur along a scenic highway nor does it support a scenic vista, therefore no impacts will occur. The Project involves wetland restoration work, therefore no new source of light or glare will result from construction.

Explanation (c): Less-Than-Significant Impact. Directly following the proposed earth work to create 133 acres of meandering swales and 18 acres of elevated mounds, the visual character or quality of the area will initially be somewhat impacted. Upon Project completion, the disturbed areas located above the flood line will be planted with an upland seed mix of grass. Seeding will occur in late October/early November after the first initial rain event and prior to the onset of winter. Disturbed areas will begin to be reclaimed by vegetation within one growing season, restoring the visual character of the site.

Mitigation

No significant impacts have been identified, so no mitigation is required.

	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
II. Agricultural and Forestry Resources				
In determining whether impacts on agricultural resources are significant environmental effects, lead agencies may refer to the California Agricultural Land Evaluation and Site Assessment Model (1997) prepared by the California Department of Conservation as an optional model to use in assessing impacts on agriculture and farmland. In determining whether impacts on forest resources, including timberland, are significant environmental effects, lead agencies may refer to information compiled by the California Department of Forestry and Fire Protection regarding the state's inventory of forest land, including the Forest and Range Assessment Project and the Forest Legacy Assessment Project, and forest carbon measurement methodology provided in the Forest Protocols adopted by the California Air Resources Board. Would the project:				
a. Convert Prime Farmland, Unique Farmland, or Farmland of Statewide Importance (Farmland), as shown on the maps prepared pursuant to the Farmland Mapping and Monitoring Program of the California Resources Agency, to non-agricultural use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b. Conflict with existing zoning for agricultural use or conflict with a Williamson Act contract?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c. Conflict with existing zoning for, or cause rezoning of forest land (as defined in Public Resources Code Section 12220(g)), timberland (as defined by Public Resources Code Section 4526), or timberland zoned Timberland Production (as defined by Government Code Section 51104(g))?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d. Result in the loss of forest land or conversion of forest land to non-forest use?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e. Involve other changes in the existing environment that, due to their location or nature, could result in conversion of Farmland to non-agricultural use or conversion of forest land to non-forest use?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Explanation (a-d): No Impact. The Project does not fall within the boundaries of Prime Farmland, Unique Farmland or Farmland of Statewide Importance identified in the Farmland Mapping and Monitoring Program for Shasta County (California Department of Conservation 2008). The Project involves lands used for seasonal cattle grazing; the Project was designed to allow continued use by cattle, which will be used to manage vegetation. The Project area does not support forest or timbered lands, therefore no impacts to this type of resource will occur.

Explanation (e): Less-Than-Significant Impact. With respect to changes to the existing environment, the Project will annually flood approximately 475 acres of jurisdictional wetland habitat. (Dittes and Guardino Consulting 2010.) The area proposed for flooding is part of “McArthur Swamp” which was historically known to flood south to the Inter-Mountain Fairgrounds and the low lying lands of the Glenburn area.

The proposed Project was designed to improve the health of existing wetland habitat and wetland function; no conversion from existing habitat types will occur. The Project area is located within a historic swamp/lakebed that is currently showing signs shifting towards a terrestrial ecosystem. Without the introduction of the proposed flood regime, portions of the various fields will continue to dry and succeed to an upland habitat type.

Mitigation

No significant impacts have been identified, so no mitigation is required.

III. Air Quality	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
When available, the significance criteria established by the applicable air quality management or air pollution control district may be relied upon to make the following determinations. Would the project:				
a. Conflict with or obstruct implementation of the applicable air quality plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b. Violate any air quality standard or contribute substantially to an existing or projected air quality violation?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. Result in a cumulatively considerable net increase of any criteria pollutant for which the project region is a nonattainment area for an applicable federal or state ambient air quality standard (including releasing emissions that exceed quantitative thresholds for ozone precursors)?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d. Expose sensitive receptors to substantial pollutant concentrations?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e. Create objectionable odors affecting a substantial number of people?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Explanation (a): No Impact. A project is deemed inconsistent with an air quality plan when it results in population and/or employment growth that exceeds growth estimates outlined in the air quality plan. Shasta County is within the Northern Sacramento Valley Air Quality Attainment Plan area. (Sacramento Valley Air Quality Engineering and Enforcement Professionals 2009.) The proposed Project will restore wetland habitat; it will not cause growth in population or employment or violate the attainment plan.

Explanation (b and c): Less-Than-Significant Impact. Construction activities will involve the use of gasoline and diesel powered equipment (e.g., trucks, tractors, compactors) for a period of 3-4 weeks. All construction work and will comply with the rules of the Shasta County Air Quality Management District, and no violations of air quality standards or considerable contributions to cumulative impacts are anticipated.

Explanation (d): Less-Than-Significant Impact. Due to the limited duration of construction activities and portable water pump locations, and the distance to sensitive receptors (nearest residence), the proposed restoration project is not expected to expose sensitive receptors to substantial pollutant concentrations.

Explanation (e): Less-Than-Significant Impact. There will be diesel exhaust emissions associated with grading, construction, and water pumping, but given the distance to the nearest residence and low volume of recreational use of the Project area, such emissions are not expected to result in objectionable odors.

Mitigation

No significant impacts have been identified, so no mitigation is required.

	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
IV. Biological Resources				
Would the project:				
a. Have a substantial adverse effect, either directly or through habitat modifications, on any 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 U.S. Fish and Wildlife Service?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
b. Have a substantial adverse effect on any riparian habitat or other sensitive natural community identified in local or regional plans, policies, or regulations, or by the California Department of Fish and Game or U.S. Fish and Wildlife Service?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c. Have a substantial adverse effect on federally protected wetlands as defined by Section 404 of the Clean Water Act (including, but not limited to, marshes, vernal pools, coastal wetlands, etc.) through direct removal, filling, hydrological interruption, or other means?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d. 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?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e. Conflict with any local policies or ordinances protecting biological resources, such as a tree preservation policy or ordinance?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f. Conflict with the provisions of an adopted habitat conservation plan, natural community conservation plan, or other approved local, regional, or state habitat conservation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Explanation (a): Less-Than-Significant Impact. Big Lake and adjacent lands are known to support federal and/or state listed wildlife species that include the federal and state endangered Shasta crayfish, state threatened Swainson's hawk (*Buteo swainsoni*), and bald eagle (*Haliaeetus leucocephalus*), and the state fully protected rough sculpin (*Cottus asperimus*), greater sandhill crane (*Grus canadensis tabida*), peregrine falcon (*Falco peregrinus anatum*), and white-tailed kite (*Elanus leucurus*). Other state species of special concern known to occur in the area include the western pond turtle (*Clemmys marmorata*), osprey (*Pandion haliaetus*), short eared owl (*Asio flammeus*), tri-colored black bird (*Agelaius tricolor*), bigeye marbled sculpin (*Cottus klamathensis macrops*), and northern harrier (*Circus cyaneus*).

Shasta Crayfish

The Shasta crayfish is known to occur in Big Lake, primarily in the spring areas of northern Big Lake. Shasta crayfish are also found in small numbers along sections of the Big Lake levee. The majority of Shasta crayfish found along the Big Lake levee are in a small cove at the eastern end of the levee. (Spring Rivers Ecological Sciences 2006.)

As part of the Project, PG&E has agreed to the following:

A portable water pump will be used to convey water directly from Big Lake into the various fields for flooding. A portable pump has the potential to impact benthic species such as the Shasta crayfish. However, the design/location of the portable pump was developed to eliminate potential impacts. The location of the portable water pump that will be used to flood Hollenbeak Field will be located approximately one mile west of a small cove at the eastern end of Big Lake known to support the Shasta crayfish. The pump location for Ash Field will be located near an area where four Shasta crayfish were observed in the early 1990s, but have not been found since. (Spring Rivers Ecological Sciences 2009.) The pump intake will be positioned 20-45 feet from the levee bank, be suspended in the water column, and draw water off the top 3 feet of the lake surface.

Because of these three factors, impacts to the Shasta crayfish are not anticipated. (Spring Rivers Ecological Sciences 2010.) The USFWS (2010) issued their concurrence that implementation of the proposed Project, specifically the pumping of water from Big Lake, was not likely to adversely affect the Shasta crayfish. The CDFG agreed with the determination issued by the USFWS that the Project would not impact Shasta crayfish (CDFG, Steve Baumgartner, Fisheries Biologist, pers. comm., September 15, 2010.)

Rough Sculpin/Big-Eyed Marbled Scuplin

Big Lake is also known to support the rough sculpin and bigeye marbled sculpin. (PG&E 1993.) Since both of these two species are benthic (bottom-dwelling), and the portable pump will be drawing water off the top 3 feet of the lake surface, they will not come into contact with the water pump. Therefore impacts to these two species are not anticipated. The CDFG issued their concurrence that the Project would not impact the rough sculpin or "any other benthic species." (Steve Baumgardner, Fisheries Biologist, CDFG, pers. comm., September 15, 2010.)

Bird Species

Emergent wetland habitat adjacent to Big Lake provides suitable nesting habitat for the short-eared owl, northern harrier, tri-colored black bird, and greater sandhill crane. Adjacent upland grassland habitat provides suitable foraging habitat for these species, as well as the peregrine falcon, white-tailed kite, and Swainson's hawk. With the exception of a few mature willow trees (*Salix* sp.) scattered within Ash Field, there is no suitable nesting habitat for tree nesting species within the immediate Project area. Big Lake provides suitable foraging habitat for osprey and bald eagle and conifer forests located north of Big Lake within the Ahjumawi Lava Springs State Park provide suitable nesting habitat.

As part of the Project, PG&E has agreed to the following:

To avoid impacts to ground nesting bird species, construction will occur after August 15 or the end of ground bird nesting season as indicated by CDFG.

Explanation (b): No Impact. The proposed Project was designed to improve the health and function of approximately 475 acres of jurisdictional wetland habitat. The proposed Project will have a net benefit to wetland resources.

Explanation (c): Less-Than-Significant Impact. The Project area was mapped as jurisdictional wetlands and verified by the ACOE. (ACOE 2010.) The Project will temporarily impact 151.42 acres of wetland habitat and permanently impact 6.34 acres of wetland habitat. (PG&E 2011.) Due to the temporary and permanent impacts to waters of the United States, the ACOE issued PG&E a 404 Nationwide Permit No. 27. PG&E originally intended to utilize the water quality certification issued for

operation of the FERC Project. However, the State Water Board deemed a separate water quality certification was necessary just after the ACOE issued the Nationwide Permit No. 27. Once a new water quality certification is issued, the ACOE will revise its permit accordingly. Below are the mitigation requirements of the current ACOE permit, most of which are expected to be the same. PG&E has included these as part of their Project.

Although the Project will result in permanent impacts to 6.34 acres of wetland habitat, it will create approximately 475 acres of waterfowl wintering and nesting habitat in addition to improving habitat conditions for both upland and shorebird species. The amount of habitat created by the Project, in addition to the compliance with regulatory permits indicates that any permanent impacts will be considered less-than-significant.

To ensure regulatory compliance PG&E agrees to the following:

1. Within 60 days following completion of the authorized work, PG&E shall submit pre- and post-construction photographs, as-built drawings, and a description of the work conducted on the Project site to the ACOE for review, including the following.
 - a. The Department of the Army Permit number.
 - b. A plan view drawing of the locations of the authorized work footprint (as shown on the permit drawings) with an overlay of the work as constructed in the same scale as the attached permit drawings. The drawings should show all "earth disturbances", wetland impacts, and structures, and include topographic contours of the entire site.
 - c. Within 30 days of completion of construction activities within waters of the U.S., PG&E shall submit to the ACOE pre- and post-construction site photographs of the Project site. Pre-construction photos shall be taken no more than 30 days prior to initiation of construction activities, and post-construction photos within 15 days after completion of the work. The camera positions and view-angles of the ground photographs shall be the same for pre- and post-construction, and identified on a map, aerial photograph, or Project drawing.
2. PG&E and the authorized contractor shall allow representatives from the ACOE to inspect the authorized activity and all mitigation areas at any time deemed necessary to ensure that work is being or has been accomplished in accordance with the terms and conditions of this verification.
3. To ensure the Project complies with the Federal Endangered Species Act, PG&E must implement all of the mitigation measures identified in the USFWS letter of concurrence (#81420-2010-I-0975-1, dated September 29, 2010). If PG&E is unable to implement any of these measures, PG&E must immediately notify the ACOE and the USFWS office prior to initiating work, in accordance with Federal law.
4. To compensate for unavoidable impacts to waters of the United States, PG&E shall fully implement the approved "Wetland Mitigation and Monitoring Plan for McArthur Swamp" mitigation plan (Plan), dated February, 2011, except as modified by the following:
 - a. Only native species may be planted within the Project area.
 - b. The existing wetlands identified within the Project area as described on the wetland delineation map, with the exception of the 6.33 acres of permanently impacted waters of the United States as described in the table on page 3 of the Plan, shall continue to meet the criteria in order to be considered "wetland" at the end of the 5-year monitoring period.

- c. In the event the site does not achieve the final success criteria identified in the Plan or does not meet condition 4(b) described above, PG&E shall provide the ACOE with an alternative compensatory mitigation plan to off-set Project impacts to waters of the United States.
5. Monitoring reports shall be submitted by November 15 of years 1, 2, 3 and 5, following the construction of the site. The site shall be monitored for at least five (5) growing seasons after construction, and/or until the ACOE determines, in writing that the success criteria are met.
6. PG&E shall notify the ACOE of the start and completion dates of the authorized work within 15 calendar days prior to initiation of construction activities within waters of the United States and 15 calendar days following completion of construction activities.
7. If PG&E discovers any previously unknown historic or archeological remains while accomplishing the activity authorized by the ACOE permit, PG&E must immediately notify the ACOE of what was found, and initiate the Federal and state coordination required to determine if the remains warrant a recovery effort or if the site is eligible for listing in the National Register of Historic Places (NRHP).

Explanation (d): Less-Than-Significant Impact. The Project will not result in substantial interference of wildlife corridors or modify the movement of migratory fish. To ensure new fencing allows pronghorn antelope (should they use the Project area) or other wildlife to move freely over the landscape, fence will consist of 4-strand barbwire with the bottom wire positioned between 16-18 inches above the ground. The height of the bottom wire will allow for antelope and other wildlife species to move unimpeded.

Explanation (e and f): No Impact. The Project does not conflict with any local policy or ordinance with respect to biological resources. The proposed Project is located on privately owned land that does not have any type of conservation easement, habitat conservation plan, natural community conservation plan, or any other type of approved local, regional, or state habitat conservation plan.

Mitigation

No significant impacts have been identified, so no mitigation is required.

V. Cultural Resources	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a. Cause a substantial adverse change in the significance of a historical resource as defined in Section 15064.5?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b. Cause a substantial adverse change in the significance of an archaeological resource pursuant to Section 15064.5?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. Directly or indirectly destroy a unique paleontological resource or site or unique geologic feature?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d. Disturb any human remains, including those interred outside of formal cemeteries?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Explanation (a): No Impact. At the request of the ACOE, the various drains, canals, and levees (Central Drain, Lee Drainage Canal, Mud Lake Canal, Mud Lake levees, and Pit 1 Levee) located within the area of potential effect were assessed for historic significance. JRP (2011) concluded that Central Drain, Lee Drainage Canal, Mud Lake Canal, Mud Lake levees, and Pit 1 Levee did not meet the criteria for listing in the NRHP. In addition, no historic resources were documented during cultural resource survey efforts that were conducted in 2007 and 2010 in support of the proposed Project.

SHPO issued their concurrence (SHPO 2011) with these findings and concluded that the Project will have no adverse effect on cultural resources.

Explanation (b): Less-Than-Significant Impact. The Project vicinity is known to support archaeological resource sites, most recently documented and re-verified by the Far Western Anthropological Research Group (2008, 2010) and JRP (2011). In support of PG&E's levee maintenance plan and the revised McArthur Swamp Management Plan (PG&E 2011), the Project area or area of potential effect was surveyed. No new archaeological resource sites were found within the immediate Project area. Portions of the Ash Field, Rat Farm Pond, and Hollenbeak Field could not be surveyed due to flooding and dense vegetation. However, it was determined that these areas would not likely support cultural resource sites because of their geomorphic setting and distribution pattern of known cultural sites that were reviewed. (Far Western Anthropological Research Group 2008; 2010; JRP 2011.) During the 2007 survey (Far Western Anthropological Research Group 2008), six cultural resource sites and two isolates were identified along Rat Farm Road, the primary access route into the Project area. Five of the six sites were previously documented, but re-verified. One new site was discovered approximately 20 meters west of Rat Farm Road and two isolates were also discovered along the road corridor. However, no sites were discovered within the road bed, making it unlikely that any archeology sites will be impacted by Project related vehicles utilizing Rat Farm Road.

The Rat Farm archeology site is located within an area used for recreation that has been significantly modified by human activity. A boat launch and parking area currently occupy the majority of this site. The recreation site consists of a gravel boat launch, handicapped parking (paved with sidewalk), and two pit toilets. During construction, this site will be used to access the Project area; however, no soil grading will occur within the recreation site.

SHPO issued its concurrence (SHPO 2011) with these findings and concluded that the Project will have no adverse effect on cultural resources. However, SHPO requested that construction personnel be provided oral instruction regarding cultural resource sites and requested the installation of “orange plastic fencing” around known sites to ensure avoidance.

To ensure regulatory compliance, PG&E has agreed to implement the following:

1. Prior to the start of construction, PG&E’s archeologist will meet with construction personnel to explain the importance of the cultural resources within the immediate and surrounding area, provide guidance should a new site be identified during the Project.
2. Temporary orange fencing will be installed around the portion of the Rat Farm archeology site located adjacent to Rat Farm Pond and the Big Lake levee. Fencing will ensure construction personnel completely avoid this site.
3. PG&E’s archeologist or contract archeologist will be onsite for the first 1-2 days of construction to monitor soil grading activities.

Explanation (c): No Impact. There are no unique geological features within the Project area. Based on detailed cultural resources surveys conducted in 2007 and 2010 (Far Western Anthropological Research Group 2008; 2010; JRP 2011), no paleontological resources were identified.

Explanation (d): No Impact. Based on the geomorphic setting (swamp/lake bed) of the Project area and known distribution pattern of cultural resource sites within the Project vicinity, the presence of human remains is not likely.

Mitigation

No significant impacts have been identified, so no mitigation is required.

	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
VI. Geology and Soils				
Would the project:				
a. Expose people or structures to potential substantial adverse effects, including the risk of loss, injury, or death involving:				
1. Rupture of a known earthquake fault, as delineated on the most recent Alquist-Priolo Earthquake Fault Zoning Map issued by the State Geologist for the area or based on other substantial evidence of a known fault? Refer to Division of Mines and Geology Special Publication 42.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
2. Strong seismic ground shaking?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
3. Seismic-related ground failure, including liquefaction?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
4. Landslides?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b. Result in substantial soil erosion or the loss of topsoil?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c. Be located on a geologic unit or soil that is unstable or that would become unstable as a result of the project and potentially result in an onsite or offsite landslide, lateral spreading, subsidence, liquefaction, or collapse?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d. Be located on expansive soil, as defined in Table 18-1-B of the Uniform Building Code (1994), creating substantial risks to life or property?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e. Have soils incapable of adequately supporting the use of septic tanks or alternative wastewater disposal systems in areas where sewers are not available for the disposal of wastewater?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Explanation (a): No Impact. The proposed Project does not involve the construction of facilities/structures intended for human use. Therefore humans will not be exposed to adverse effects related to earthquake faults, ground shaking or failure, and landslides.

Explanation (b): No Impact. The Project area is relatively flat, lacking any significant topographic relief. All soil grading will occur within a historic swamp/lake bed, which acts as a "basin" trapping water. This "basin" effect and lack of topographic relief limits the potential for soil erosion. Soils are classified as Pastolla Muck, Henhill silt loam, and the Whipp-Cupvar complex (slightly saline). Once the meandering swales and loafing islands are constructed, there will not be repeated grading annually that would encourage loss of topsoil.

Explanation (c-e): No Impact. The Project involves the restoration of wetland habitat, not the construction of structures/facilities that will encourage human use. Therefore the Project will not expose people/structures to adverse effects related to landslides, lateral spreading, subsidence, liquefaction, collapse, or expansive soils. The Project does not require the construction of septic tanks or other wastewater disposal systems.

Mitigation

No significant impacts have been identified, so no mitigation is required.

VII. Greenhouse Gas Emissions	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a. Generate greenhouse gas emissions, either directly or indirectly, that may have a significant impact on the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b. Conflict with an applicable plan, policy, or regulation adopted for the purpose of reducing the emissions of greenhouse gases?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Explanation (a and b): No Impact. The Project will involve 3-4 weeks of construction with heavy equipment. Based on the short duration of construction, greenhouse gas emissions will not impact the environment. The Project will also not violate any applicable plan, policy or regulation that outlines the reduction of green house gases in California or Shasta County.

Mitigation

No significant impacts have been identified, so no mitigation is required.

VIII. Hazards and Hazardous Materials	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a. Create a significant hazard to the public or the environment through the routine transport, use, or disposal of hazardous materials?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b. Create a significant hazard to the public or the environment through reasonably foreseeable upset and accident conditions involving the release of hazardous materials into the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
c. Emit hazardous emissions or involve handling hazardous or acutely hazardous materials, substances, or waste within one-quarter mile of an existing or proposed school?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d. Be located on a site that is included on a list of hazardous materials sites compiled pursuant to Government Code Section 65962.5 and, as a result, would it create a significant hazard to the public or the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e. Be located within an airport land use plan area or, where such a plan has not been adopted, be within two miles of a public airport or public use airport, and result in a safety hazard for people residing or working in the project area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f. Be located within the vicinity of a private airstrip and result in a safety hazard for people residing or working in the project area?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
g. Impair implementation of or physically interfere with an adopted emergency response plan or emergency evacuation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
h. Expose people or structures to a significant risk of loss, injury, or death involving wildland fires, including where wildlands are adjacent to urbanized areas or where residences are intermixed with wildlands?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Explanation (a, c, d): No Impact. The use, disposal of, or routine transportation of hazardous materials is not proposed for this Project. The Project also does not involve the release of hazardous emissions. The Project is not located on a site with known hazardous materials.

Explanation (b): Less-Than-Significant Impact. During construction, there is a possibility of a vehicle fuel spill from construction equipment. In the unlikely event that a spill occurs, appropriate practices will be employed to isolate the spilled fuel, prevent it from entering any sensitive habitat, and to remove and properly dispose of the spilled fuel. If such a spill were to occur, it would not create a significant hazard to the public because access to the Project area is limited.

Explanation (e and f): No Impact. The Project area is not located within an airport land use plan, nor is it located within 2 miles of a public or private airport.

Explanation (g): No Impact. The Project is located approximately 4 miles north of McArthur (Shasta County). The creation of wetland habitat will not interfere with any type of emergency response plan or evacuation plan.

Explanation (h): No Impact. The nearest urbanized area is located approximately 4 miles south of the Project area. The Project area may experience periodic grass fires, but the Project will not result in a significant increase of risk with respect to the urban-fire interface.

Mitigation

No significant impacts have been identified, so no mitigation is required.

	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
IX. Hydrology and Water Quality				
Would the project:				
a. Violate any water quality standards or waste discharge requirements?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b. Substantially deplete groundwater supplies or interfere substantially with groundwater recharge, resulting in a net deficit in aquifer volume or a lowering of the local groundwater table level (e.g., the production rate of pre-existing nearby wells would drop to a level that would not support existing land uses or planned uses for which permits have been granted)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, in a manner that would result in substantial erosion or siltation onsite or offsite?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
d. Substantially alter the existing drainage pattern of the site or area, including through the alteration of the course of a stream or river, or substantially increase the rate or amount of surface runoff in a manner that would result in flooding onsite or offsite?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e. Create or contribute runoff water that would exceed the capacity of existing or planned stormwater drainage systems or provide substantial additional sources of polluted runoff?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
f. Otherwise substantially degrade water quality?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
g. Place housing within a 100-year flood hazard area, as mapped on a federal Flood Hazard Boundary or Flood Insurance Rate Map or other flood hazard delineation map?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
h. Place within a 100-year flood hazard area structures that would impede or redirect flood flows?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
i. Expose people or structures to a significant risk of loss, injury, or death involving flooding, including flooding as a result of the failure of a levee or dam?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
j. Contribute to inundation by seiche, tsunami, or mudflow?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Explanation (a): No Impact. The Project will not result in the discharge of waste and will not violate any water quality standards. To ensure no violation occurs, Project construction will be limited to the driest time of year for the Project area (August-October). Since the Project area lacks any significant relief in topography, no water will leave the Project area during construction. To ensure no water leaves the work area, the two water control structures will be installed first to ensure water is retained. The Project area is situated in a basin which further limits the potential for water to leave the work area. If a portion of the field is wet during construction, that area will be avoided by heavy equipment. In addition, the water quality monitoring effort as described under Explanation (f) will be implemented.

Explanation (b): No Impact. The Project will depend on surface water from Big Lake, not ground water. The proposed flood regime is estimated at 807 acre feet and will benefit ground water resources; a portion of this water will be lost to soil saturation which will aid in recharging ground water resources.

Explanation (c): Less-Than-Significant Impact. The Project area is relatively flat, with little topographic relief. Therefore, it is not anticipated that substantial erosion or siltation on or off site will occur. To reduce/eliminate erosion potential, all construction activities will occur in the "dry" areas (soil grading will not occur in areas with standing water) and take place during the driest time of year. If necessary, the installation of erosion control material (i.e., straw wattles) will be incorporated into construction.

Construction of a network of meandering swales will not alter the existing drainage pattern of the project area, but will be used to distribute water through out Ash and Hollenbeak Fields and Rat Farm Pond. Swales will be graded so as to convey water into the existing drains and canals (Central Drain, McArthur Drain, unnamed drain south of Ash Field) when water draw down occurs. Upon Project completion, water will still continue to drain south towards the Pit River.

To ensure regulatory compliance, PG&E has agreed to implement the following:

- Upon completion of construction, all disturbed soil above the flood line will be planted with an upland seed mix of grass species consisting of slender wheatgrass (*Elymus trachycaulus*), blue bunch wheatgrass (*Pseudoroegneria spicata*), streambank wheatgrass (*Elymus lanceolatus* spp. *lanceolatus*), and common reed (*Phragmites australis*) at a rate of 15 lbs/acre and blended with 50lbs/acre of annual ryegrass (*Lolium multiflorum*) as a nurse seed crop. Seed will be broadcast into a clean seed bed and harrowed in. Seeding will occur in late October/early November after the first initial rain event and prior to the onset of winter.

Explanation (d): Less-Than-Significant Impact. The proposed Project will not significantly alter the existing drainage pattern of McArthur Swamp. However, the Project does involve the construction of two water control structures to ensure the annual flooding of approximately 475 acres. The area proposed for flooding historically flooded prior to reclamation work that occurred in the late 1800s and early 1900s. Hollenbeak Field will be flooded from January to June; Ash Field and Rat Farm Pond will be flooded annually from mid October to April. The water control structures will be used to stack or hold water in the various fields, then opened to slowly release water during water draw down.

Explanation (e): Less-Than-Significant Impact. The canals and drains located within the Project area have been assessed for their capability of handling runoff from the various fields proposed for flooding. The McArthur Headgate, located near the confluence of the Tule River and McArthur Canal was recently built (2008 construction effort) to pass 300 cubic feet per second (cfs) of water into the McArthur Canal. Any water that drains off the fields will drain into the McArthur Canal; a canal with a structure designed to pass 300 cfs of water. Approximately 807 acre feet of water will be used to flood 475 acres. The meandering swales will be flooded to a depth of 18-24 inches; the remainder of the Project area will be flooded to a depth of 1-4 inches. Based on the shallow water depth and soil conditions, the majority of water will be lost through evapotranspiration and soil saturation. Any runoff will be insignificant and not add a significant amount of water to the existing drains and canals.

Explanation (f): Less-Than-Significant Impact. It is not anticipated that the Project will result in the degradation of water quality. Approximately 807 acre feet of water will be used to flood 475 acres. The majority of water will be lost through evapotranspiration and soil saturation. Some water is expected to drain off into the various drains and canals that flow south to the Pit River. However, these canals and drains carry water from other sources and water will be required to travel approximately 5 miles through these conveyance systems before entering the Pit River.

It is not anticipated that water from Ash and Hollenbeak Fields and Rat Farm Pond will significantly alter water quality in the existing drains and canals located within the Project area, or the Pit River. However, during the development of the Project, stakeholders were concerned with water quality; therefore PG&E will conduct water sampling at the locations described below. Should sample results after three years reveal no significant change in water quality, sampling will be discontinued following the approval of the Deputy Director of the Division of Water Rights.

To ensure regulatory compliance, PG&E has agreed to implement the following:

1. Prior to water draw down in the three years following construction of the Project, water samples will be collected as follows:
 - a. Three samples: one sample in each of the three fields proposed for flooding;
 - b. One sample at the confluence of the McArthur Canal and McArthur Drain;
 - c. One sample above the head gate structure near the intersection of the Rat Farm Road and the road to the Tule River Boat Launch (near fair grounds);
 - d. One sample downstream of the twin culverts located near the Rat Farm Boat launch;
 - e. One sample in the Lee Drain upstream of the confluence with Central Drain; and
 - f. One sample in the unnamed ditch that borders Ash Field to the south.

2. Water samples will again be collected 1 to 5 days after water draw down starts. Water samples will be collected as follows:
 - a. One sample at the confluence of the McArthur Canal and McArthur Drain;
 - b. One sample downstream of the twin culverts located near the Rat Farm Boat launch;
 - c. One sample above the head gate structure near the intersection of the Rat Farm Road and the road to the Tule River Boat Launch (near fair grounds); and
 - d. One sample immediately downstream of the confluence of the Lee Drain and the unnamed ditch that borders Ash Field to the south.

All samples will be analyzed to ensure compliance with water quality criteria outlined in the *Water Quality Control Plan for the Sacramento River and San Joaquin River Basins* (Basin Plan).

Explanation (g): No Impact. The proposed Project does not involve the construction of housing units.

Explanation (h): No Impact. Structures intended for human use will not be constructed as part of this Project.

Explanation (i): Less-Than-Significant Impact. The proposed Project involves construction of two prefabricated water control structures and levee repair around Rat Farm Pond. The levee repair around Rat Farm Pond and the two water control structures will be constructed with the intent to hold water at a depth of 18 to 24 inches of water in 133.3 acres of meandering swales and a depth of 1 to 4 inches of water over between approximately 329 and 342 acres depending upon the water year. Should the levee or water control structures fail, they will not expose the public to a significant risk of loss, injury, or death. Historically, McArthur Swamp was known to flood south to the Inter-Mountain Fairgrounds and the low lying lands of the Glenburn area. The 2003 Big Lake levee break flooded lands south towards the fairgrounds, but only resulted in the flooding of existing wetland and upland habitat used for livestock grazing. No structures are located within the flood plain, therefore accidental flooding does not pose a significant risk to the public.

Explanation (j): Less-Than-Significant Impact. The Project is immediately adjacent to Big Lake; there is a slight possibility the Project area could be inundated by a seiche (resonant oscillation of the water). However, no structures intended for human habitation will be constructed. The Project area could also be inundated by a levee failure. Between 1924 when PG&E originally purchased the property where the proposed Project is located, major levee failures occurred in 1954, 1964, 1986, 1994, 1997, and 2003. However, in 2003, PG&E began efforts to reinforce the levee system with high quality imported fill material. As a result, no other levee failures have occurred.

Mitigation

No significant impacts have been identified, so no mitigation is required.

X. Land Use and Planning	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a. Physically divide an established community?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b. Conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the project (including, but not limited to, a general plan, specific plan, local coastal program, or zoning ordinance) adopted for the purpose of avoiding or mitigating an environmental effect?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c. Conflict with any applicable habitat conservation plan or natural community conservation plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Explanation (a-c): No Impact. The restoration of approximately 475 acres of wetland habitat will not physically divide an established community, or conflict with any applicable land use plan, policy, or regulation of an agency with jurisdiction over the Project. The Project area is not located within a habitat conservation plan or natural community conservation plan.

Mitigation

No significant impacts have been identified, so no mitigation is required.

XI. Mineral Resources	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a. Result in the loss of availability of a known mineral resource that would be of value to the region and the residents of the state?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b. Result in the loss of availability of a locally important mineral resource recovery site delineated on a local general plan, specific plan, or other land use plan?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Explanation (a and b): No Impact. The Project will result in the excavation of approximately 67,500 cubic yards of soil. However, the deepest excavation will be approximately 18 inches deep and not impact mineral resources should they occur. Project area soils are comprised of Pastolla Muck, Henhill silt loam, and the Whipp-Cupvar complex (slightly saline). These soil types are typically associated with basins, low terrace landforms, and stream terraces and originate from ash, lake sediment, and extrusive igneous rock.

Mitigation

No significant impacts have been identified, so no mitigation is required.

XII. Noise	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a. Expose persons to or generate noise levels in excess of standards established in a local general plan or noise ordinance or applicable standards of other agencies?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b. Expose persons to or generate excessive groundborne vibration or groundborne noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c. Result in a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d. Result in a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project?	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
e. Be located within an airport land use plan area, or, where such a plan has not been adopted, within two miles of a public airport or public use airport and expose people residing or working in the project area to excessive noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f. Be located in the vicinity of a private airstrip and expose people residing or working in the project area to excessive noise levels?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Explanation (a and b): No Impact. The Project will use standard soil grading equipment that will not result in excessive ground borne vibration or ground borne noise levels. The nearest residential area is located approximately 4 miles south of the Project area.

Explanation (c): No Impact. The Project will not result in the permanent increase of ambient noise levels.

Explanation (d): Less-Than-Significant Impact. Once the Project is built the fields will be flooded annually, which will require the use of a portable diesel pump. The pump will generate noise comparable to agriculture pumps currently used in the Fall River Valley. The portable pump will be positioned on the Big Lake levee during the initial flood up period and convey water from Big Lake until the fields reach their targeted flood level. It is estimated that it will take approximately 17 days to flood Hollenbeak Field and 25 days to flood Ash Field and Rat Farm Pond. The flooding of Ash Field and Rat Farm Pond will start in mid-October. The flooding of Hollenbeak Field will start in January. The two pump locations are approximately 1 mile from the public boat launch facility on Big Lake and approximately 4 miles north of the town of McArthur. Due to the remoteness of the Project area/pump locations, limited use of the Project area by the public, the short duration of the pumping, and small size of the pump (pump capacity of approximately 3,000 gallons per minute), ambient noise levels will not significantly increase.

Explanation (e and f): No Impact. The Project area is not located within an airport land use plan area or within the vicinity of a private airstrip.

XIII. Population and Housing	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a. Induce substantial population growth in an area, either directly (e.g., by proposing new homes and businesses) or indirectly (e.g., through extension of roads or other infrastructure)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b. Displace a substantial number of existing housing units, necessitating the construction of replacement housing elsewhere?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c. Displace a substantial number of people, necessitating the construction of replacement housing elsewhere?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Explanation (a-c): No Impact. The proposed Project is not growth inducing and does not currently support single family or multi family housing units that would result in family displacement. The Project area is zoned as “unclassified” by Shasta County’s Planning Division (Shasta County web site; www.co.shasta.ca.us/index/gis_index.aspx , last visited May 2012).

Mitigation

No significant impacts have been identified, so no mitigation is required.

XIV. Public Services	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
Would the project:				
a. Result in substantial adverse physical impacts associated with the provision of new or physically altered governmental facilities or a need for new or physically altered governmental facilities, the construction of which could cause significant environmental impacts, in order to maintain acceptable service ratios, response times, or other performance objectives for any of the following public services:				
Fire protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Police protection?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Schools?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Parks?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
Other public facilities?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Explanation (a): No Impact. The enhancement of wetland habitat, as proposed, will not require the support of additional public services. The alteration of existing government facilities or construction of new facilities to support such public services is not necessary.

Mitigation

No significant impacts have been identified, so no mitigation is required.

	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
XV. Recreation				
Would the project:				
a. Increase the use of existing neighborhood and regional parks or other recreational facilities such that substantial physical deterioration of the facility would occur or be accelerated?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b. Include recreational facilities or require the construction or expansion of recreational facilities that might have an adverse physical effect on the environment?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Explanation (a and b): No Impact. It is not anticipated that wetland enhancement will increase use of the adjacent Ahjumawi Lava Springs California State Park. PG&E met with California State Parks on January 27, 2009, to present and discuss the proposed Project. The State Parks (2009) issued its concurrence in an email dated June 24, 2009. PG&E does not anticipate that public use will increase, therefore no new facilities are proposed.

Mitigation

No significant impacts have been identified, so no mitigation is required.

	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
XVI. Transportation/Traffic				
Would the project:				
a. Conflict with an applicable plan, ordinance, or policy establishing measures of effectiveness for the performance of the circulation system, taking into account all modes of transportation, including mass transit and non-motorized travel and relevant components of the circulation system, including, but not limited to, intersections, streets, highways and freeways, pedestrian and bicycle paths, and mass transit?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b. Conflict with an applicable congestion management program, including, but not limited to, level-of-service standards and travel demand measures or other standards established by the county congestion management agency for designated roads or highways?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c. Result in a change in air traffic patterns, including either an increase in traffic levels or a change in location that results in substantial safety risks?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d. Substantially increase hazards because of a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment)?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e. Result in inadequate emergency access?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f. Conflict with adopted policies, plans, or programs regarding public transit, bicycle or pedestrian facilities, or otherwise decrease the performance or safety of such facilities?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Explanation (a-f): No Impact. The proposed habitat enhancement of approximately 475 acres of wetland habitat does not involve the development of new transportation systems. Access to the Project area will be facilitated by existing public and private roads.

Mitigation

No significant impacts have been identified, so no mitigation is required.

	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
XVII. Utilities and Service Systems				
Would the project:				
a. Exceed wastewater treatment requirements of the applicable Regional Water Quality Control Board?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b. Require or result in the construction of new water or wastewater treatment facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c. Require or result in the construction of new stormwater drainage facilities or expansion of existing facilities, the construction of which could cause significant environmental effects?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
d. Have sufficient water supplies available to serve the project from existing entitlements and resources, or would new or expanded entitlements be needed?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
e. Result in a determination by the wastewater treatment provider that serves or may serve the project that it has adequate capacity to serve the project's projected demand in addition to the provider's existing commitments?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
f. Be served by a landfill with sufficient permitted capacity to accommodate the project's solid waste disposal needs?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
g. Comply with federal, state, and local statutes and regulations related to solid waste?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Explanation (a-g): No Impact. The proposed Project does not involve construction of single family housing units or commercial development. As a result, no water treatment facility or drainage facility will be required. The local landfill or transfer station will not need to support the proposed wetland restoration Project.

Mitigation

No significant impacts have been identified, so no mitigation is required.

	Potentially Significant Impact	Less-than-Significant with Mitigation Incorporated	Less-than-Significant Impact	No Impact
XVIII. Mandatory Findings of Significance				
a. Does the project have the potential to degrade the quality of the environment, substantially reduce the habitat of a fish or wildlife species, cause a fish or wildlife population to drop below self-sustaining levels, threaten to eliminate a plant or animal community, substantially reduce the number or restrict the range of a rare or endangered plant or animal, or eliminate important examples of the major periods of California history or prehistory?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
b. Does the project have impacts that are individually limited but cumulatively considerable? (“Cumulatively considerable” means that the incremental effects of a project are considerable when viewed in connection with the effects of past projects, the effects of other current projects, and the effects of probable future projects.)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
c. Does the project have environmental effects that will cause substantial adverse effects on human beings, either directly or indirectly?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>

Explanation (a): No Impact. The proposed Project was designed with the intent to improve the health and function of wetland habitat thereby enhancing habitat for a suite of wildlife species. The Project will improve both wintering and nesting waterfowl habitat in addition to improving habitat conditions for both upland and shorebird species. To protect fisheries resources from entrainment when diverting water from Big Lake, the portable water pump will be fitted with a “screen box” with ¼ inch perforations (design approved by CDFG). The pump intake was also designed to ensure that the federally endangered Shasta crayfish or State protected rough sculpin is not impacted; the pump intake will be positioned 20-40 feet off the levee bank and be suspended within the water column. Based on the detailed cultural resource surveys conduct within and adjacent to the Project area, no historic or prehistoric resources will be impacted.

Explanation (b): No Impact. The proposed Project will restore the health and function of approximately 475 acres of wetland habitat, therefore resulting in a net benefit to the environment.

Explanation (a): No Impact. The proposed Project will indirectly benefit human beings within the Fall River Valley. The proposed flood regime will help recharge the depleted aquifer that is so heavily relied upon for agriculture purposes.

Mitigation

No significant impacts have been identified, so no mitigation is required.

XIX. Earlier Analysis

Earlier analyses may be used where, pursuant to the tiering, program EIR, or other CEQA process, one or more effects have been adequately analyzed in an earlier EIR or negative declaration. Section 15063(c)(3)(D).

This Project was not analyzed in an earlier EIR or negative declaration.

REFERENCES

- ACOE. 2010. Letter of concurrence to PG&E for wetland delineation, SPK-2010-00286. Letter dated July 8, 2010, sent to PG&E, Natural Resource Management, Redding, California.
- Baumgardner, S. CDFG. Personal Communication, September 15, 2010.
- California Department of Conversation. 2008. Farmland Mapping and Monitoring Program for Shasta County.
- California States Parks. 2009. Email dated June 24, 2009.
- CDFG. 2011. California natural diversity database. Natural Heritage Division. Sacramento, California.
- Dittes and Guardino Consulting. 2010. Delineation of jurisdictional wetlands, waters of the United States and riparian habitats for the proposed PG&E revised McArthur Swamp Management Plan – Implementation of the Waterfowl Restoration Project. Prepared for Pacific Gas and Electric Company, Redding, California. Prepared by Dittes and Guardino Consulting, Los Molinos, California.
- Far Western Anthropological Research Group, Inc. 2008. Archaeological survey for the McArthur drainage project and levee maintenance plan at McArthur Swamp, Shasta County, California. Prepare for: Pacific Gas and Electric Company, Environmental Services, Chico, California.
- Far Western Anthropological Research Group, Inc. 2010. Addendum to: Archaeological survey for the McArthur drainage project and levee maintenance plan at McArthur Swamp, Shasta County, California. Prepare for: Pacific Gas and Electric Company, Environmental Services, Chico, California
- Heiman, D., Central Valley Regional Water Quality Control Board. Personal Communication, March 3 and November 15, 2010.
- Jones and Stokes. 1991. Waterfowl production during the 1991 nesting season at Pacific Gas and Electric Company's WHIP area near Fall River Mills, California. Prepared for Pacific Gas and Electric Company, Technical and Ecological Services, San Ramon, California. Prepared by Jones and Stokes Associates, Sacramento, California.
- JRP. 2011. Historic resources inventory and evaluation report of drains, canals, and levees; Revised McArthur Swamp management plan- Implementation of FERC License Article 406. Prepared for Far Western Anthropological Research group, Inc, Davis, California and Pacific Gas and Electric Company, Environmental Services, Chico, California. Prepared by JRP Historical Consulting, LLC, Davis, California.
- Moyle, P. B. and R. A. Daniels. 1982. I. Fishes of the Pit River System, McCloud River System, and Surprise Valley Region, in Distribution and Ecology of stream fishes of the Sacramento-San Joaquin Drainage System, California by P. B. Moyle, J. J. Smith, R. A. Daniels, T. L. Taylor, D. G. Price, and D. M. Baltz, University of California Publications Zoology 115:1–82.

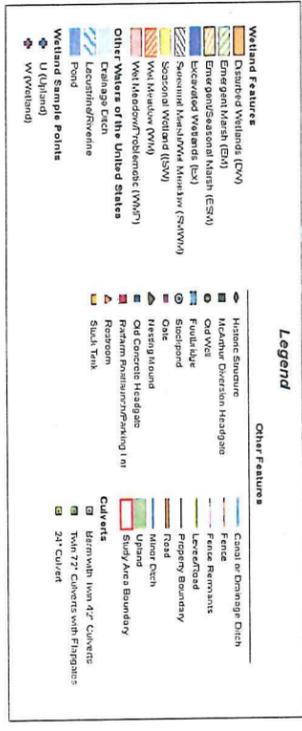
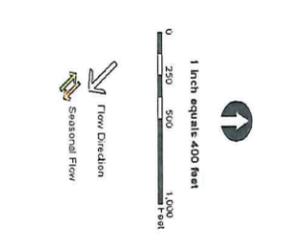
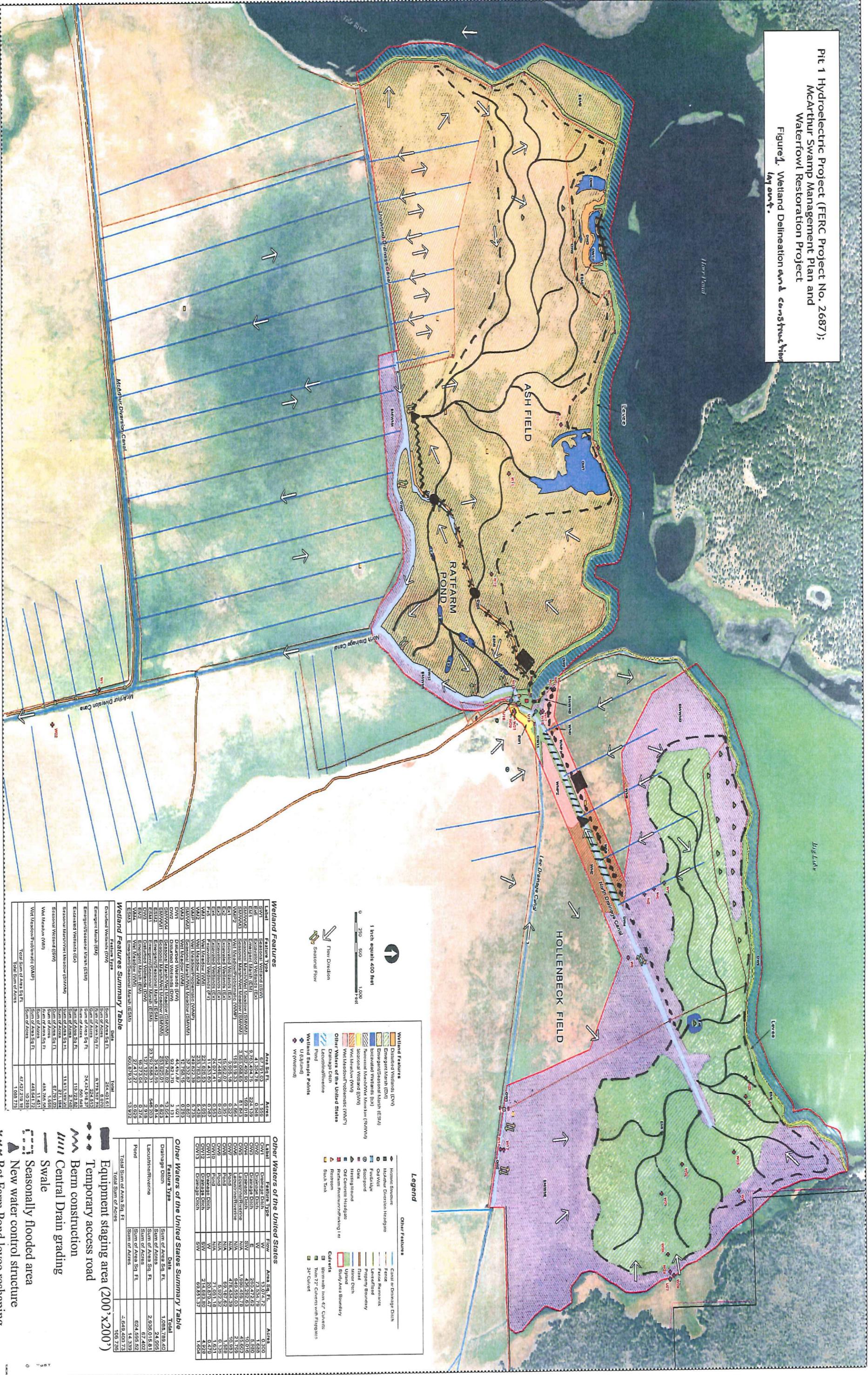
- Moyle, P.B. 2002. Inland fishes of California. Revised and Expanded. University of California Press
- PG&E. 1990. Application for new license, first stage consultation package, December 31, 1990, Vol. 1. Pit 1 Project, FERC 2687.
- PG&E. 1991. Waterfowl use of PG&E land in Fall River Valley, California. Final progress report, 1991. Prepared by Todd Sloat and Scott McWilliams, U.C. Davis, California.
- PG&E. 1993. Pit 1 Project, FERC NO. 2687, application for new license, December, 1993, Vol. 1. Report E3-fish, wildlife, and botanical resources, section E3.1, fish resources. Pacific Gas and Electric Company, Technical and Ecological Resources, San Ramon, California.
- PG&E. 2003. McArthur Swamp management plan; addressing license article 406. Pit No. 1 Hydroelectric Project, FERC Project No. 2687. Pacific Gas and Electric Company, Hydro Generation Department, San Francisco, California.
- PG&E. 2004. Levee maintenance plan, addressing License Article 407 (draft). Pit 1 Hydroelectric Project (FERC Project No. 2687).
- PG&E. 2009. Project description for the Revised McArthur Swamp Management Plan – Implementation of the Waterfowl Restoration Project. FERC Project No. 2687. Pacific Gas and Electric Company, Hydro Generation Department, San Francisco, California
- PG&E. 2011. Revised Project description for the revised McArthur Swamp Management Plan – Implementation of the Waterfowl Restoration Project. FERC Project No. 2687. Pacific Gas and Electric Company, Hydro Generation Department, San Francisco, California
- Sacramento Valley Air Quality Engineering and Enforcement Professionals. 2009. Northern Sacramento Valley Air Quality Attainment Plan.
- Shasta County. [Website last visited May 2012] www.co.shasta.ca.us/index/gls_index.aspx.
- State Historic Preservation Office. 2011. PG&E McArthur Swamp habitat improvement project (WHIP) management plan. Letter (letter dated April 11, 2011) of concurrence for cultural resources within the area of potential effect, FERC110225A. Department of Parks and Recreation, Office of Historic Preservation, Sacramento, California.
- State Water Resources Control Board. 2001. Water quality certification for the Pit 1 Hydroelectric Project (FERC 2687). Division of Water Rights, Sacramento California.
- Spring Rivers Ecological Sciences. 2006. Shasta crayfish technical review committee 2005 annual report. Cassel, California. Prepared for Pacific Gas and Electric Company, San Ramon, California.
- Spring Rivers Ecological Sciences. 2009. Shasta Crayfish Technical Review Committee summary report. Prepared for Pacific Gas and Electric Company, San Ramon, California.
- Spring Rivers Ecological Sciences. 2010. Potential impacts of water pumping for Revised McArthur Swamp Management Plan on the endangered Shasta crayfish (*Pacifastacus fortis*). Prepared for Pacific Gas and Electric Company, San Ramon, California. September 8, 2010.
- U.S. Fish and Wildlife Service. 2010. Informal endangered species consultation for the implementation of the revised McArthur Swamp Management Plan, Pit 1 Hydroelectric Project, FERC Project No. 2687, in Shasta County, California (81420-2010-I-0975-1). U.S. Department of the Interior, Fish and Wildlife Service, Sacramento Fish and Wildlife Office, Sacramento, California.

Initial Study and Environmental Checklist

PBarnes:tvallejo (6.6.2012)

U:\WQC-PT\WQC Unit\3_WQC Projects\McArthurSwamp\Final CEQA Docs\McArthur Swamp Initial Study-FINAL_1.DOC

Pit 1 Hydroelectric Project (FERC Project No. 2687);
 McArthur Swamp Management Plan and
 Waterfowl Swamp Restoration Project
 Figure 1. Wetland Delineation and Construction
 Lay out.



Wetland Features

Label	Feature Type	Area Sq Ft.	Acres
SW1	Seasonal Wetland (SWM)	61,731.03	1.42
EM1	Emergent Marsh (EM)	9,763,494.75	224.139
SMW1	Seasonal Marsh/Water Marsh (SMW)	7,350,209.50	168.018
SMW2	Seasonal Marsh/Water Marsh (SMW)	3,158,810.33	72.464
EW1	Eucalypt Wetland (EW)	9,905.18	0.227
EW2	Eucalypt Wetland (EW)	15,522.07	0.351
VP1	Vernal Pools (VP)	11,433.60	0.262
VP2	Vernal Pools (VP)	24,071.41	0.553
VP3	Vernal Pools (VP)	225,952.53	5.148
VP4	Vernal Pools (VP)	2,690,922.38	61.735
VP5	Vernal Pools (VP)	21,328.97	0.485
VP6	Vernal Pools (VP)	62,931.70	1.421
VP7	Vernal Pools (VP)	44,451.87	1.021
VP8	Vernal Pools (VP)	2,113.11	0.048
VP9	Vernal Pools (VP)	263,920.01	6.014
VP10	Vernal Pools (VP)	35,452.55	0.814
VP11	Vernal Pools (VP)	20,122,922.24	461.213
VP12	Vernal Pools (VP)	16,373.04	0.374
VP13	Vernal Pools (VP)	27,417.27	0.629
VP14	Vernal Pools (VP)	625,072.51	14.302
VP15	Vernal Pools (VP)	10,892.28	0.246
Total	Sum of Area Sq. Ft.	24,424,016.37	560.846

Other Waters of the United States

Label	Feature Type	Flow	Area Sq. Ft.	Acres
OW1	Drainage Ditch	W	70,324.78	1.580
OW2	Drainage Ditch	E	280,472.62	6.360
OW3	Drainage Ditch	SW	1,480,292.63	33.510
OW4	Drainage Ditch	N	966,559.03	21.929
OW5	Drainage Ditch	N/A	478,424.38	10.853
OW6	Pond	N/A	89,107.62	2.036
OW7	Pond	N/A	71,051.18	1.611
OW8	Drainage Ditch	W	20,878.47	0.470
OW9	Drainage Ditch	SW	28,851.37	0.654
Total	Sum of Area Sq. Ft.	2,848,400.73	65.073	

Wetland Features Summary Table

Feature Type	Area	Total
Disturbed Wetlands (DWM)	Sum of Area Sq. Ft.	24,424,016.37
Emergent Marsh (EM)	Sum of Area Sq. Ft.	9,763,494.75
Emergent/Seasonal Marsh (ESM)	Sum of Area Sq. Ft.	24,424,016.37
Eucalypt Wetlands (EW)	Sum of Area Sq. Ft.	25,429.25
Seasonal Marsh/Water Marsh (SMW)	Sum of Area Sq. Ft.	11,509,019.83
Seasonal Wetland (SWM)	Sum of Area Sq. Ft.	61,731.03
Vernal Pools (VP)	Sum of Area Sq. Ft.	448,765.54
Other Waters of the United States (OW)	Sum of Area Sq. Ft.	2,848,400.73
Total	Sum of Area Sq. Ft.	47,427,219.18

- Equipment staging area (200'x200')
- Temporary access road
- Berm construction
- Central Drain grading
- Swale
- Seasonally flooded area
- New water control structure
- Rat Farm Pond levee reslapping
- Levee rock swale crossing
- New Rio Lake levee rin ran