Final

Biological Resources Investigations for Interim Measures No. 3: Topock Compressor Station Expanded Groundwater Extraction and Treatment System San Bernardino County, California

Prepared for

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Acronyms and Abbreviations

BLM	Bureau of Land Management
CDFG	California Department of Fish and Game
CEQA	California Environmental Quality Act
CFR	Code of Federal Regulations
CNDDB	California Natural Diversity Database
CWA	Clean Water Act
DTSC	California Department of Toxic Substances Control
FESA	Federal Endangered Species Act
HCP	Habitat Conservation Plan
msl	mean sea level
MWD	Metropolitan Water District of Southern California
NEPA	National Environmental Policy Act
PG&E	Pacific Gas and Electric
PRC	Public Resources Code
RWQCB	Regional Water Quality Control Board
SAA	Streambed Alteration Agreement
USACE	United States Army Corps of Engineers
USC	United States Code
USFWS	United States Fish and Wildlife Service
USGS	United States Geological Survey

1.0 Introduction

Pacific Gas and Electric Company (PG&E) is addressing chromium in groundwater at the Topock Compressor Station under the oversight of the California Environmental Protection Agency, Department of Toxic Substances Control (DTSC). In a letter dated June 30, 2004, DTSC directed PG&E to implement Interim Measures Number 3 (IM No. 3) to expand existing groundwater extraction and management facilities to address hydraulic control of the chromium plume at the Topock site. The IM No. 3 project requires PG&E to conduct additional groundwater investigations for further plume delineation, to characterize groundwater conditions for the design of IM No. 3 facilities, and to proceed with the design and installation of the piping and conveyance of extracted water to a treatment system, the treatment of extracted groundwater using reduction-precipitation-filtration and reverse osmosis, and management of treated water.

Pursuant to Section IV.A. of the Corrective Action Consent Agreement (CACA) between DTSC and PG&E (DTSC 1996), DTSC determined that immediate action is required to continue to prevent and/or mitigate potential impacts to the Colorado River. Recognizing the time-critical nature of its directive, DTSC prepared a California Environmental Quality Act Notice of Exemption pursuant to §21080(b)(4) of the Public Resources Code for the IM No. 3 project. As noted in the NOE signed by DTSC on June 30, 2004, "these project activities are necessary to prevent or mitigate an emergency situation wherein the waters of the Colorado River may be impacted with a hazardous constituent, chromium which is in contaminated groundwater in close proximity to the river. Immediate action is necessary to contain and reverse the flow of groundwater away from the Colorado River. Commencement of the development of additional extraction, treatment and treated water disposal capacity is urgent to assure that increased pumping rates will be available to respond to impending fluctuations in the Colorado River level."

By two Action Memoranda issued pursuant to the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), 42 U.S.C. §§9601 et seq., and dated March 3, 2004 and May 20, 2004, the Arizona State Director, United States Bureau of Land Management (BLM), authorized PG&E to conduct a time-critical removal actions to prevent or abate the release of hexavalent chromium into the Colorado River, and to reduce the volume of hazardous waste transported off site from the MW-20 cluster, respectively.

1.1 Project Background

In February 1996, PG&E and DTSC entered into a CACA pursuant to Section 25187 of the California Health and Safety Code. Under the terms of the CACA, PG&E was directed to conduct a Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) and to implement corrective measures to address constituents of concern released in the Bat Cave Wash Area near the PG&E Topock Compressor Station. The primary constituents of concern at Topock are hexavalent chromium [Cr(VI)] and total chromium [Cr(T)]. The source was Cr(VI) salts used historically as a corrosion inhibitor in the station's cooling towers. DTSC is the lead administering agency for the project.

PG&E is currently proceeding with the corrective measures process by which a long-term remedy for the site will be selected under State law. PG&E submitted the Corrective Measures Study (CMS) work plan in December 2002, pursuant to the RCRA corrective action process and in accordance with the DTSC CACA. The DTSC approved the CMS work plan in June 2003. Beginning in August 2003, DTSC and PG&E began working in a collaborative process with affected and interested agencies through the Topock Consultative Work Group (CWG), constituted under California's site designation process. CWG members include:

- DTSC
- Colorado River Basin Regional Water Quality Control Board (CRBRWQCB)
- United States Fish and Wildlife Service
- Bureau of Land Management
- Representatives from local Indian Tribes
- United States Bureau of Reclamation
- Metropolitan Water District of Southern California (MWD)
- United States Geological Survey

Concurrently with the CMS, and in compliance with the DTSC directive of February 9, 2004 (to implement actions referred to as Interim Measures No. 2), PG&E commenced pumping, transport, and disposal of groundwater from existing wells at the MW-20 cluster. The Interim Measures No. 2 (IM No. 2) is part of the overall corrective measures process for the site. It is a step in establishing a long-term approach for site remediation. The IM, proposed additional measures, and the results of the groundwater investigation will be integrated into the long-term corrective measure for the site.

DTSC has determined that the objective of the IM is defined as follows:

> ***Initiate hydraulic control of the plume boundaries near the Colorado River to achieve a net reversal of gradient away from the Colorado River.***

In March 2004, PG&E began extracting groundwater at the MW-20 bench location, on property owned by the United States Bureau of Reclamation (BOR) and managed by the BLM. At the direction of DTSC and upon approval of BLM, PG&E installed two extraction wells on the MW-20 bench and is currently pumping at rate of approximately 20 gallons per minute from this location (Well TW-2D).

These measures have contributed to the prevention of groundwater containing chromium from reaching the Colorado River. However, due to the influence of the Colorado River stage on groundwater levels (as described below), extracting groundwater at higher rates is likely to be needed to maintain the stated goal of hydraulic control.

The daily fluctuations in river stage cause the surface water-groundwater interaction at this site to be dynamic. As the river levels begin to decline, the pumping rate must increase to overcome the natural tendency of the groundwater to flow toward the river. Space, limitations and constraints on treatment and disposal alternatives make necessary the installation of additional facilities to extract, treat, and manage the significantly higher groundwater flows required to maintain hydraulic control of the plume near the Colorado River. Treatment facilities will be built on MWD property (San Bernardino County

Assessor's Parcel No. 650-151-06), which PG&E is in the final stages of purchasing from MWD. (MWD is providing PG&E with access to undertake required work in the property prior to the formal transfer of title of the property.)

1.2 Regional Environmental Setting

The proposed project site is located near the town of Topock, Arizona, a community situated halfway between Laughlin, Nevada and Lake Havasu City, Arizona. Agriculture and public lands along the surrounding landscape dominate the area. Access to the project site is via I-40 that links Barstow, California and Topock, Arizona. The project site is bordered to the east by the Colorado River, to the north by Historic Route 66, to the south by the railroad tracks and I-40, and Sacramento Mountains to the west. Topography is abrupt, rising from around 450 feet above mean sea level (msl) at the Colorado River to over 1,200 feet above msl within 1 mile to the south and southwest. Slopes encountered west of the river reflect a series of ancient river terraces.

1.3 Project Location

The MWD parcel is located approximately 15 miles to the southeast of the City of Needles along Interstate 40 and 0.25 mile northwest of the PG&E Topock Compressor Station in the easternmost portion of San Bernardino County, California. The site includes the approximately 100-acre MWD property (San Bernardino County Assessor's Parcel No. 650-151-06) as well as areas to the south and west managed by the BLM. The MWD parcel is surrounded by land that is owned and managed by a number of federal and regional agencies including the BLM, United States Fish and Wildlife Service (USFWS), BOR, and areas under the jurisdiction of San Bernardino County. The project area can be identified on the Topock and Whale Mountain United States Geological Survey (USGS) Quadrangle Topographic Map. Figure 1 in Appendix A depicts the general vicinity of the proposed project site.

2.0 Project Description

The project description is divided into three sections - previously authorized activities, activities currently seeking authorization under Action Memorandum 3, and activities that may need authorization at a future date. The project consists of several elements including well installation, piping and conveyance, treatment facilities, and management of the treated water. The treatment facility will be a closed system. Therefore, untreated water will not be exposed to the environment that may potentially impact wildlife. Treatment facilities will be built on MWD property, which PG&E is in the final stages of purchasing from MWD. Immediate planning and permitting followed by construction of the proposed activity allows for handling the necessary increased extraction rates. PG&E is planning and designing these project facilities to extract and treat approximately 135 gallons per minute by fall 2004.

Access to the site is available from the Park Moabi Road interchange with Interstate 40. Internal portions of the project site may be accessed from the west at the intersection of Park Moabi Road and old Route 66; access from the east is provided from Park Moabi Road and the proposed pipeline access roads.

The final project layout and components may include some minor additions and/or modifications to the conceptual design summarized below. Each project element is described in the following sections. Figure 2 in Appendix A depicts the conceptual project site plan.

2.1 Drilling and Investigation Activities

2.1.1 Previously Authorized Activities

The IM No. 3 project will include drilling and well installation on BLM-managed property. Activities include the installation of new extraction wells to support the existing pumping operations, and monitoring wells for further characterization of chromium concentrations in groundwater. BLM has authorized this activity under a previous Action Memorandum, dated March 3, 2004. The siting, installation and pumping of these potential wells will be subject to review and approval by BLM, USFWS, and DTSC.

Currently, one existing extraction well (TW-2D) is being pumped to extract contaminated groundwater. Two wells (of the seven additional well locations previously authorized by Action Memorandum) are planned initially to supplement pumping from extraction well TW-2D. Both of these wells (PE-1 and PE-2) are in the western portion of the site (Figure 2).

The proposed well installations would result in negligible impacts to the surface environment. Submersible pumps would be placed down-hole, and subsurface concrete vaults equipped with instrumentation, valves, and other pipe appurtenances would complete the well head construction. Underground piping and electrical conduits would be connected to the well heads to convey water and provide power.

Groundwater monitoring wells on BLM-managed property to be installed for further characterization of chromium concentrations in groundwater are not addressed in this work plan as BLM has authorized this activity by previous Action Memorandum.

2.1.2 Activities Requiring Authorization under Time Critical Action Memorandum No. 3

Other drilling, well installation, and testing activities on BLM-managed property to be conducted as part of the IM No. 3 and subject to a new Action Memorandum are described below.

At the direction of DTSC, PG&E submitted a separate work plan on July 19, 2004 to summarize the drilling activities on Parcel 650-151-06 (Conceptual Work Plan for Hydrogeologic Characterization and Well Installation on Parcel 650-151-06). These field activities, in support of IM No. 3, involve drilling potential injection wells and conducting hydrogeologic testing. Data collected will be used to evaluate injection into the aquifer as a discharge option to manage the treated water. The conceptual plan includes the drilling and installation of up to ten injection wells and eight observation/monitoring well clusters (to assess water levels) to be installed on Parcel 650-151-06. The approximate locations of the injection well fields are shown in Figure 2. Because the proposed injection fields are close to BLM property, it is possible that PG&E may be required to drill observation wells on BLM land in the vicinity of the injection well system to collect additional data and to monitor changes in water levels. DTSC may make a determination in September as to the need for additional drilling to support the siting of facilities for the IM. The siting, installation and pumping of these potential wells on BLM property will be subject to review and approval by BLM and DTSC.

The wells will be drilled and installed using mud-rotary drilling methods. Equipment needed for mud-rotary drilling typically includes a large drilling rig, a pipe truck, a water truck, a mud screen/shaker table, and two or more large bins or tanks for cuttings and waste drilling mud. A support/water truck and smaller four-wheel-drive trucks will be used for crew and equipment and material transfer to the drilling sites. Short-term material storage at the sites will be necessary to accommodate the drilling operations. Materials to be temporarily stored at the well sites include drilling equipment and well construction materials (casing, sand, bentonite, cement grout, etc.) and a lined steel roll-off soil bin for cuttings generated from drilling.

Drill cuttings may potentially contain chromium, although during previous drilling operations at the Topock site these materials had non-detectable concentrations of chromium. The cuttings will be contained in lined roll-off bins at the drill sites during the drilling and sampling activities. After sampling and characterization, all cuttings bins will be removed from the drill sites for ultimate disposition by PG&E. The cuttings will be screened for chromium, the main chemical of concern for the site, as appropriate. If the cuttings are characterized as a hazardous waste, they will be transported off site for disposal at a permitted hazardous waste disposal facility. It is estimated that the soil investigation-derived waste bins temporarily staged on BLM property will not exceed 45 days.

Water generated during well drilling and development activity will be contained in storage tanks on the drilling support truck and transferred to storage tanks in PG&E's operations area for characterization, treatment, or disposal at a permitted waste disposal facility.

Incidental trash (empty paper and plastic bags, cardboard boxes, wooden pallets, and miscellaneous debris) will be collected at the end of each drilling shift and hauled off the drill site to an appropriate disposal facility. Personal protective equipment and disposable sampling equipment designated as non-hazardous waste will be double-bagged and disposed of in dumpsters at the station. In the unlikely event that such equipment is designated as hazardous waste, it will be disposed of at a permitted facility in compliance with hazardous waste regulatory requirements.

2.1.3 Potential Activities to Support IM No. 3 That May Require Future Authorization

Additional sampling or characterization may be conducted, as directed by DTSC. These measures may include additional data collection to support evaluation of remedial technologies, including the potential installation of a slurry wall and/or the use of *in-situ* treatment techniques to augment remediation activity.

In-situ treatment techniques have the potential to enhance the effectiveness of existing and planned groundwater extraction and above-ground treatment by providing additional treatment in the subsurface. *In-situ* field pilot testing at existing and/or new wells on land managed by BLM will be considered by DTSC. *In-situ* pilot testing is proposed to obtain information for design of future supplemental remediation measures. PG&E will describe the methodology and location of the *in situ* pilot test wells and piping in a future work plan, and such activities will be subject to approval by DTSC and BLM for those wells located on BLM-managed land. Figure 1 shows the proposed location for the potential *in-situ* testing wells.

Also, in furtherance of the site conceptual model, a seismic evaluation in the floodplain may be necessary to supplement the drilling activities, and to obtain additional data to evaluate the potential feasibility of additional remediation approaches, including the potential installation of a barrier wall. DTSC has recommended that PG&E undertake a seismic refraction survey over the Colorado River, involving water-borne transducer technology, and thereby avoiding physical impacts to the floodplain. A water-borne survey could provide valuable information to complete the conceptual site model of the area beneath the river, and thereby complementing the data collected on land. It is not anticipated that the water-borne survey requires BLM authorization. However, contingent upon the results of a seismic refraction survey over the Colorado River, another investigation may be required by DTSC on the floodplain if additional geophysical and geotechnical evaluations are necessary to define the floodplain's subsurface. This may include the installation of test borings. PG&E would describe the details of such a scope of work, if required by DTSC, in a future submittal to BLM.

2.2 Piping and Conveyance System

2.2.1 Previously Authorized Activities

Conveyance pipelines connecting new extraction wells to the MW-20 bench have been authorized by previous action memoranda.

2.2.2 Activities Requiring Authorization under Time Critical Action Memorandum No. 3

The piping and conveyance system for IM No. 3 will consist of the following:

- Influent and effluent piping and electrical conduit between the MW-20 bench and the PG&E treatment facility. Influent piping will convey extracted groundwater to Parcel 650-151-06. Effluent piping will convey RO brine back to the MW-20 bench. Effluent piping will also convey treated water back to the MW-20 bench until more permanent disposal methods are permitted and in place to accommodate peak extraction rates.
- Piping to convey treated water from the PG&E treatment facility to the disposal facilities (injection well fields on Parcel 650-151-06, direct discharge to the Colorado River, or reuse at the PG&E Compressor Station).

Currently, PG&E is discussing the design and layout of the project facilities with DTSC and the CWG during on-board CWG review sessions. An on-board review process enables interested stakeholders to be involved in the early stages of an expedited design-build project while meeting the accelerated project schedule. A Draft Design Basis Report for Interim Measures Number 3 and accompanying drawings representing a 30 percent design were submitted to DTSC and members of the Topock Consultative Workgroup on July 30, 2004. Engineering design and construction planning are ongoing to meet the accelerated project schedule. The following description of conveyance pipelines is based on the current design and on-board review sessions conducted to date.

The proposed main piping and conveyance alignment for the project follows existing access roads and is designed to avoid impacts to the Topock Maze, former U.S. Highway 66 (Route 66) and other cultural sites. The proposed route is set forth in Figure 2. PG&E is designing all project facilities to avoid or minimize impacts to cultural and natural resources. PG&E has surveyed the site and conducted resource related evaluations. Resource investigation reports have been drafted to document the survey findings. Mitigation measures will be implemented as required by the BLM and other agencies as a result of the consultation process. PG&E will offset the piping from existing utilities in accordance with applicable requirements and will work with the appropriate regulatory agencies to avoid, reduce or mitigate potential cultural and natural resource impacts.

Double wall high-density polyethylene (HDPE) piping will convey extracted groundwater to prevent releases of untreated groundwater. Piping and appurtenances will be sized to accommodate the anticipated system flow rates. Appurtenances to monitor system operations will include:

- Flow meter/totalizers to measure flow rate and cumulative flow from each extraction well;
- In-line sample ports for each extraction well; and
- Electrical or visual indication of pipe leakage within the containment piping. Visual leak indication would be facilitated by underground vaults placed at selected points along the alignment. Electrical leak detection methods include, at a minimum, level detection sensors in the underground vaults.

Given the design, a leak or catastrophic pipe failure is not expected. In the event of any release or other event necessitating an emergency response, PG&E will notify immediately the BLM Lake Havasu Field Office and the United States Bureau of Reclamation Lower Colorado Regional Office as well as other agencies, such as the National Response Center, as required by law.

2.2.2.1 Piping between the MW-20 Bench and Parcel 650-151-06

The water conveyance system delivers (1) untreated water from the extraction wells on the MW-20 bench to the treatment facilities; and (2) RO brine and treated water from the treatment facility back to the MW-20 bench. To minimize and avoid impacts to cultural resources, a combination of subsurface and aboveground alignments are proposed.

From the MW-20 bench to the PG&E treatment facility, piping will be constructed in an excavated trench approximately 7 feet wide to accommodate manual assembly of pipeline. Upon completion of the construction, the piping alignment will be within an existing 10-foot-wide graded gravel access road with 2-foot-wide shoulders. Two subsurface influent (untreated water) pipelines and two subsurface effluent pipelines (treated water and RO brine stream) would be placed in a common trench running to and from the MW-20 bench and Parcel 650-151-06, as shown in Figure 2. The trench will be excavated from the MW-20 bench approximately 700 feet north on the east shoulder of Route 66 (Park Moabi Road). At this point, the pipes will be directionally drilled west beneath Route 66 to the existing access road, where the road starts to run in a southerly direction. By following this existing access road, the alignment of the conveyance system avoids an abandoned segment of Route 66 (old Route 66). The trench will be constructed approximately 1,700 feet on BLM land following this existing access road. The trench will cross onto Parcel 650-151-06, and will be routed to the treatment facility location. Trenching along the roadway will minimize the disturbance to the hill slopes around the MW-20 bench. Directional drilling or other similar techniques (*e.g.*, boring and jacking) will be used to install segments of the piping to avoid impacts to cultural and natural resources.

Influent lines will be double-contained high-density polyethylene, and effluent lines will be single-contained polyvinyl chloride or high-density polyethylene. For the influent line conveying untreated groundwater, it is estimated that the inner pipe will be 4 inches in diameter and the outside pipe will be 8 inches in diameter. Electrical conduit also will be placed in the trench.

2.2.2.2 Piping between the Treatment Facility and the Injection Well Fields

Piping would be installed to deliver treated water from the PG&E treatment facility to the proposed injection wells on the Parcel 650-151-06. A portion of the route for this pipeline will traverse BLM land, as shown on Figure 2. PG&E has conducted resource related evaluations for these project activities; mitigation measures will be implemented as required by the BLM and SHPO as a result of the National Historic Preservation Act Section 106 consultation process.

From the PG&E treatment facility, treated water will be pumped through a single wall pipeline, approximately 4 inches in diameter, to be directionally drilled beneath old Route 66 from the south to the north shoulder. Along the north shoulder of old Route 66, the pipe will be constructed in an aboveground alignment on BLM land to the proposed injection

well fields at the west side of Parcel 650-151-06. The aboveground alignment minimizes disturbance to old Route 66.

2.2.3 Potential Activities to Support IM No. 3 That May Require Future Authorization

At the direction of DTSC, PG&E is evaluating three options to manage the treated water: injection into the aquifer on Parcel 650-151-06, discharge to the Colorado River under a National Pollutant Discharge Elimination System (NPDES) permit, and re-use of the treated water at the Topock Compressor Station. DSTC further directed PG&E to prepare applications to the Colorado River Basin Regional Water Quality Control Board (CRBRWQCB) for consideration at the Board's September 15, 2004 meeting (applications were submitted to the CRBRWQCB on July 28, 2004). No decision has been made regarding which of these alternatives will be used; each alternative remains a potentially viable option for treated water disposal. Of the three disposal alternatives under evaluation, PG&E has performed the detailed engineering design for the injection well disposal method on the basis that it represents the alternative most likely to be permitted and constructed in time to meet the demands of anticipated future pumping in October and November of 2004. The details of piping alignment for the extraction well disposal alternative are described in the preceding section, and they are the subject of approvals requested under Action Memorandum No. 3. In the event that one of the other two options for treated water disposal is chosen instead of, or in addition to, disposal by injection, PG&E will perform the necessary engineering design to implement that option, and will seek BLM approval for activities on BLM property through a future Action Memorandum process.

2.2.3.1 Potential Piping to a River Discharge Point

PG&E is evaluating piping alignments to accommodate the potential discharge of treated water into the Colorado River under a NPDES permit. Under the NPDES scenario, a pipeline would convey the treated water from the PG&E treatment facility across BLM property to the potential point of outfall, which may be directly into the Colorado River or to a drainage course within Bat Cave Wash. The alignment of any potential NPDES discharge pipeline would be determined following the decision by DTSC to implement this disposal option.

2.2.3.2 Potential Piping to the Topock Compressor Station

PG&E is also evaluating the potential reuse of the treated water in the cooling towers at the PG&E Topock Compressor Station. Under this scenario, the treated water from the PG&E treatment facility would be either transported by truck or conveyed in a pipeline across both BLM-managed land and the Havasu National Wildlife Refuge (HNWR). The truck route or the alignment of any potential pipeline would be determined following the decision by DTSC to implement this disposal option.

2.3 Grading and Construction-Related Activities

In support of the IM No. 3 drilling, well installation, and pipeline construction activities, PG&E will perform grading and other construction-related activities on BLM-managed land.

2.3.1 Previously Authorized Activities

As described in Section 2.1.1, the installation of new extraction wells, and the trenching and piping installation associated with those wells, has been authorized under a previous Action Memorandum. Trenches from new extraction wells to the MW-20 bench will be approximately 3-feet wide and will be installed using backhoes or trenching machines.

2.3.2 Activities Requiring Authorization Under Time Critical Action Memorandum No. 3

Interim Measure No. 3 grading and construction-related activities to be authorized under Action Memorandum No. 3 include the following:

- Inspect the BLM property along which conveyance pipeline alignments or road improvements are planned to evaluate the placement of equipment and the suitability of construction methods.
- Perform grading to level ground as required for staging equipment and to provide easy access for construction vehicles (*e.g.*, trucks, drill rigs) at the MW-20 bench and on the access roads. Temporary road crossings in areas where water has washed out roads may be constructed of materials such as soil and road base.
- Improve existing roads and create all-weather roads by filling in any washed out areas, carving/cutting as necessary to build roadway, and placing road base materials to finish the surface.
- Place temporary rip-rap to control erosion at up to four locations along portions of old Route 66, between the PG&E treatment facility and the potential injection well fields.
- Site and install temporary power supply (portable diesel-generator equipped with an auxiliary fuel tank), and auxiliary lighting.
- Trench for pipelines and electrical conduit. Trenches will be constructed with backhoes or trenching machines and will be approximately 3 feet deep and 7 feet wide.

Currently, PG&E is designing the project facilities; technical drawings and grading plans will continue to be discussed with DTSC and interested stakeholders during on-board review sessions.

2.3.3 Potential Activities to Support IM No. 3 That May Require Future Authorization

Grading and construction-related activities associated with (1) construction of an NPDES discharge pipeline across BLM property, and (2) construction of a pipeline conveyance to the PG&E Topock Compressor Station (for reuse of treated water and/or disposal of RO brine) will require authorization under a future Action Memorandum. The design and engineering of such facilities, if required, will commence in the event that DTSC directs PG&E to proceed with those disposal alternatives.

2.4 Temporary Increased Storage of Effluent on, and Trucking From, MW-20 Bench

2.4.1 Previously Authorized Activities

Activities to increase temporarily the storage capacity on the MW-20 bench, and to dispose of the additional stored water, associated with the IM No. 3 activities have not been authorized under previous Action Memoranda.

2.4.2 Activities Requiring Authorization Under Time Critical Action Memorandum No. 3

As discussed in Section 2.2.2, effluent piping will be installed to bring waste streams from the PG&E treatment facility products back to the MW-20 bench. The treatment process presently being designed (treatment to be performed on Parcel 650-151-06) is addition of ferrous chloride or ferrous sulfate to achieve chromium reduction, followed by removal through precipitation and filtration, and final polishing for total dissolved solids separation through RO. The process will produce three waste streams – RO concentrate (i.e., brine), RO permeate (i.e., treated water), and dewatered process sludge. The sludge will be stored at the PG&E treatment facility for transport and disposal to a licensed facility. The RO brine and treated water will be piped back to the MW-20 bench for temporary storage before being transported to an off-site facility by truck. When adequate disposal methods (injection, discharge into the river, or reuse at the PG&E Topock Compressor Station) are permitted and in place to accommodate expected peak extraction rates, PG&E will reduce or discontinue the conveyance of treated water to the MW-20 bench.

With a peak expected groundwater extraction rate of 135 gallons per minute (gpm), contingency storage of treated water and RO brine may be necessary. During the peak flow, a total of twelve or thirteen holding tanks (of 17,500-gallon capacity each) would be needed on the MW-20 bench to provide sufficient holding capacity for the RO brine and the treated water from the PG&E treatment facility. Assuming that 3 of the existing treated water tanks on the MW-20 bench are available for such use, 9 to 10 additional holding tanks may need to be added to the existing facilities. The existing operations would be expanded to accommodate the additional tanks within a lined containment area, although full secondary containment will not be necessary (the RO brine and the treated water will be nonhazardous). Approximately 25 percent of the holding capacity will be used for the RO brine, and approximately 75 percent of the holding capacity will be used for the treated water. Once a sufficient water management/on-site disposal option is in place, the extra tanks will be decommissioned and removed from the bench.

At peak groundwater extraction, up to 42 truck loads per day would be required. The site's comprehensive transportation plan will be updated to address the increase in truck traffic along Park Moabi Road. The transportation plan would include measures to protect the roadway where needed, and to limit the effects of project traffic to designated areas. Site operators at the MW-20 bench will continue to be responsible for daily trucking operation. The facility operational procedures will be updated to address the expanded operations. Each operator will be trained on proper operation of system equipment, field instruments, and monitoring equipment, and will be familiar with the normal operating ranges of system

components. The pumping and storage system will be equipped with automatic shutoffs to prevent tank overflow and pipe failures. The automatic shutoffs combined with site inspection will provide operational reliability and safety. Site security is provided to safeguard against vandalism and injury. During implementation of this IM, appropriate security measures will be implemented for the express purpose of providing safety to operators and the public, consistent with current operations.

2.4.3 Potential Activities to Support IM No. 3 That May Require Future Authorization

The use of the MW-20 bench for the storage and shipping of treated water is anticipated to be a temporary measure, to be implemented following startup of the treatment facilities and until a direct disposal method (injection, NPDES discharge, reuse at the Topock Compressor Station) is implemented. As such, PG&E does not foresee a need to request future authorization to conduct such work, beyond the authorization requested to be contained within Action Memorandum No. 3.

2.5 Project Schedule

The time critical period for the project, associated with the lowest river levels, is October 2004 through January 2005. It is essential that PG&E immediately begin preparations to expand the interim measure treatment to meet the DTSC directive and prevent potential impacts to the Colorado River. PG&E's ability to meet this schedule is dependent upon BLM's authorization of the IM No. 3 through the issuance of an Action Memorandum as a time-critical removal action under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA). Without this authorization, PG&E does not have the ability to conduct the necessary site preparation or installation activities to meet the time critical period for the project.

3.0 Applicable Regulations

3.1 Federal Regulations and Standards

The following are the various applicable federal and state regulations and policies, provided here for general information purposes.

- National Environmental Policy Act of 1969 (NEPA), as amended (42 United States Code [USC] §§ 4321 *et seq*). The purposes of this act are to declare a national policy to promote efforts that prevent damage to the environment and benefit human health and welfare, increase understanding of natural resources, and establish a National Council on Environmental Quality. The BLM will be the lead federal agency.

- Federal Endangered Species Act (FESA), including coordination requirements of Sections 7 and 10 and Habitat Conservation Plan (HCP) requirements of Section 9 (16 USC §§1531 *et seq.*; 50 Code of Federal Regulations [CFR] Part 402). Section 9 of FESA prohibits the "take" of species federally listed as threatened or endangered. "Take" is further defined to include any harm or harassment, including significant habitat modification or degradation that could potentially kill or injure wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Take incidental to otherwise lawful activities can be authorized under Section 7 of FESA, where a federal nexus or agency is involved. PG&E currently possesses a biological opinion for the desert tortoise (*Gopherus agassizii*) entitled *Biological Opinion for Maintenance Activities on the Pacific Gas and Electric Company Gas Pipeline System in the California Desert* (6840, CA-063.50) (1-8-99-F-71) (USFWS 2000).

- Clean Water Act (CWA) – Sections 401 and 404 of the CWA (33 USC §§1344). Activities that have the potential to discharge fill materials into "waters of the United States," including wetlands, are regulated under Section 404 of the CWA, as administered by the United States Army Corps of Engineers (USACE). Fill activities may be permitted by a Nationwide or Individual Permit. The Nationwide Permit Program involves certain activities that have been pre-authorized by USACE. Section 404 (1)(b) guidelines require USACE to rule in favor of the least environmentally-damaging practicable alternative when multiple alternatives are available for a project. Typically, USACE requires mitigation in the form of restoration of areas of temporary impacts, and restoration/enhancement of additional wetland areas at a specified ratio of impacts. Alternatively, in-lieu fees can be paid into a mitigation banking fund. Projects requiring a Section 404 permit also require a CWA Section 401 Water Quality Certification issued by the appropriate RWQCB. BLM will be the lead federal agency.

- Migratory Bird Treaty Act (16 USC 703-712; 50 CFR 10). The federal Migratory Bird Treaty Act prohibits the "take" of migratory birds, unless permitted. This regulation can constrain construction activities that have the potential to affect nesting birds either through vegetation removal and land clearing, or through other construction or

operation-related disturbance. It is not anticipated that a depredation permit will be required.

3.2 State Regulations and Standards

The proposed project may be subject to the following state regulations:

- California Environmental Quality Act of 1970 (CEQA) as amended (Public Resources Code [PRC] §§21000 *et seq.*). The CEQA goals intended to assist California public agencies in identifying potential significant environmental effects of their actions, and either avoiding or mitigating those effects, when feasible. DTSC will be the state lead agency. DTSC has issued an emergency exemption under CEQA.
- California Endangered Species Act (California Fish and Game Code §§2050 *et seq.*). Section 2050 of the California Fish and Game Code prohibits any activities that would jeopardize or take a species listed as threatened or endangered within the state. Projects that have the potential to impact species listed as threatened or endangered by the state might require an Incidental Take Permit from the California Department of Fish and Game (CDFG) under Section 2081 of the Fish and Game code. The application for this permit requires a project description, and analysis of impacts to the species, and an analysis of the probability of the species' long-term survival as related to impacts. PG&E possesses a biological opinion for the desert tortoise issued by USFWS.
- Clean Water Act – Projects requiring a Section 404 permit also require a CWA Section 401 Water Quality Certification issued by the appropriate RWQCB. Section 401 of the CWA, governed by 33 USC 1341 and 40 CFR 121, requires a water quality certification from the State Board or Regional Board when a project: (1) requires a federal license or permit and (2) will result in a discharge to waters of the United States. Such certification may be conditioned. Project activities that typically result in a discharge subject to Section 401 water quality certification are the construction and subsequent operation of a facility.
- CDFG Code 1600 – Streambed Alteration Agreements (California Fish and Game Code §1600). Section 1600 of the Fish and Game Code regulates the alteration of the bed, bank, or channel of a stream, river, or lake, including dry washes. Generally, CDFG asserts jurisdiction up to the top of significant bank cuts or to the outside of any riparian vegetation associated with a water course. Activities that have the potential to affect jurisdictional areas can be authorized through issuance of a Streambed Alteration Agreement (SAA). The SAA specifies conditions and mitigation measures that will minimize impacts to riparian resources from proposed actions. The DTSC has issued an emergency exemption under CEQA. It is anticipated that the CDFG will concur with this finding and inform PG&E that an emergency notification package must be prepared and delivered to CDFG within 14 days of the proposed action.
- California Fully-protected Wildlife Species Provisions (California Fish and Game Code §§3511, 4700, 5050, and 5515). These provisions prohibit the taking of fully-protected birds, mammals, amphibians, and fish.

- Birds of Prey Protection Provision (California Fish and Game Code § 3503.5). This provision prohibit the taking of birds of prey, including any birds of the order Falconiformes or Strigiformes, and including nests or eggs of such birds. Potential impacts to these species will be avoided.

4.0 Survey Methodology

4.1 Purpose and Need

A biological survey of the proposed project site was performed to identify potential biological constraints. The focus of the survey was directed toward the detection of special-status plant and wildlife species and jurisdictional waters. This report documents the survey findings, identifies potential impacts to resources, and proposes measures to avoid, reduce and mitigate potential impacts. Based on the survey findings, the appropriate agencies including the Bureau of Land Management (BLM), United State Fish and Wildlife Service (USFWS), and California Department of Fish and Game (CDFG) will be consulted on permitting requirements. All necessary permits/approvals will be obtained prior to project implementation.

4.2 Background Search

Prior to conducting the field survey, the California Natural Diversity Database (CNDDB), Arizona's Game and Fish Natural Heritage Program, and United States Fish and Wildlife Service's Threatened and Endangered Species Database was queried to identify the potential occurrence of special-status plants, wildlife (including federally and state listed threatened and endangered species), and habitats occurring within 2 miles of the project site. The search encompassed the Topock and Whale Mountain 7.5-minute USGS quadrangle. Figure 3 depicts special-status species identified during the database queries.

4.3 Methodology

On May 4, 5, 17, and 19, 2004, CH2M HILL wildlife biologists Ray Romero and Robert Hernandez conducted a reconnaissance survey for special-status species that may potentially occur at the proposed project site and surrounding lands. On August 11, 2004, the alternative locations for the conveyance pipeline were surveyed. Pedestrian transects spaced approximately 100-200 feet apart, depending on topography, were conducted at the site. The survey encompassed areas within and surrounding the MWD parcel, including washes such as Bat Cave Wash, other unnamed washes, small tributaries, and areas where proposed project facilities including conveyance pipeline options that would be constructed (Figure 2). The field characterization of the habitat at the project site was then compared to suitable habitat for each of the special-status species that is essential for the species survival. In addition to this analysis, a literature review was conducted to determine the potential for the project site to support such species. This comparison is provided in Table 1. The analysis was intended to determine the need for focused species and/or protocol-level surveys.

The primary focus of the survey was directed toward the detection of any live desert tortoises and sign such as carcasses, burrows, scat, courtship rings, tracks, egg shell

fragments, etc. The secondary focus of the survey was to delineate the dry washes and identify any potential impacts that may occur within or adjacent to the project site. A list of plant and wildlife species observed during the survey are presented in Table 2. Photographs of the site and a photo index map of the existing conditions occurring at the project site and surrounding areas are provided in Appendix C.

5.0 Survey Results

5.1 Characterization of Vegetation and Habitat

The site is characterized by arid conditions (precipitation averages less than 5 inches/year) and high temperatures. Structurally diverse vegetation is primarily limited to the Colorado River floodplain and ephemeral washes into the river. Trees observed along these waterways include salt cedar, palo verde, cat claw, smoke tree, and mesquite. The local geology consists of recent and older river deposits progressing westward to older alluvial deposits associated with the local mountains. Sand, gravel and cobblestone dominate these deposits, comprising the principal groundwater aquifer at the site. The main surface water drainage from the study area into the Colorado River is from Bat Cave Wash and a large unnamed desert wash with several tributaries located to the west. These ephemeral desert washes are dry most of the year.

The land in the vicinity of, and including the MWD property, has been significantly disturbed and is highly fragmented. The landscape in the vicinity of the proposed project site has been fragmented and significantly disturbed by construction of I-40 Highway, Park Moabi Road, old Route 66, several dirt roads, gas pipeline corridors, and the Burlington Northern Santa Fe Railway (Figure 2). In addition, significant amounts of litter and several illegal dump sites were observed along the roadways and railroad tracks.

The MWD property is a series of terraces divided by dry desert washes. The landscape within the proposed project area is considerably eroded and can most suitably be described as badlands. The lands are made up of small- to moderately-sized terraces with very steep slopes potentially cut by historic flash flood events. For the most part, terraces occurring on site are homogeneous, comprising rocky soils with very sparse vegetation, mostly resembling creosote bush desert scrub plant community. Vegetation occurring on these sites include, but are not limited to, creosote bush (*Larrea tridentata*), burrobush (*Ambrosia dumosa*), allscale saltbush (*Atriplex polycarpa*), beavertail cactus (*Opuntia basilaris*), and desert trumpet (*Eriogonum inflatum*). The dry desert washes comprise sandy-to-gravely soils and are sparsely vegetated. Vegetation observed along the washes during the biological reconnaissance survey primarily included creosote bush, salt cedar (*Tamarix* sp), cat-claw (*Acacia greggii*), mesquite (*Prosopis* sp), palo-verde (*Ceridium* sp), and smoke tree (*Dalea spinosa*).

Bat Cave Wash is one of two large dry washes at the project site, located along the eastern portion of the project site. The second wash is a combination of several smaller tributaries merging to form a larger wash that flows along the eastern and northern portions of the MWD property. These washes remain dry throughout most of the year due to arid desert conditions. The low-flow channels within the wash floors are mostly barren of vegetation and comprise a sand, gravel, and cobblestone substrate. Although the ephemeral washes occur within the creosote bush scrub plant community, they contain substantially large stands of salt cedar at the confluence with the Colorado River.

The Colorado River is the primary aquatic habitat located approximately 800 feet northeast from the eastern edge of the MWD parcel. The river is approximately 700 to 900 feet wide and 8 to 15 feet deep at this location. Little to no submergent vegetation exists within the river. Small patches of emergent vegetation along the banks consist of common reed (*Phragmites communis*), cattails (*Typha* sp.), sedges (*Carex* sp.), and rushes (*Scirpus* sp.).

5.2 Wildlife

Based on few wildlife observations and sparse vegetation providing limited cover and forage within the project area, wildlife diversity and abundance is considered low. In addition, due to the disturbed nature of the land on or in close proximity to the project site and adjacent natural barriers such as the Sacramento Mountains and Colorado River, a continuous wildlife corridor is not available. This greatly inhibits movement of terrestrial wildlife species onto the project site. However, the occurrence of trees and patches of native vegetation near the Colorado River may provide limited roosting habitat for avian species and other common wildlife species.

As mentioned previously, two large stands of salt cedar are located at the confluence of the two large washes and the Colorado River, which dominate either bank and may be used as roost trees by various avian species including raptors. Although salt cedar provides habitat and nest sites for some wildlife, many biologists conclude that it provides low quality habitat for most native amphibians, reptiles, birds, and mammals (Lovich and de Gouvenain 1998). However, some literature has documented southwestern willow flycatchers (*Empidonax traillii extimus*) nesting in tamarisk thickets near watercourses including the Colorado River. During the reconnaissance survey, species such as mourning dove (*Zenaida macroura*) were detected within salt cedar. Although salt cedar is not known to provide optimal wildlife habitat, the trees appear to provide the only significant roosting structure, due to limited structural tree diversity in the area.

5.3 Special-status Plants

No special-status plant species were identified in any of the database queries nor was suitable habitat observed during the survey. Physical evidence of the highly-developed and historically-disturbed nature of the project site was evident throughout. These physical characteristics included graded, compacted, and eroded soils due to natural and man-made conditions such as washes, roadways, railroad tracks, pipeline corridors, fence lines, and presence of exotic vegetation. Due to these disturbances in the area, the project site does not provide appropriate conditions for establishment of special-status plant species. Therefore, focused species and/or protocol-level surveys were considered unnecessary. However, the BLM has identified several sensitive plants including the ocotillo (*Fouquieria splendens*), palo verde, cat-claw, mesquite, and all cactus species. These species were observed within and adjacent to the project area.

5.4 Special-status Wildlife

The following section addresses special-status wildlife species observed, reported, or with the potential to occur at the project site or in the immediate vicinity. These resources include habitat and wildlife species that have been afforded recognition by federal and state resource agencies—as well as private conservation organizations—as species with a documented or perceived decline or limitation of its population size or geographical extent and/or distribution, resulting in most cases from habitat loss.

Special-status species include those: (1) listed or proposed for listing by state or federal agencies as rare, threatened, or endangered and (2) federal Species of Concern or state Species of Special Concern. Table 1 in Appendix B provides a list of each special-status wildlife species that may potentially occur in the project area and includes information on status, likelihood for occurrence, and habitat requirements.

No live special-status wildlife was detected during the reconnaissance field survey. However, a desert tortoise carcass was observed within one of the small tributaries to the large unnamed wash located within the central portion of the proposed project site (Figure 2). The desert tortoise carcass, consisting primarily of a disarticulated and bleached plastron, was found in a narrow, sparsely-vegetated wash with a rocky/gravely substrate. Based on the stage of deterioration, the shell appeared to be greater than 20 years old. In addition, due to the considerable degree of habitat disturbance and fragmentation, this portion of the shell may have been washed on site by a historical flash-flood event. Other desert tortoise sign was not observed.

Of all wildlife species identified by the database queries as potentially occurring in the general vicinity of the proposed project site, one mammal, the Nelson's bighorn sheep (*Ovis canadensis nelsoni*), recognized by the BLM as sensitive, has been identified as potentially occurring within the Chemehuevi Mountains south of the proposed project site. Other wildlife identified during the database queries as potentially occurring within 2 miles of the project site are directly associated with the Colorado River and include the Yuma clapper rail (*Rallus longirostris yumanensis*), bonytail (*Gila elegans*), flannelmouth sucker (*Catostomus latipinnis*), and razorback sucker (*Xyrauchen texanus*) (Figure 3). The project site for the treatment facility does not contain suitable habitat for the Yuma clapper rail and three fish species In addition, although not identified in any of the databases or documented during the survey of the project area, the southwestern willow flycatcher has been historically observed breeding near the Colorado River. According to the Southwestern Willow Flycatcher Recovery Plan, the largest breeding population (21 territories) currently known along the Colorado River is found at Topock Marsh (USFWS 2002) located approximately 1.3 miles northeast of the MW-20 bench project site.

The proposed locations for the two additional extraction wells (PE-1 and PE-2) along the Colorado River floodplain is dominated by salt cedar. With the exception of southwestern willow flycatcher, this area does not support suitable habitat for any of the other listed species within the proposed footprints for the extraction wells. Observation records and reports of southwestern willow flycatcher in the immediate project area were not found. The salt cedar at the confluence of Bat Cave Wash and the Colorado River is not expected to

be impacted by the proposed well installation activities. Additionally, the well installation activities will take place outside of the breeding season for the flycatcher.

The Colorado River is subject to boating and other personal watercraft recreation in the area. This portion of the river experiences daily noise impacts from not only watercraft, but vehicle and railroad traffic crossing over the river at this location. Therefore, no adverse impacts to these species are anticipated and, therefore, are not discussed further. The following list of special-status species relative to the proposed treatment facility site are discussed in the subsections below.

5.4.1 Reptiles

5.4.1.1 Desert Tortoise (*Gopherus agassizii*)

The desert tortoise is recognized as a federal- and state-listed threatened species under FESA and CESA, respectively. The desert tortoise was listed under FESA in 1990 and under CESA in 1989. The desert tortoise is widely distributed throughout the Mojave, Sonoran, and Colorado Deserts. Desert tortoises are found in the California desert from below sea level to elevations of at least 7,300 feet. The most favorable habitats occur at elevations of approximately 1,000 to 3,000 feet.

The desert tortoise is a herbivore, feeding mainly on forbs, grasses and cacti. Highest tortoise densities are achieved in desert washes and creosote bush communities with extensive annual wildflower blooms. The Mojave population of desert tortoise generally avoids very steep, rocky areas and prefers open valleys containing creosote bush scrub. The species also requires friable soils for burrow and nest construction. Typically, the tortoise will excavate a burrow under bushes or along dry washes and will occasionally dig into the open soil. Burrows are extremely essential to their survival, especially in extremely hot weather when direct sun can kill a tortoise in an hour or less (Marlow 1979).

Critical habitat for the desert tortoise has not been designated at the proposed project site; however, the Chemehuevi Valley Critical Habitat Unit occurs approximately 9 miles to the west of the proposed project site. Primary constituent elements required for the designation of critical habitat include, but are not limited to:

- Space for individual and population growth and for normal behavior.
- Food, water, or other nutritional or physiological requirements.
- Cover or shelter.
- Sites for breeding, reproduction, and rearing of offspring.
- Generally, habitats that are protected from disturbance or are representative of the historic geographical and ecological distributions of a species.

Microhabitat requirements for this species are very limited at the proposed project site and in the general vicinity. The project site is previously disturbed and fragmented, providing poor quality habitat for this species. Poor quality habitat at the project site is defined as follows:

- Habitat fragmentation from man-made and natural barriers such as I-40 Highway, Park Moabi Road, railroad tracks, Colorado River, and Sacramento Mountains.
- Previous disturbance from dirt roads, natural gas pipeline corridor, and illegal dumping.
- Lack of friable soils. Soils are predominately rocky and not conducive to burrow construction.
- Low abundance of vegetation providing forage (annual grasses and forbs) and cover (perennial shrubs).

A weathered desert tortoise plastron, thought to be deposited in the area by a flash-flood event, was observed during the field survey. Other than the disarticulated aged carcass, no other desert tortoise sign was observed during the survey. Therefore, there is a very low probability for this species to occur within or adjacent to the project site. Based on the aforementioned, a USFWS protocol-level survey was considered unnecessary.

5.4.2 Birds

5.4.2.1 Burrowing Owl (*Athene cunicularia*)

The burrowing owl is a federal Species of Concern and a California Species of Special Concern. This species is widespread throughout the western United States but has declined in many areas due to habitat loss and modification, poisoning of its prey, and introduced nest predators. This species is diurnal and usually non-migratory in this portion of its range. It excavates nests in friable soils of abandoned burrows from ground squirrels, kit fox, desert tortoise, and other wildlife. It is generally found in low densities in desert habitats but can occur in much higher densities near agricultural lands, where rodent and insect prey tend to be more abundant. The project site does not support suitable habitat for the burrowing owl. Soils are not friable for burrow construction. No database records occur for this species at the project site, and neither individuals nor burrows were observed during the field reconnaissance survey. It is anticipated that there is a low probability for this species to occur within the project site. Therefore, a CDFG protocol-level survey was considered unnecessary.

5.4.2.2 Prairie Falcon (*Falco mexicanus*)

The prairie falcon is recognized as a California Species of Special Concern by CDFG. This species forages in open country, including deserts, prairies, agricultural lands, and open playas. Nest sites are generally located in arid regions, usually in a scrape on a sheltered ledge, and in open terrain with canyons, cliffs, escarpments, and rocky outcrops. Preferred nest sites are on higher cliffs and escarpments. No database records occur for this species in the project site, and prairie falcons were not observed during the course of field surveys. No nesting habitat occurs within the project site; however, marginal nesting habitat may occur within the Sacramento Mountains south of the proposed project site. Therefore, there is a moderate potential for this species to forage at or near the proposed project site.

5.4.2.3 Loggerhead Shrike (*Lanius ludovicianus*)

The loggerhead shrike is recognized as a Federal Species of Concern and a California Species of Special Concern by CDFG. Loggerhead shrikes are common residents and winter visitors of California foothills and lowlands. This species can be found within open habitat types including sage scrub, non-native grasslands, chaparral, riparian, croplands, and areas characterized by open scattered trees and shrubs. Fences, posts, or other potential perches are typically present. The loggerhead shrike forages for large insects over open ground within areas of short vegetation, usually impaling prey on thorns, wire barbs, or sharp twigs to cache for later feeding. No database records occur for this species in the project site. Loggerhead shrikes were not detected during the field survey. However, there is a moderate potential for this species to forage at or near the proposed project site.

5.4.2.4 Ferruginous Hawk (*Buteo regalis*)

The ferruginous hawk is recognized as a federal Species of Concern and a California Species of Special Concern by CDFG. In southern California, this species is a winter visitor or migrant, usually arriving in early fall and departing in early spring (Grinnell and Miller 1944). The hawk is fairly common in grasslands and agricultural regions in southern California from mid-September to early April (Garrett and Dunn 1981). Ferruginous hawks are largely perch hunters, although they will spend more time foraging on the ground than any other large raptor, course low over the ground to flush prey, and hover hunt from heights up to 300 feet (Wakely 1974). This species nests in sagebrush/shrub-step, grassland, mixed shrub/grasslands; in lone trees or sparse groves primarily in the pinyon-juniper ecotone; and in the transition zone between woodland and shrub or grassland habitats (Blair and Schitoskey 1982). No database records occur for this species at the project site, and no ferruginous hawks were observed during the course of field surveys. No nesting habitat occurs within the proposed project site; however, this species has a moderate potential of foraging at the proposed project site and adjacent lands.

5.4.2.5 LeConte's Thrasher (*Toxostoma lecontei*)

Le Conte's thrasher is recognized as a California Species of Special Concern by CDFG. This species is a desert resident that inhabits areas with sparse desert scrub, alkali desert scrub, and desert succulent scrub habitats with open desert washes (CDFG 2003). It can be found year-round throughout much of the Mojave and Colorado Deserts of California. Its population densities are among the lowest of passerine (perching) birds, estimated at less than five birds per square mile in optimal habitat. This low population density decreases the probability of their detection during field surveys. Le Conte's thrasher feeds on seeds, insects, small lizards, and other small vertebrates. This species requires areas with an accumulated leaf litter under most plants as cover for its mostly-arthropod prey (BLM undated). No database records occur for this species in the project site. This species was not observed during the course of field surveys.

The creosote bush scrub habitat within and adjacent to the proposed project site on the MWD land may provide marginally suitable habitat for the Le Conte's thrasher due to monotypic creosote bush scrub, which provides limited cover or nesting sites. Therefore, it is anticipated that this species has a low probability of occurring within the proposed project site.

5.4.3 Mammals

5.4.3.1 Nelson's Bighorn Sheep (*Ovis canadensis nelsoni*)

The Nelson's bighorn sheep is not listed under the FESA or CESA; however, it is recognized as a sensitive species by the BLM. This species is widely distributed from the White Mountains in Mono County to the Chocolate Mountains in Imperial County. The Nelson's bighorn sheep use open, rocky, steep areas rarely disturbed by humans with available water and herbaceous forage. This species graze and browse on a wide variety of plant species. Green, succulent grasses and forbs are preferred; browse is important all year, especially for populations in arid habitats. Some populations use mineral licks, and some may be limited by phosphorus. Nelson's bighorn sheep feed in open habitats, such as rocky barrens, meadows, and low, sparse brushlands (Dunaway 1972; Monson and Sumner 1980; Ginnett and Douglas 1982; Lawson and Johnson 1982).

Database records occur for this species south of the PG&E facility. It is believed that bighorn sheep cross over to the Chemehuevi Mountains from the Sacramento Mountains to the west. The population is estimated to be approximately 20 animals, due to disease, as well as weakening by competition with feral burros (CNDDB 2003). Habitat to support this species nor individuals were observed during the field survey. Therefore, it is anticipated that Nelson's bighorn sheep do not occur within the proposed project site.

6.0 Environmental Consequences

Impacts to biological resources would be considered to be significant if proposed project actions would:

- Substantially affect a rare or endangered species of animal or plant or the habitat of the species, leading to the decline in population below self-sustaining levels;
- Interfere substantially with the movement of any resident or migratory fish or wildlife species;
- Substantially diminish habitat for fish, wildlife, or plants.

The potential impacts to biological resources from project implementation could be distinguished into temporary, permanent, and cumulative impacts.

Temporary impacts are short-term and construction-related impacts, anticipated to occur primarily during construction of the treatment facility, pipelines, and injection well fields on the project site. These impacts may be due to dust, noise, foot traffic, and vehicular activity, resulting in temporary loss of foraging habitat and displacing of species.

Permanent impacts are long-term impacts, anticipated to occur during the construction phase. These impacts may occur due to grading or filling activities, foot traffic, and/or vehicular activities.

Operational impacts are those anticipated to occur during the operational or maintenance phase of the facilities and may include temporary and permanent impacts.

Cumulative impacts are those that may result from implementation of other projects in the project area, simultaneously with the proposed project. Cumulative impacts are not anticipated with the implementation of the proposed project, as no other project activities are planned in the immediate project area.

7.0 Impact Assessment

7.1 Vegetation and Habitat

This section addresses potential temporary and permanent impacts to vegetation and habitat including special-status plant species as a result of implementation of the proposed project.

7.1.1 Temporary Impacts

Due to the lack of favorable conditions at the proposed project site for special-status plant species, temporary impacts to these species are not expected. BLM sensitive plant species generally associated with the ephemeral washes including palo verde, ocotillo, mesquite, cat-claw, smoke tree, and cacti species are located at the project site. These plant species were not detected directly within the project footprint; therefore, temporary impacts including crushing are not anticipated. Temporary impacts, leading to crushed creosote bushes and other native vegetation are anticipated during construction and operational activities. However, it is anticipated that only a few native shrubs will be crushed by project activities as the area is sparsely vegetated.

Facility siting would be primarily limited to previously disturbed and barren areas within creosote bush scrub habitat. Additionally, existing roads will be improved and used for access and pipeline conveyance, thus minimizing additional impacts. During construction, most of the vehicular traffic would be restricted to existing dirt and paved roads. During operations, all vehicular traffic would be limited to existing roads. This would further reduce the likelihood of any temporary impacts to vegetation at the proposed project site.

The proposed project will temporarily impact less than 6 acres of creosote bush scrub habitat from construction-related activities such as use of a construction staging area, placement of the 4-inch pipeline on the existing road surface from the treatment facility to injection well fields, construction-related vehicle traffic, and well installations. It is anticipated that the majority of the temporary disturbance would result from well installation activities within the designated well fields. The footprint of the three well fields comprise of 4.8 acres. Although this figure was used for ease of temporary disturbance calculations, the entire well field areas are not expected to be impacted by well installations due to sensitive cultural resources in the immediate area. Therefore, the actual area of temporary disturbance is expected to be considerably less than 6 acres. Creosote bush scrub habitat is abundant locally and regionally. Therefore, potential temporary impacts are not considered adverse.

7.1.2 Permanent Impacts

Due to the lack of favorable conditions at the proposed project site for special-status plant species, permanent impacts to these species are not expected. BLM sensitive plant species generally associated with the ephemeral washes including palo verde, ocotillo, mesquite,

cat-claw, smoke tree, and cacti species are located at the project site. These plant species were not detected directly within the project footprint; therefore, permanent impacts including removal are not anticipated. Permanent impacts, leading to the loss of creosote bushes and other native vegetation are anticipated during construction and operational activities. However, it is anticipated that only a few native shrubs will be removed by project activities as the area is sparsely vegetated.

Facility siting would be primarily limited to previously disturbed and barren areas. Siting of all facilities as proposed, would primarily occur in areas of previously disturbed creosote bush scrub habitat. Additionally, existing roads will be improved and used for access and pipeline conveyance, thus minimizing additional impacts. During construction, most of the vehicular traffic would be restricted to existing dirt and paved roads. During operations, all vehicular traffic would be limited to existing roads. This would further reduce the likelihood of any permanent impacts to vegetation at the proposed project site.

It is anticipated that the proposed project will permanently impact less than 3 acres of creosote bush scrub habitat from construction of the treatment facility, injection wells, conveyance pipeline and associated roads. Creosote bush scrub habitat is abundant locally and regionally. Therefore, potential permanent impacts are not considered adverse.

7.2 Wildlife

This section addresses potential temporary and permanent impacts to special-status wildlife species as a result of implementation of the proposed project.

7.2.1 Reptiles

7.2.1.1 Desert Tortoise

Temporary Impacts. As described earlier, the proposed project site consists of poor habitat for this listed as threatened species. Additionally, recent sign of desert tortoise use in the area were not detected during the survey of the proposed project site. Facility siting would be primarily limited to previously disturbed and barren areas within creosote bush scrub habitat. Additionally, existing roads will be improved and used for access and pipeline conveyance, thus minimizing additional impacts. During construction, most of the vehicular traffic would be restricted to existing dirt and paved roads. During operations, all vehicular traffic would be limited to existing roads. This would further reduce the likelihood of any temporary impacts to this species at the proposed project site. Therefore, potential temporary impacts are not considered adverse. In order to avoid, reduce, and mitigate potential effects to this species as a result of the proposed project, minimization measures are proposed in Section 9.0.

Permanent Impacts. Potential permanent impacts anticipated during the operational lifetime of the facility from vehicles or other maintenance activities is minimal, as this species is not likely to occur within the proposed project site. Facility siting would be primarily limited to previously disturbed and barren areas within creosote bush scrub habitat. Additionally, existing roads will be improved and used for access and pipeline conveyance, thus minimizing additional impacts. During construction, most of the vehicular traffic would be restricted to existing dirt and paved roads. During operations, all vehicular traffic would be

limited to existing roads. This would further reduce the likelihood of any permanent impacts to this species at the proposed project site. Therefore, potential permanent impacts are not considered adverse. In order to avoid, reduce, and mitigate potential effects to this species as a result of the proposed project, minimization measures are proposed in Section 9.0.

7.2.2 Birds

7.2.2.1 Burrowing Owl

Temporary Impacts. The proposed project site provides limited foraging habitat and does not support any suitable habitat in the form of grasslands with friable soils, which are preferred nesting and breeding habitat for this special-status species. There are no known records of occurrence of this species on the project site, and the species was not observed during field surveys. Therefore, the implementation of the proposed project is not anticipated to result in the loss of burrowing owl habitat. Construction noise impacts are considered temporary. These potential impacts are considered minor when compared to long-term daily noise impacts from I-40 vehicle and railroad traffic. Facility siting would be primarily limited to previously disturbed and barren areas within creosote bush scrub habitat. Additionally, existing roads will be improved and used for access and pipeline conveyance, thus minimizing additional impacts. During construction, most of the vehicular traffic would be restricted to existing dirt and paved roads. During operations, all vehicular traffic would be limited to existing roads. This would further reduce the likelihood of any temporary impacts to this species at the proposed project site. Therefore, potential temporary impacts are not considered adverse. In order to avoid, reduce, and mitigate potential effects to this species as a result of the proposed project, minimization measures are proposed in Section 9.0.

Permanent Impacts. This species is not likely to breed or nest at the project site due to the lack of suitable habitat. Potential permanent impacts anticipated during the operational lifetime of the facility from vehicles or other maintenance activities is minimal, as this species is not likely to occur within the proposed project site. Facility siting would be primarily limited to previously disturbed and barren areas within creosote bush scrub habitat. Additionally, existing roads will be improved and used for access and pipeline conveyance, thus minimizing additional impacts. During construction, most of the vehicular traffic would be restricted to existing dirt and paved roads. During operations, all vehicular traffic would be limited to existing roads. This would further reduce the likelihood of any permanent impacts to this species at the proposed project site. Therefore, potential permanent impacts are not considered adverse. In order to avoid, reduce, and mitigate potential effects to this species as a result of the proposed project, minimization measures are proposed in Section 9.0.

7.2.2.2 Ferruginous Hawk and Prairie Falcon

Temporary Impacts. The project site affords only limited foraging and no nesting habitat for these raptors. These species may therefore occur at the proposed project site only as a transient, occasionally foraging in surrounding open country and agricultural areas. Construction noise impacts are considered temporary. These potential impacts are considered minor when compared to long-term daily noise impacts from I-40 vehicle and

railroad traffic. Due to the proposed construction activities, the foraging habitat may be temporarily unavoidable to these species. However, such habitats are abundant regionally, and these species are likely to use such foraging habitats during this period. These species are likely to resume foraging at the proposed project site once the construction activities are completed. Facility siting would be primarily limited to previously disturbed and barren areas within creosote bush scrub habitat. Additionally, existing roads will be improved and used for access and pipeline conveyance, thus minimizing additional impacts. During construction, most of the vehicular traffic would be restricted to existing dirt and paved roads. During operations, all vehicular traffic would be limited to existing roads. This would further reduce the likelihood of any temporary impacts to these species at the proposed project site. Therefore, potential temporary impacts are not considered adverse. In order to avoid, reduce, and mitigate potential effects to these species as a result of the proposed project, minimization measures are proposed in Section 9.0.

Permanent Impacts. Permanent impacts anticipated during the operational phase are minimal due to the fact that the maintenance activities will be conducted periodically. In addition, due to the lack of nesting habitat, these species are likely to occur at the proposed project site only as transients. Facility siting would be primarily limited to previously disturbed and barren areas within creosote bush scrub habitat. Additionally, existing roads will be improved and used for access and pipeline conveyance, thus minimizing additional impacts. During construction, most of the vehicular traffic would be restricted to existing dirt and paved roads. During operations, all vehicular traffic would be limited to existing roads. This further reduces the likelihood of any long-term, permanent impacts to these species. Therefore, potential permanent impacts are not considered adverse. In order to avoid, reduce, and mitigate potential effects to these species as a result of the proposed project, minimization measures are proposed in Section 9.0.

7.2.2.3 Loggerhead Shrike and Le Conte's Thrasher

Temporary Impacts. As indicated earlier, the proposed project site affords only limited foraging and unsuitable nesting habitat for these species. These species may therefore occur at the proposed project site only as a transient, occasionally foraging in surrounding open country. If these species were to occur within the proposed project sites during construction, it is anticipated that they would use the surrounding lands. These species are likely to resume foraging at the proposed project site once the construction activities are completed. Facility siting would be primarily limited to previously disturbed and barren areas within creosote bush scrub habitat. Additionally, existing roads will be improved and used for access and pipeline conveyance, thus minimizing additional impacts. During construction, most of the vehicular traffic would be restricted to existing dirt and paved roads. During operations, all vehicular traffic would be limited to existing roads. This would further reduce the likelihood of any temporary impacts to these species at the proposed project site. Therefore, potential temporary impacts are not considered adverse. In order to avoid, reduce, and mitigate potential effects to these species as a result of the proposed project, minimization measures are proposed in Section 9.0.

Permanent Impacts. Permanent impacts anticipated during the operational phase are minimal due to the fact that the maintenance activities will be conducted periodically. In addition, due to the lack of suitable nesting habitat, these species are likely to occur at the

proposed project site only as transients. Facility siting would be primarily limited to previously disturbed and barren areas within creosote bush scrub habitat. Additionally, existing roads will be improved and used for access and pipeline conveyance, thus minimizing additional impacts. During construction, most of the vehicular traffic would be restricted to existing dirt and paved roads. During operations, all vehicular traffic would be limited to existing roads. This further reduces the likelihood of any long-term, permanent impacts to these species. Therefore, potential permanent impacts are not considered adverse. In order to avoid, reduce, and mitigate potential effects to these species as a result of the proposed project, minimization measures are proposed in Section 9.0.

7.2.3 Mammals

7.2.3.1 Nelson's Bighorn Sheep

Temporary Impacts. As indicated earlier, the project site affords limited foraging habitat for this species. Nelson's bighorn sheep may therefore occur at the project site only as a transient, occasionally foraging in surrounding open country and mountain ranges. It is anticipated that the proposed construction activities will not impact surrounding foraging habitat. Construction noise impacts are considered temporary; these potential impacts are considered minor when compared to long-term daily noise impacts from I-40 vehicle and railroad traffic. Facility siting would be primarily limited to previously disturbed and barren areas within creosote bush scrub habitat. Additionally, existing roads will be improved and used for access and pipeline conveyance, thus minimizing additional impacts. During construction, most of the vehicular traffic would be restricted to existing dirt and paved roads. During operations, all vehicular traffic would be limited to existing roads. This further reduces the likelihood of any temporary impacts to this species at the proposed project site. Therefore, potential temporary impacts are not considered adverse. In order to avoid, reduce, and mitigate potential effects to this species as a result of the proposed project, minimization measures are proposed in Section 9.0.

Permanent Impacts. Permanent impacts anticipated during the operational phase are minimal due to the fact that the maintenance activities will be conducted periodically. Additionally, due to the lack of suitable habitat, this species is likely to occur at the project site only as a transient. Facility siting would be primarily limited to previously disturbed and barren areas within creosote bush scrub habitat. Additionally, existing roads will be improved and used for access and pipeline conveyance, thus minimizing additional impacts. During construction, most of the vehicular traffic would be restricted to existing dirt and paved roads. During operations, all vehicular traffic would be limited to existing roads. This further reduces the likelihood of any long-term, permanent impacts to this species. Therefore, potential permanent impacts are not considered adverse. In order to avoid, reduce, and mitigate potential effects to this species as a result of the proposed project, minimization measures are proposed in Section 9.0.

8.0 Impact Overview

A total of less than 9 acres (6 acres temporary and 3 acres permanent) of habitat disturbance are anticipated from the implementation of the proposed project. Temporary disturbances include impacts from the construction staging area, surface road placement of conveyance pipelines, well installations, and construction-related vehicle traffic. Less than 3 acres of creosote bush scrub habitat may be permanently impacted by the proposed project from road construction/improvement and well/facility sitting.

Facility siting would be primarily limited to previously disturbed and barren areas within creosote bush scrub habitat. Additionally, existing roads will be improved and used for access and pipeline conveyance. During construction, most of the vehicular traffic would be restricted to existing dirt and paved roads. During operations, all vehicular traffic would be limited to existing roads. Thus, these actions will further minimize potential impacts.

The project site consists of unsuitable habitat for special-status plant species; therefore, potential adverse impacts are not expected. BLM sensitive plant species occur on the project site. To the extent practicable, these species will be avoided. Adverse impacts to special-status wildlife species that may potentially occur in the vicinity of the project area are not anticipated. The aforementioned special-status wildlife species are unlikely to occur on the project site; however, avian species may occasionally forage or occur on the project site as transients. In order to avoid, reduce, and mitigate potential effects to these species as a result of the proposed project, minimization measures are proposed in Section 9.0.

9.0 Avoidance and Minimization Measures

Although the proposed project is unlikely to result in any adverse temporary or permanent impacts to special-status species, the following general impact avoidance and minimization measures are proposed. The objective of the measures is to avoid, reduce or mitigate potential effects to habitat and special-status species that may occur during the proposed project construction and operational activities:

1. All project activities will be conducted in a manner that avoids take of a listed species. Take is defined to include any harm or harassment, including significant habitat modification or degradation that could potentially kill or injure listed wildlife by significantly impairing essential behavioral patterns, including breeding, feeding, or sheltering. Should a listed species enter the project site or become harmed or killed by project activities, the project will be shut down and the USFWS, Bureau and CDFG will be consulted. Impacts to habitat will also be minimized to the maximum possible extent.
2. Listed species including the desert tortoise will not be handled or harassed. Encounters with a listed species will be reported to the CH2MHILL project and BLM Lake Havasu (Bureau) biologists. These biologists will maintain records of all listed species encountered during project activities. This information will include for each individual: the locations (narrative, vegetation type, and maps) and dates of observations; general conditions and health; any apparent injuries and state of healing; and diagnostic markings.
3. To the maximum extent possible, facilities (treatment facility, pipelines, injection wells, and access routes) will be sited within an existing right–of-way (ROW) and previously-disturbed or barren areas to limit new surface disturbance.
4. All PG&E employees and its contractors involved with the proposed project will be required to attend PG&E's threatened and endangered species education program prior to initiation of activities. New employees will receive formal, approved training prior to working on-site.
5. Existing routes of travel to and from the proposed project site will be used. Cross-country use of vehicles and equipment will be prohibited.
6. Trash and food items will be contained in closed containers and removed daily to reduce attractiveness to opportunistic predators such as common ravens (*Corvus corax*), coyotes (*Canis latrans*), and feral dogs.
7. To minimize effects, lights will be angled toward the ground, reduced in intensity to levels compatible with safety concerns, and limited in duration of usage.
8. Employees will not bring pets to the project site.
9. Firearms will be prohibited from the proposed project site.

10. Employees will be required to check under their equipment or vehicle before it is moved. If a desert tortoise is encountered, the vehicle is not to be moved until the animal has voluntarily moved to a safe distance away from the parked vehicle.

11. Upon project completion, all unused material and equipment will be removed from the site. This condition does not apply to fenced sites.

12. Upon locating an individual of a dead or injured listed species, PG&E will make initial notification to the Bureau and US Fish and Wildlife Service (Service) within three working days of its finding. The notification must be made in writing to the Service's Division of Law Enforcement in Torrance (370 Amapola Avenue, Suite 114, Torrance, California 90501; (310) 328-1516) and by telephone and writing to the Ventura Fish and Wildlife Office (2493 Portola Road, Suite B, Ventura, California 93003; (805) 644-1766). The report will include the date and time of the finding or incident (if known), location of the carcass, a photograph, cause of death (if known), and other pertinent information. Animals injured through PG&E activities will be transported to a qualified veterinarian for treatment at the expense of PG&E. If an injured animal recovers, the CDFG and the Bureau will be contacted for final disposition of the animal.

13. The biologist will be responsible for assisting crews in compliance with the minimization measures, performing surveys in front of the crew as needed to locate and avoid listed species, and monitoring compliance. Preconstruction surveys by a biologist will be implemented for special-status wildlife species in impact areas immediately prior to initiation of ground-disturbing activities. The inspection will provide 100 percent coverage of the area within the project limits. All desert tortoise burrows and pallets outside of, but near, the project footprint will be flagged at that time so that they may be avoided during work activities. At the conclusion of work activities, all flagging will be removed.

14. Preconstruction surveys for avian nesting pairs, nests, and eggs will occur in areas proposed for any vegetation removal and active nesting areas flagged. If nesting birds are detected, vegetation removal will be avoided during the nesting season (generally February to August for most birds). All construction activity within 200 feet of active nesting areas will be prohibited until the nesting pair/young have vacated the nests.

15. Palo verde, ocotillo, mesquite, cat-claw, smoke tree, and cacti species are considered sensitive by the BLM. To the extent practicable, these species will be avoided. If avoidance is not possible, these species will be transplanted when practical. Should any of the aforementioned plants be destroyed, they will be replaced.

16. PG&E will designate a field contact representative (FCR) who will be responsible for overseeing compliance with the minimization measures. The FCR must be onsite during all construction activities. The FCR will have authority to halt all activities that are in violation of the minimization measures and/or pose a danger to listed species. The FCR will have a copy of all minimization measures when work is being conducted on the site. The FCR may be a project manager, PG&E representative, or a biologist.

17. The area of disturbance will be confined to the smallest practical area, considering topography, placement of facilities, location of burrows, nesting sites or dens, public

health and safety, and other limiting factors. As needed, work area boundaries will be delineated with flagging or other marking to minimize surface disturbance associated with vehicle straying.

18. All activities will be restricted to a pre-determined corridor. If unforeseen circumstances require project expansion, the potential expanded work areas will be surveyed for listed species prior to use of the area. All appropriate minimization measures will be implemented within the expanded work areas based on the judgment of the agencies and the project biologist. Work outside of the original ROW will proceed only after receiving written approval from the Bureau, Service and CDFG describing the exact location of the expansion.

19. PG&E has the option of erecting desert tortoise fencing in lieu of inspection of open trenches. If the trench is short, personnel may monitor the trench. All open holes and trenches will be inspected for trapped desert tortoises at the beginning, middle, and end of the work day, at a minimum. During excavation of trenches or holes, earthen ramps will be provided to facilitate the escape of any wildlife species that may inadvertently become entrapped. If desert tortoises are trapped, the project biologist will be notified immediately. The desert tortoise will be allowed to escape before work continues in that location. A final inspection of the open trench segment will also be made immediately before back filling. All open pipe segments will be covered when work activity is not occurring at the site. Trenches must meet the safety requirements of the Occupational Safety and Health Administration before personnel enter open trenches to remove wildlife.

20. All construction vehicles and equipment will be periodically checked to ensure proper working condition and to ensure that there is no potential for fugitive emissions of oil, hydraulic fluid or other hazardous products. The Bureau will be informed of any hazardous spills.

21. Workers will exercise caution when traveling to and from the project area. To minimize the likelihood for vehicle strikes of listed species, speed limits when commuting to project areas on ROW roads will not exceed 20 miles per hour.

22. Intentional killing or collection of either plant or wildlife at construction sites and surrounding areas will be prohibited. The Bureau will be notified of any such occurrences.

23. The Bureau will endeavor to place the remains of intact listed species with educational or research institutions holding the appropriate state and federal permits per their instructions. If such institutions are not available or the animal's remains are in poor condition, the information noted above will be obtained and the carcass left in place. If the animal is a desert tortoise, the Bureau should consider marking the carcass in a manner that would not be toxic to other wildlife to ensure that it would not be re-recorded in the future. Arrangements regarding proper disposition of potential museum specimens will be made with the institution by the Bureau through a biologist prior to implementation of the action.

24. For emergency situations involving a pipeline leak or spill or any other immediate safety hazard, PG&E will notify the Bureau within 48 hours. As a part of this emergency response, the Bureau may require specific measures to protect listed species. During cleanup and repair, the agencies may also require measures to recover damaged habitats.

25. Once the treatment facility is no longer needed, PG&E will be required to restore disturbed areas in a manner that will assist in the re-establishment of biological values within the disturbed ROW. Methods of such restoration will include the reduction of erosion, re-spreading of the top two inches of soil, planting with appropriate native shrubs, and scattering of bladed vegetation and rocks across the ROW, depending upon the appropriateness or effectiveness in a given area.

26. Within 60 days of completion of construction activities, the FCR and biologist will prepare a brief report for the Bureau documenting the effectiveness and practicality of the minimization measures and making recommendations for modifying the measures to enhance species protection. The report will also provide information on survey and monitoring activities, observed listed species, and the actual acreage disturbed by the project.

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Appendix A

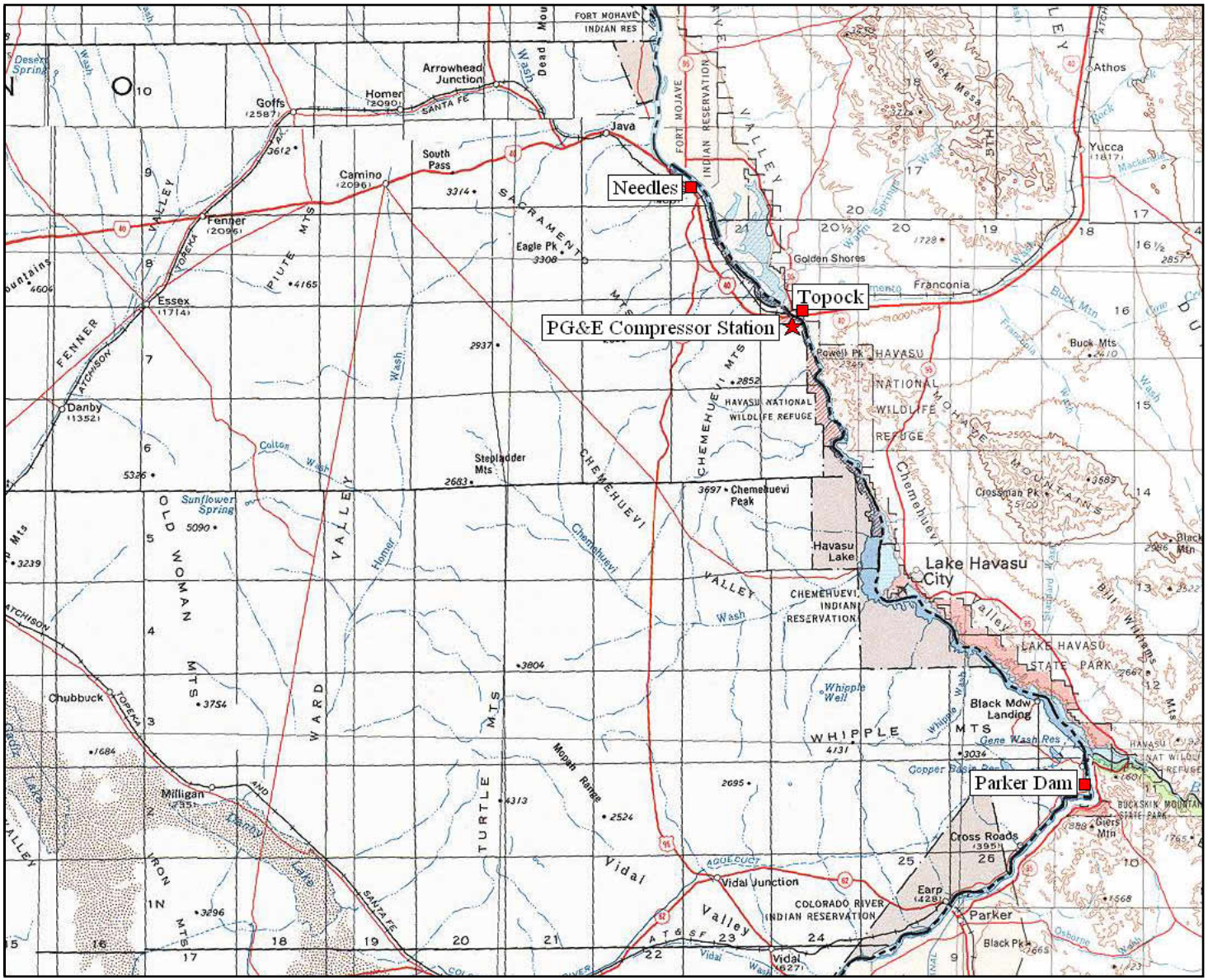


Figure 1
Site Location Map

PG&E Topock Compressor Station

CH2MHILL

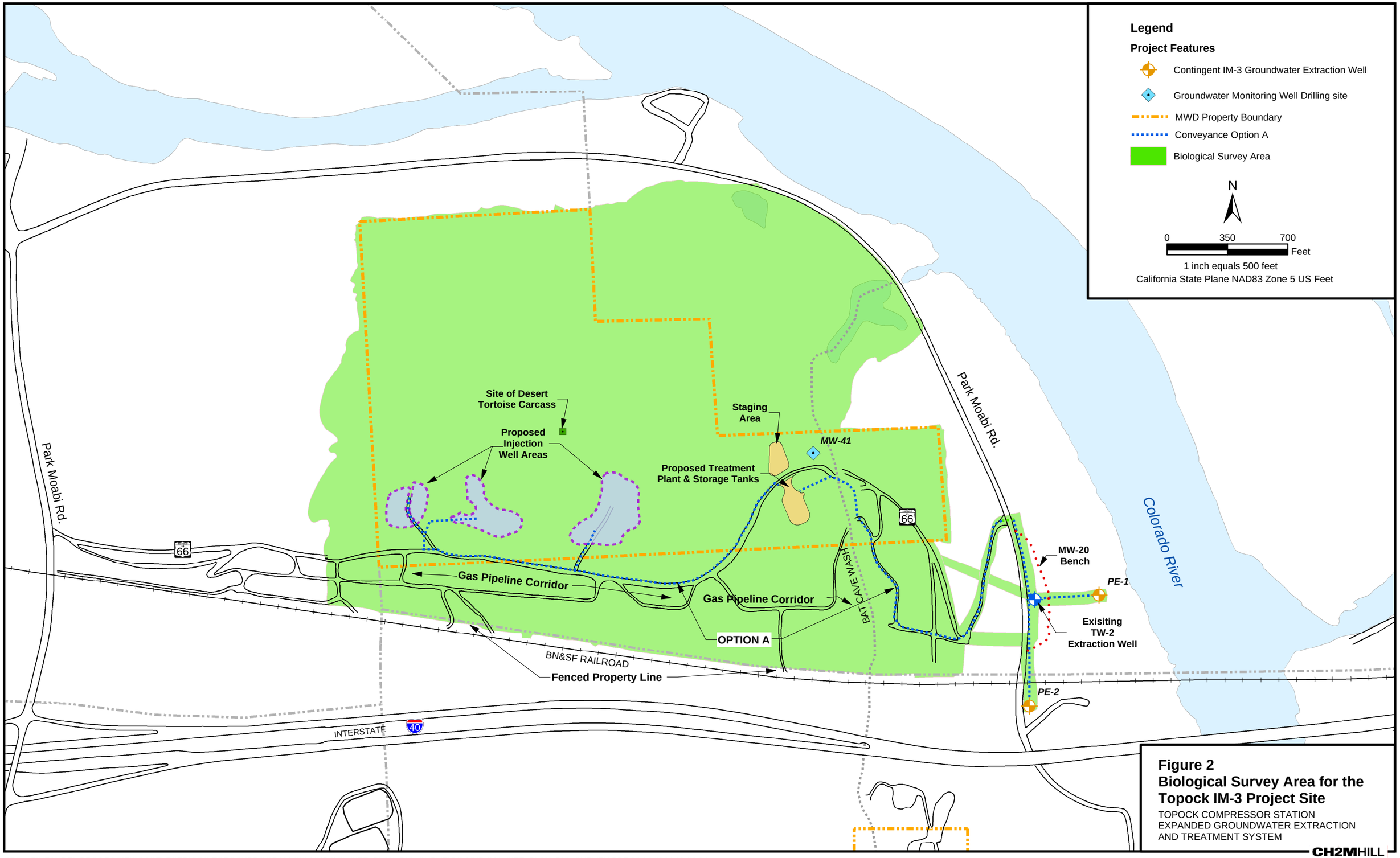
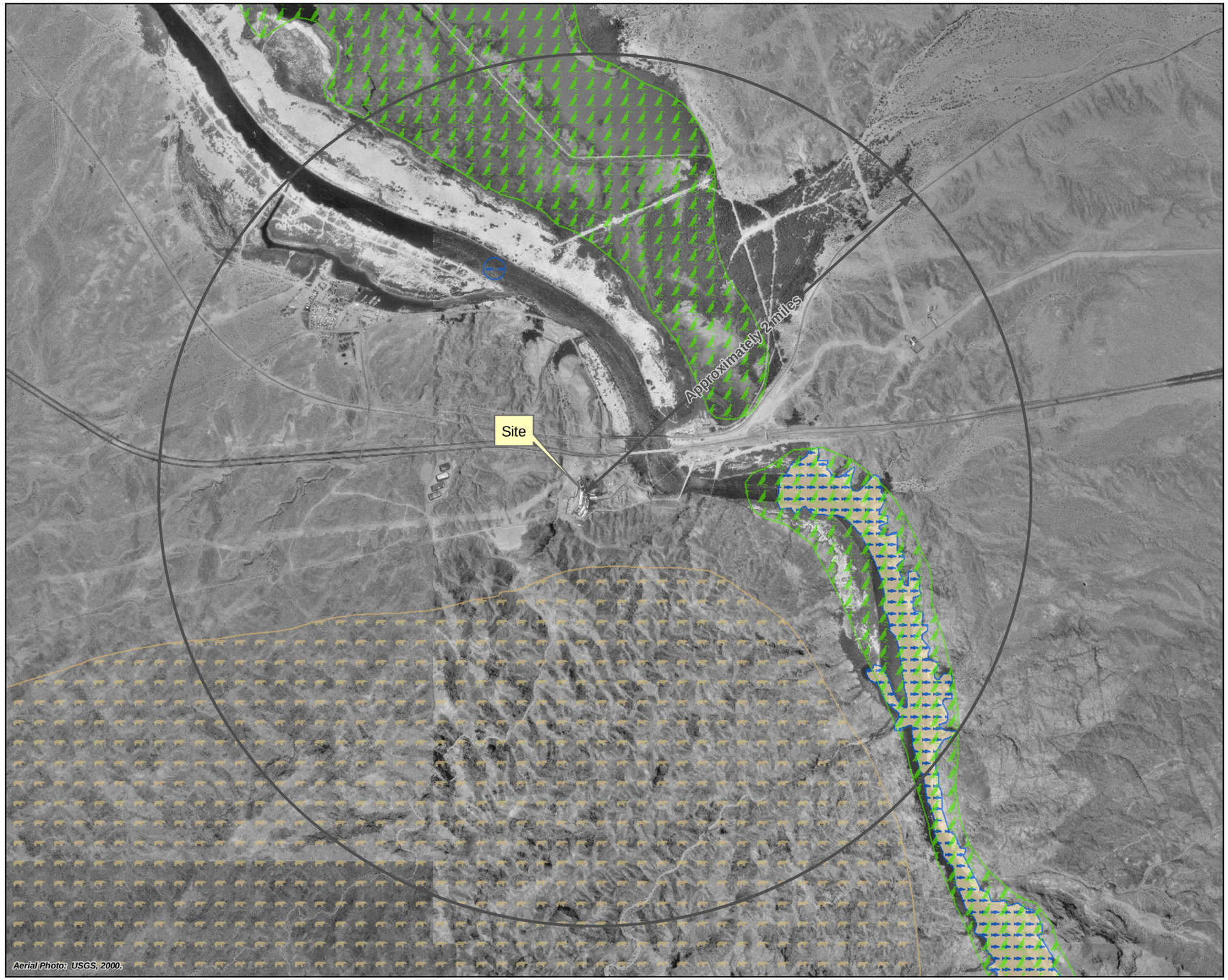


Figure 2
Biological Survey Area for the Topock IM-3 Project Site

TOPOCK COMPRESSOR STATION
EXPANDED GROUNDWATER EXTRACTION
AND TREATMENT SYSTEM

CH2MHILL



N

2,500 1,250 0 2,500
Feet

Legend

- Nelson's Bighorn Sheep
- Yuma Clapper Rail
- Bonytail
- Flannelmouth and Razorback Suckers

Note: CNDDB Data from the Topock and Whale Mountain USGS Quads was used.

Source: CNDDB, 2003.

Figure 3

Special Status Species Potentially Occurring in the Project Vicinity

CH2MHILL

November 25, 2003

GIS1 on 'Galt\Topock\Plots\Figure03PotentialOcc_111903.mxd User: TFaludy

Appendix B

TABLE 1
Potentially-occurring Special-status Species Within the Vicinity of the Project Site

Species	Status [a] (Federal/State)	Habitat Present within the Project Impact Area	Potential for Occurrence in Area of Potential Effects	Habitat Requirements
Mammals				
Nelson's Bighorn Sheep *Ovis canadensis nelsoni*	**-- / --**	No	Low	Open, rocky, steep areas with available water and herbaceous forage.
Birds				
Burrowing Owl *Athene cunicularia*	**FSC / CSC**	No	Low	Open grasslands and agricultural fields with burrowing mammal populations.
Ferruginous Hawk *Buteo regalis*	**--- / CSC**	No	Low	Winter visitor and migrant to open grasslands and agricultural areas in the desert.
Le Conte's Thrasher *Toxostoma lecontei*	**FSC / CSC**	No	Low	Desert resident; primarily of open desert wash, desert scrub, alkali desert scrub, and desert succulent scrub habitats.
Loggerhead Shrike *Lanius ludovicianus*	**FSC / CSC**	No	Low	Broken woodlands, savannah, pinyon-juniper, joshua tree, and riparian woodlands, desert oases, desert scrub & washes. Prefer open country for hunting, with perches for scanning, and fairly dense shrubs and brush for nesting.
Prairie Falcon *Falco mexicanus*	**--- / CSC**	No	Low	Inhabits dry, open terrain, either level or hilly.
Southwestern Willow Flycatcher *Empidonax traillii extimus*	**FE / ---**	No	Low	Occur in dense riparian habitats along streams, rivers, and other wetlands. Inhabiting low elevations, the Flycatcher breeds in stands of dense cottonwood, willow, and tamarisk thickets.
Yuma Clapper Rail *Rallus longirostris yumanensis*	**FE / ST**	No	Low	Nests in freshwater marshes with stands of cattails and tules dissected by narrow channels of flowing water.
Reptiles				

TABLE 1
Potentially-occurring Special-status Species Within the Vicinity of the Project Site

Species	Status [a] (Federal/State)	Habitat Present within the Project Impact Area	Potential for Occurrence in Area of Potential Effects	Habitat Requirements
Desert Tortoise *Gopherus agassizii*	**FT / ST**	Poor	Low	Common in desert scrub, desert wash, and joshua tree habitats. Requires friable soils required for burrow and nest construction. Also requires creosote bush habitat with large annual wildflower blooms for foraging.
Fish				
Bonytail *Gila elegans*	**FE / SE**	No	Unlikely	Occupy lacustrine habitat; usually found in areas over a clean, sandy bottom with reverse eddy current.
Flannelmouth Sucker *Catostomus latipinnis*	**-- / --**	No	Unlikely	Found in the Colorado River Bordering California.
Razorback Sucker *Zyrauchen texanus*	**FE / SE**	No	Unlikely	Adapted for swimming in swift currents, but also need quite waters. Spawn in areas of sand / gravel / rocks in shallow water.

Notes:
[a] Key to status designations.

Federal Designations:
(FE) federally endangered, (FT) federally threatened, (FPE) Federally Proposed Endangered, (FPT) Federally Proposed Threatened, (FSC) Species of Concern, (FC) Candidate.

State Designations:

(SE) State Endangered, (ST) State Threatened, (SR) State Rare, (CSC) Species of Concern, (CFP) Fully Protected Species.

TABLE 2
List of Observed Plants and Wildlife Incidental to the Survey

Common Name	Scientific Name
Plants	
Allscale saltbush	*Atriplex polycarpa*
Beavertail cactus	*Opuntia basilaris*
Brittlebush	*Encelia farinosa*
Burrobush	*Ambrosia dumosa*
Catclaw	*Acacia greggii*
Creosote bush	*Larrea tridentata*
Dalea	*Dalea mollisma*
Desert trumpet	*Eriogonum inflatum*
Fishhook cactus	*Mammillaria* sp.
Jumping cholla	*Opuntia bigelovii*
Mesquite	*Prosopis* sp
Ocotillo	*Fonquieria splendens*
Palo verde	*Ceridium* sp
Saltcedar	*Tamarix* sp
Smoke tree	*Dalea spinosa*
Spineflower	*Chorizanthe* sp.
Sweetbush	*Bebbia juncea*
Birds	
Ash-throated flycatcher	*Myiarchus cinerascens*
Canyon wren	*Catherpes mexicanus*
Cliff swallow	*Hirundo pyrrhonota*
Common poorwill	*Phalaenoptilus nuttallii*
Gambel's quail	*Callipepla gambelii*
Great-tailed grackle	*Quiscalus mexicanus*
Lesser nighthawk	*Chordeiles acutipennis*
Mourning dove	*Zenaida macroura*
Northern rough-winged swallow	*Stelgidopteryx serripennis*
Phainopepla	*Phainopepla nitens*
Turkey vulture	*Cathartes aura*

TABLE 2
List of Observed Plants and Wildlife Incidental to the Survey

Common Name	Scientific Name
Reptiles	
Desert tortoise (carcass)	*Gopherus agassizii*
Coachwhip	*Masticophis flagellum*
Desert iguana	*Dipsosaurus dorsalis*
Western whiptail	*Cnemidophorus tigris*
Mammals	
Black-tailed jackrabbit	*Lepus californicus*
Coyote	*Canis latrans*
Northern river otter	*Lutra canadensis*

Appendix C

Bureau of Reclamation
(managed by BLM)

Metropolitan Water District of Southern California (MWD)

U.S. Government

U.S. Government

Legend

- Photo Locations
- Property Boundaries

N

0 175 350 700 Feet

1 inch equals 350 feet

Photographic Point Location Map of MDW Parcel

PG&E TOPOCK COMPRESSOR STATION
NEEDLES, CALIFORNIA

CH2MHILL

Photo Point 1: Viewing southeast from photo point location.

Photo Point 2: Viewing northeast from photo point location.

Photo Point 2: Viewing southwest from photo point location.

Photo Point 3: Viewing northeast from photo point location.

Photo Point 3: Viewing southwest from photo point location.

Photo Point 4: Viewing northeast from photo point location.

Photo Point 4: Viewing northwest along Historic Route 66 from photo point location.

Photo Point 4: Viewing west from photo point location.

Photo Point 5: Viewing north from photo point location.

Photo Point 6: Viewing north from photo point location.

Photo Point 7: Viewing north from photo point location within Batcave Wash.

Photo Point 7: Viewing south from photo point location within Batcave Wash.

Photo Point 8: Viewing southeast from photo point location along Historic Route 66.

Photo Point 9: Viewing northwest from photo point location along Historic Route 66.

Photo Point 9: Viewing north from photo point location within Batcave Wash.

Photo Point 9: Viewing south from photo point location within Batcave Wash.

Photo Point 10: Viewing north from photo point location within Batcave Wash.

Photo Point 10: Viewing south from photo point location within Batcave Wash.

Photo Point 11: Viewing northwest from photo point location.

Photo Point 12: Viewing southeast from photo point location.

Photo Point 12: Viewing southeast from photo point location.

Photo Point 13: Viewing northwest from photo point location.

Photo Point 14: Viewing north from photo point location with Batcave Wash.

Photo Point 14: Viewing south from photo point location within Batcave Wash.

Photo Point 15: Viewing southeast from photo point location.

Photo Point 16: Viewing northwest from photo point location.

Photo Point 16: Viewing northeast from photo point location.

Photo Point 16: Viewing southeast from photo point location.

Photo Point 16: Viewing south from photo point location.

Photo Point 16: Viewing northwest from photo point location along Historic Route 66.

Photo Point 17: Viewing northeast from photo point location along Historic Route 66.

Photo Point 17: Viewing southwest from photo point location along Historic Route 66.

Photo Point 18: Viewing southeast from photo point location at pipeline maintenance road.

Photo Point 19: Viewing southwest from photo point location at pipeline maintenance road.

Photo Point 20: Viewing east from photo point location along Historic Route 66.

Photo Point 20: Viewing west from photo point location along Historic Route 66.

Photo Point 21: Viewing east from photo point location along Historic Route 66.

Photo Point 21: Viewing west from photo point location along Historic Route 66.

Photo Point 22: Viewing east from photo point location along Historic Route 66.

Photo Point 22: Viewing west from photo point location along Historic Route 66.

Photo Point 23: Viewing northeast from photo point location.

Photo Point 23: Viewing west from photo point location.

Photo Point 23: Viewing south from photo point location.

Photo Point 23: Viewing southeast from photo point location.

Photo Point 23: Viewing east from photo point location.

Photo Point 24: Viewing west from photo point location.

Photo Point 24: Viewing northwest from photo point location.

Photo Point 24: Viewing north from photo point location.

Photo Point 24: Viewing northeast from photo point location.

Photo Point 25: Viewing southwest from photo point location.

Photo Point 25: Viewing northwest from photo point location.

Photo Point 25: Viewing north from photo point location.

Photo Point 25: Viewing east from photo point location.

Photo Point 26: Viewing south from photo point location.

Photo Point 26: Viewing southeast from photo point location.

Photo Point 26: Viewing east from photo point location.

Photo Point 27: Viewing southeast from photo point location.

Photo Point 27: Viewing east from photo point location.

Photo Point 27: Viewing north from photo point location.

Photo Point 28: Viewing south from photo point location.

Photo Point 29: Viewing southeast from photo point location.

Photo Point 29: Viewing west from photo point location.

Photo Point 30: Viewing south from photo point location.

Photo Point 31: Viewing west from photo point location.

Photo Point 32: Viewing east from photo point location.

Photo Point 32: Viewing southeast from photo point location.

Photo Point 32: Viewing south from photo point location.

Photo Point 33: Viewing west from photo point location.

Photo Point 33: Viewing northeast from photo point location.

Photo Point 33: Viewing southeast from photo point location.

Photo Point 34: Viewing south from photo point location.

Photo Point 35: Viewing southwest from photo point location.

Photo Point 36: Viewing north from photo point location within Batcave Wash.

Photo Point 37: Viewing south from photo point location.

Photo Point 37: Viewing north from photo point location.

Photo Point 38: Viewing west from photo point location.

Photo Point 38: Viewing southwest from photo point location.

Photo Point 39: Viewing south from photo point location.

Photo Point 40: Viewing east from photo point location.

Photo Point 40: Viewing south from photo point location.

Photo Point 40: Viewing southwest from photo point location.

Photo Point 40: Viewing west from photo point location.

Photo Point 40: Viewing northwest from photo point location.

Photo Point 40: Viewing north from photo point location.

Photo Point 40: Viewing northeast from photo point location.

Photo Point 41: Viewing northeast from photo point location.

Photo Point 41: Viewing south from photo point location.

Photo Point 42: Looking at desert tortoise carcass observed within a small desert wash, tributary to large unnamed wash.

Photo Point 42: Viewing downstream at desert tortoise carcass observed within a small desert wash, tributary to large unnamed wash.

Photo Point 42: Viewing upstream at desert tortoise carcass observed within a small desert wash, tributary to large unnamed wash.